Tumor Marker Control **PRODUCT CODE: TMC-300**

LOT# TMCAC1K1 **EXP: 2024/11/30**

INTENDED USE

The Tumor Marker Controls are intended for use as an assayed quality control material to monitor the consistency of performance of laboratory test procedures associated with determination and monitoring of the clinical status. This product is a human-serum based, liquid control, stabilized with preservatives and can be used with all ELISA and CLIA methods.

SUMMARY AND EXPLANATION

The use of quality control material to assist in the assessment of precision in the clinical laboratory is an integral part of laboratory practices. Controls that contain varied levels of analytes are necessary to insure precision and accuracy in immunoassay systems.

REAGENTS

Monobind's The Tumor Marker Controls are intended to be used in the exact manner as patient samples. The control is packaged as 6 vials of 2.0 ml. The analyte activities are adjusted to concentrations in the low, middle and high range in order to monitor the efficacy of the procedure in use.

INSTRUCTIONS FOR USE

1) Bring the vials to room temperature before use.
2) Carefully unscrew and remove cap.
3) Aliquot the materials in 0.5 ml aliquots in cryo vials and store at -20ºC.

STORAGE, STABILITY AND DISPOSAL

This control is provided liquid and ready to use. This product will be stable until the expiration date when stored unopened at <-20°C. Once the control is opened, all analytes will be stable for 7 days when stored tightly capped at 2 to 8°C. To avoid contamination, it is recommended labs aliquot required quantities into vials before each use.

Controls should be tightly capped and returned to refrigerator 2 to 8° C as soon as practical after usage. (Long term room temperature storage is not supported.) Unused controls should be tightly capped and frozen within two (2) hours. Once thawed, do not refreeze the control; discard remaining material. It is recommended that customers aliquot control into separate containers before freezing to allow for usage on different days. Outdated material should be discarded as a biohazardous component.

STORAGE	STABILITY	TEMPERATURE
Unopened	Three (3) years	< -20°C
Unopened	Ninety (90) days	2 – 8°C
Opened	Seven (7) days	2 – 8°C

EXPECTED RANGE OF VALUES

The mean values printed in this insert were derived from replicate analyses and are specific for this lot of product. The tests listed were performed by Monobind QA using representative lots of this product, as well as those of Monobind's AccuBind® ELISA and AccuLite® CLIA reagents.

Analyte	A Range	B Range	C Range	Method
CA 125 in U/ml	15.69 ± 5.18	60.31 ± 19.90	117.81 ± 38.88	MB ACCUBIND ELISA
	18.16 ± 5.99	64.25 ± 21.20	126.93 ± 41.89	MB ACCULITE CLIA
CA 19-9 in U/ml	14.89 ± 5.43	52.19 ± 17.22	91.50 ± 30.19	MB ACCUBIND ELISA
	15.01 ± 5.08	46.89 ± 15.47	80.73 ± 26.64	MB ACCULITE CLIA
CA 15-3 in U/ml	15.50 ± 5.12	47.47 ± 15.67	93.09 ± 30.72	MB ACCUBIND ELISA
	14.63 ± 4.83	44.10 ± 19.09	105.29 ± 34.75	MB ACCULITE CLIA

Individual laboratory means should fall within the corresponding acceptable range; however laboratory means may vary from the listed values during the life of this control. Therefore, each laboratory should establish its own means and acceptable ranges for the product used, using Monobind's assignment only as guide. A trend log should be maintained for batch to batch consistency of the test. Variations over time and between laboratories may be caused by a) differences in laboratory personnel, b) improper technique, c) instrumentation and reagents, d) improper dilutions from the stated manufacturer's procedure, and/ or e) modifications in the manufacturer's test procedure.

Refer to http://www.monobind.com/site/qc-documents.html for any updated insert information.

WARNING AND PRECAUTIONS

FOR IN VITRO DIAGNOSTIC USE

All products that contain human serum have been found to be non-reactive for HIV 1&2, HIV-Ag, HBsAg, HCV and RPR by FDA required tests. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.

Revision: 0 **Date: 2021-NOV-30** **Product Code: TMC-300**

For Orders and Inquiries, please contact

Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA

Tel: +1 949.951.2665 Email: info@monobind.com
Fax: +1 949.951.3539 Web: www.monobind.com

Please visit our website to learn more about our other interesting products and services.

IVD CE 2° 8°

EC REP **CEpartner4U**, Esdoornlaan 13, 3951DB Maarn, The Netherlands www.cepartner4u.eu

Glossary of Symbols (EN 980/ISO 15223)

- IVD — In Vitro - Diagnostic Medical Device
- 2° 8° — Temperature Limitation Storage Condition (2-8° C)
- Consult Instructions for Use
- REF — Catalogue Number
- Date of Manufacturer
- LOT — Batch Code
- Used By (Expiration Day)
- Manufacturer
- CE — European Conformity
- EC REP — Authorized Rep in European Country

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Reason: MoldSign Signature
Location: Moldova

DOCUMENT HISTORY

PREPARED BY: _____ DEPT: QC VERIFIED BY: A.Shatola DEPT: QA

APPROVED BY: _____ DEPT: Administration EFFECTIVE DATE: 2021-NOV-30

REVISION: 0 DCO: N/A

ВЕКТОР БЕСТ

Набор реагентов для иммуноферментного выявления иммуноглобулинов класса А к *Mycoplasma hominis*

ИНСТРУКЦИЯ ПО ПРИМЕНЕНИЮ

Утверждена 10.12.14

Mycoplasma hominis – IgA – ИФА – БЕСТ

НАБОР РЕАГЕНТОВ **D-4358**

1. НАЗНАЧЕНИЕ

1.1. Набор реагентов предназначен для выявления иммуноглобулинов класса А (IgA) к антигену p120 *Mycoplasma hominis* в сыворотке *(плазме)* крови человека и может быть использован в клинических и эпидемиологических исследованиях.

1.2. Набор реагентов рассчитан на проведение 96 анализов, включая контроли. Возможны 12 независимых постановок ИФА, при каждой из которых 3 лунки используют для постановки контролей.

2. ХАРАКТЕРИСТИКА НАБОРА

2.1. Принцип действия.

Метод определения основан на твёрдофазном иммуноферментном анализе с применением рекомбинантного антигена. Во время первой инкубации, при наличии в исследуемых образцах иммуноглобулинов класса А к *Mycoplasma hominis*, происходит их связывание с иммобилизованным на поверхности лунок планшета рекомбинантным антигеном p120 *Mycoplasma hominis*. Не связавшийся материал удаляют отмывкой.

На второй стадии антитела к IgA человека, меченные пероксидазой хрена *(конъюгат),* свя-

зываются с комплексом «антиген-антитело». Не связавшийся конъюгат удаляют отмывкой.

Во время третьей инкубации с раствором тетраметилбензидина происходит окрашивание раствора в лунках, содержащих комплексы «антиген-антитело».

Реакцию останавливают добавлением стоп-реагента. Результаты ИФА регистрируют с помощью спектрофотометра, измеряя **оптическую плотность (ОП)** в двухволновом режиме: основной фильтр – 450 нм, референс-фильтр – в диапазоне 620–650 нм. Допустима регистрация результатов только с фильтром 450 нм. Интенсивность жёлтого окрашивания пропорциональна количеству содержащихся в исследуемом образце иммуноглобулинов класса А к *Mycoplasma hominis*.

После измерения оптической плотности раствора в лунках на основании рассчитанного значения $ОП_{крит}$ анализируемые образцы оцениваются как положительные, сомнительные или отрицательные.

2.2. Состав набора:

- планшет разборный с иммобилизованным рекомбинантным антигеном p120 *Mycoplasma hominis* – 1 шт.;

- положительный контрольный образец ($К^+$), инактивированный – на основе инактивированной сыворотки крови человека, содержащий иммуноглобулины класса А к *Mycoplasma hominis* – прозрачная жидкость красного цвета – 1 фл., 0,5 мл;
- отрицательный контрольный образец ($К^–$), инактивированный – на основе инактивированной сыворотки крови человека, не содержащий иммуноглобулины класса А к *Mycoplasma hominis* – прозрачная жидкость светло-жёлтого цвета – 1 фл., 1 мл;
- конъюгат, концентрат – антитела к IgA человека, меченные пероксидазой хрена – прозрачная жидкость синего цвета – 1 фл., 1,5 мл;
- раствор для разведения конъюгата (РК) – бесцветная слегка опалесцирующая жидкость –1 фл., 13 мл;
- раствор для разведения сывороток (РС) – прозрачная жидкость жёлто-красного цвета – 1 фл., 13 мл;
- 25-кратный концентрат фосфатно-солевого буферного раствора с твином (ФСБ-Т×25) – прозрачная или слегка опалесцирующая бесцветная жидкость, возможно выпадение осадка солей, растворяющегося при нагревании – 1 фл., 28 мл;
- раствор ТМБ – прозрачная бесцветная или с желтоватым оттенком жидкость — 1 фл., 13 мл;
- стоп-реагент – прозрачная бесцветная жидкость – 1 фл., 12 мл.

Набор дополнительно комплектуется:

- плёнкой для заклеивания планшета – 3 шт.;
- ванночками для реагентов – 2 шт.;
- наконечниками для пипетки на 4–200 мкл – 16 шт.

3. АНАЛИТИЧЕСКИЕ И ДИАГНОСТИЧЕСКИЕ ХАРАКТЕРИСТИКИ

3.1. Результат качественного определения набором иммуноглобулинов класса А к *Mycoplasma hominis* должен соответствовать требованиям СПП *(рег. № 05-2-178),* включающей образцы сывороток, содержащие специфические IgA к *Mycoplasma hominis*: **чувствительность** по иммуноглобулинам класса А к *Mycoplasma hominis* – 100%.

3.2. Результат качественного определения набором иммуноглобулинов класса А к *Mycoplasma hominis* должен соответствовать требованиям СПП *(рег. № 05-2-178)*, включающей образцы сывороток, не содержащие IgA к *Mycoplasma hominis*: **специфичность** по иммуноглобулинам класса А к *Mycoplasma hominis* – 100%.

4. МЕРЫ ПРЕДОСТОРОЖНОСТИ

Потенциальный риск применения набора – класс 2а *(Приказ МЗ РФ от 06.06.2012 № 4н)*.

При работе с исследуемыми сыворотками и контрольными образцами следует соблюдать меры предосторожности, принятые при работе с потенциально инфекционным материалом:

* работать в резиновых перчатках;
* не пипетировать растворы ртом;
* все использованные материалы дезинфицировать в соответствии с требованиями с СП 1.3.2322-08 от 01.05.08 и МУ-287-113 от 30.12.98;
* утилизацию или уничтожение, дезинфекцию наборов реагентов следует проводить в соответствии с СанПиН 2.1.7.2790-10 «Санитарно-эпидемиологические требования к обращению с медицинскими отходами» и МУ-287-113 «Методические указания по дезинфекции, предстерилизационной очистке и стерилизации изделий медицинского назначения».

5. ОБОРУДОВАНИЕ И МАТЕРИАЛЫ

– Спектрофотометр, позволяющий проводить измерения оптической плотности растворов в лунках планшета при длине волны 450 нм и/или в двухволновом режиме при основной длине волны 450 нм и длине волны сравнения в диапазоне 620–650 нм;
– термостат, поддерживающий температуру (37±1) °С;
– холодильник бытовой;
– пипетки полуавтоматические одноканальные с переменным или фиксированным объёмом со сменными наконечниками, позволяющие отбирать объёмы жидкости от 5 до 1000 мкл;
– пипетка полуавтоматическая многоканальная со сменными наконечниками, позволяющая отбирать объёмы жидкостей от 5 до 300 мкл;
– промывочное устройство для планшета;
– перчатки медицинские диагностические одноразовые;
– бумага фильтровальная лабораторная;
– цилиндр мерный 2-го класса точности вместимостью 100 мл;
– цилиндр вместимостью 1000 мл;
– вода дистиллированная;
– дезинфицирующий раствор.

6. АНАЛИЗИРУЕМЫЕ ОБРАЗЦЫ

– Допускается использование образцов, хранившихся при температуре (2–8) °С не более 5 суток, либо при температуре минус (20±4) °С, если необходимо более длительное хранение.

– Сыворотки, содержащие взвешенные частицы, могут дать неправильный результат. Такие образцы перед использованием следует центрифугировать при 3000 об/мин в течение 10–15 минут.

– Нельзя использовать проросшие, гемолизированные, гиперлипидные сыворотки или подвергавшиеся многократному замораживанию и оттаиванию.

7. ПРОВЕДЕНИЕ ИММУНОФЕРМЕНТНОГО АНАЛИЗА

7.1. **ВНИМАНИЕ! Тщательное соблюдение описанных ниже требований позволит избежать искажения результатов ИФА.**

– Перед постановкой реакции все компоненты набора необходимо выдержать при температуре (18–25)°С не менее 30 минут.

– Для приготовления растворов и проведения ИФА следует использовать чистую мерную посуду и автоматические пипетки с погрешностью измерения объёмов не более 5%.

– После отбора необходимого количества стрипов оставшиеся сразу упаковать в пакет с осушителем. Упакованные стрипы, плотно закрытые флаконы с исходными компонентами хранить при (2–8) °С.
– Раствор конъюгата в рабочем разведении готовить непосредственно перед использованием.
– Раствор ТМБ готов для использования. Необходимо исключить воздействие прямого света на раствор ТМБ.
– При промывке лунки *(стрипа, планшета)* заполнять полностью, не допуская переливания промывочного раствора через края лунок, и не касаясь лунок наконечником пипетки. Время между заполнением и опорожнением лунок должно быть не менее 30 секунд.
– При использовании автоматического или ручного промывателя необходимо следить за состоянием ёмкости для промывочного раствора и соединительных шлангов: в них не должно быть «заростов». Раз в неделю желательно ёмкость для промывочного раствора и шланги промывать 70% спиртом.
– Не допускать высыхания лунок планшета между отдельными операциями.
– При постановке ИФА нельзя использовать компоненты из наборов разных серий или

смешивать их при приготовлении растворов, кроме неспецифических компонентов *(ФСБ-Т×25), раствор ТМБ, стоп-реагент)*, которые взаимозаменяемы в наборах АО «Вектор-Бест».

– При приготовлении растворов и проведении ИФА следует использовать **одноразовые** наконечники для дозаторов.

– Посуду *(ванночки)*, используемые для работы с растворами конъюгата и ТМБ, не обрабатывать дезинфицирующими растворами и моющими средствами.

– В случае повторного использования посуду *(ванночки)* для раствора конъюгата промыть проточной водой и тщательно ополоснуть дистиллированной водой, посуду *(ванночки)* для раствора ТМБ сразу после работы необходимо промыть 50% раствором этилового спирта, а затем дистиллированной водой.

– Для дезинфекции посуды и материалов, контактирующих с исследуемыми и контрольными образцами, рекомендуем использовать дезинфицирующие средства, не оказывающие негативного воздействия на качество ИФА, не содержащие активный кислород и хлор, например, комбинированные средства на основе ЧАС *(четвертичных аммониевых соединений)*, спиртов, третичных аминов.

– Пипетки и рабочие поверхности обрабатывать только 70% раствором этилового спирта. Не использовать перекись водорода, хлорамин и т.д.

7.2. Приготовление реагентов.

7.2.1. Промывочный раствор.

Взболтать содержимое флакона с ФСБ-Т×25. При выпадении осадка солей в концентрате прогреть его перед разведением до полного растворения осадка.

В соответствии с числом используемых стрипов отобрать необходимое количество ФСБ-Т×25 *(см. таблицу)* и развести дистиллированной водой до указанного в таблице объёма или содержимое 1 флакона – до **700 мл.**

Хранение: при температуре (2–8) °С до 72 часов.

7.2.2. Контрольные образцы.

Контрольные образцы ($К^+$ и $К^-$) готовы к использованию.

Хранение: при температуре (2–8) °С в течение всего срока годности набора.

7.2.3. Раствор конъюгата в рабочем разведении.

Внимание! *Для работы с конъюгатом рекомендуем использовать* ***одноразовые*** *наконечники для пипеток.*

Таблица расхода реагентов

	Количество используемых стрипов											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Приготовление промывочного раствора												
ФСБ-Т×25, мл	2	4	6	8	10	12	14	16	18	20	22	24
Дистиллированная вода, мл	до 50	до 100	до 150	до 200	до 250	до 300	до 350	до 400	до 450	до 500	до 550	до 600
Приготовление раствора конъюгата в рабочем разведении												
Конъюгат (концентрат), мл	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,1	1,2
РК, мл	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0
Раствор ТМБ												
Раствор ТМБ, мл	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0

Внимание! *Раствор конъюгата в рабочем разведении готовить в пластиковой ванночке, входящей в состав набора, непосредственно перед использованием!*

Перед приготовлением раствора конъюгата в рабочем разведении необходимо аккуратно перемешать, не допуская вспенивания, содержимое флаконов с концентратом конъюгата и с РК.

В пластиковую ванночку внести необходимое количество РК, добавить соответствующее количество конъюгата *(см. таблицу)* и аккуратно перемешать пипетированием до получения равномерного окрашивания.

7.2.4. Раствор ТМБ.

Внимание! *Раствор ТМБ готов к использованию. Необходимо исключить воздействие света на раствор ТМБ.*

Непосредственно перед использованием отобрать в пластиковую ванночку **только** необходимое в соответствии с числом используемых стрипов количество раствора ТМБ *(см. таблицу)*. Остатки раствора ТМБ из ванночки утилизировать *(не сливать во флакон с исходным раствором ТМБ)*.

Хранение: при температуре (2–8) °С в течение всего срока годности набора.

7.3. Проведение анализа.

7.3.1. Подготовить необходимое количество стрипов к работе. Оставшиеся – сразу упаковать во избежание губительного воздействия влаги. Для этого стрипы поместить в цефленовый пакет с влагопоглотителем, тщательно закрыть пакет пластиковой застёжкой. Упакованные таким образом стрипы хранить при (2–8) °С до конца срока годности набора.

Приготовить промывочный раствор *(п. 7.2.1)*, контрольные образцы *(п. 7.2.2)*.

7.3.2. Перед постановкой ИФА лунки стрипов промыть один раз промывочным раствором, заливая в каждую лунку по 400 мкл промывочного раствора. По истечении 5 мин раствор аккуратно удалить в сосуд с дезинфицирующим раствором.

По окончании промывки необходимо тщательно удалить влагу из лунок, постукивая перевёрнутыми стрипами по сложенной в несколько слоёв фильтровальной бумаге. *Не допускать высыхания лунок стрипов между отдельными операциями при постановке реакции.*

7.3.3. Во все лунки стрипов внести по **80 мкл РС**. В одну лунку внести **20 мкл К$^+$**, в две другие лунки по **20 мкл К$^-$**, в остальные лунки – по **20 мкл исследуемых образцов**, получая таким образом, разведение 1:5. Внесение образцов

должно сопровождаться аккуратным перемешиванием *(пипетирование не менее 4 раз)*. Не допускать вспенивания и касания наконечником дна и стенок лунки.

Лунки заклеить плёнкой и инкубировать при температуре (37±1) °С **30 минут**.

За 5 мин до окончания инкубации приготовить раствор конъюгата в рабочем разведении.

7.3.4. По окончании инкубации содержимое лунок собрать в сосуд с дезинфицирующим раствором, промыть лунки стрипов 5 раз промывочным раствором и тщательно удалить влагу.

Внимание! *Каждую лунку при промывке необходимо заполнять полностью (400 мкл промывочного раствора). Необходимо добиваться полного опорожнения лунок после каждого их заполнения. Время между заполнением и опорожнением лунок должно быть не менее 30 секунд.*

7.3.5. Во все лунки планшета внести по **100 мкл раствора конъюгата в рабочем разведении.**

Внимание! *Для внесения раствора конъюгата в рабочем разведении использовать пластиковую ванночку и* ***одноразовые*** *наконечники, входящие в состав набора.*

Заклеить лунки плёнкой и инкубировать при температуре (37±1) °С **30 минут**.

По окончании инкубации содержимое лунок собрать в сосуд с дезинфицирующим раствором, лунки промыть 5 раз промывочным раствором и удалить влагу, как описано выше.

7.3.6. Во все лунки внести по **100 мкл раствора ТМБ**.

Внимание! *Для внесения раствора ТМБ использовать пластиковую ванночку и* ***одноразовые*** *наконечники, входящие в состав набора.*

Стрипы поместить в защищённое от света место при температуре (18–25) °С на **30 минут.**

7.3.7. Остановить реакцию добавлением во все лунки по **100 мкл стоп-реагента** и через 2–3 минуты измерить ОП.

Следует избегать попадания стоп-реагента на одежду и открытые участки тела. При попадании – промыть большим количеством воды.

8. РЕГИСТРАЦИЯ РЕЗУЛЬТАТОВ

Результаты ИФА регистрировать с помощью спектрофотометра, измеряя ОП в двухволновом режиме: основной фильтр – 450 нм, референс-фильтр – в диапазоне 620–650 нм. Допустима регистрация результатов только с фильтром 450 нм.

Выведение спектрофотометра на нулевой уровень *(«бланк»)* осуществлять по воздуху.

9. УЧЁТ РЕЗУЛЬТАТОВ РЕАКЦИИ

9.1. Результаты исследований учитывать только при соблюдении следующих условий:

– среднее значение ОП в лунках с отрицательным контрольным образцом не более 0,25 ($ОП_{ср}К^{-} \leq 0{,}25$).

– значение ОП в лунке с положительным контрольным образцом не менее 0,6 ($ОПК^{+} \geq 0{,}60$).

Вычислить **критическое значение оптической плотности ($ОП_{крит}$)** по формуле:

$$\mathbf{ОП_{крит} = ОП_{ср}(К^{-}) + 0{,}3},$$

где $ОП_{ср}(К^{-})$ — среднее значение ОП для отрицательного контрольного образца.

Исследуемый образец оценить как:

– **отрицательный**, т.е. не содержащий IgA к *Mycoplasma hominis*, если полученное для него значение $ОП_{обр} \leq ОП_{крит} - 0{,}05$;

– **положительный,** т.е. содержащий IgA к *Mycoplasma hominis*, если значение $ОП_{обр} \geq ОП_{крит} + 0{,}05$;

– **сомнительный**, если $ОП_{крит} - 0{,}05 < ОП_{обр} < ОП_{крит} + 0{,}05$.

10. УСЛОВИЯ ХРАНЕНИЯ И ЭКСПЛУАТАЦИИ НАБОРА

10.1. Транспортирование набора должно проводиться при температуре (2–8) °С. Допускается транспортирование при температуре до 25 °С не более 10 суток. Замораживание не допускается.

10.2. Хранение набора в упаковке предприятия-изготовителя должно производиться при температуре (2–8) °С. Замораживание не допускается.

10.3. Срок годности набора реагентов – 12 месяцев со дня выпуска.

11. ГАРАНТИЙНЫЕ ОБЯЗАТЕЛЬСТВА

11.1. Производитель гарантирует соответствие выпускаемых изделий требованиям нормативной и технической документации.

Безопасность и качество изделия гарантируются в течение всего срока годности.

11.2. Производитель отвечает за недостатки изделия, за исключением дефектов, возникших вследствие нарушения правил пользования, условий транспортирования и хранения, либо действия третьих лиц, либо непреодолимой силы.

11.3. Производитель обязуется за свой счёт заменить изделие, технические и функциональ-

ные характеристики *(потребительские свойства)* которого не соответствуют нормативной и технической документации, если указанные недостатки явились следствием скрытого дефекта материалов или некачественного изготовления изделия производителем.

По вопросам, касающимся качества набора ***«Mycoplasma hominis-IgA-ИФА-БЕСТ»****, обращаться в* ***АО «Вектор-Бест»*** *по адресу:*
630117, г. Новосибирск-117, а/я 492,
тел.: (383) 332-92-49, 227-60-30;
тел./факс: (383) 332-94-47, 332-94-44;
E-mail: plkobtk@vector-best.ru

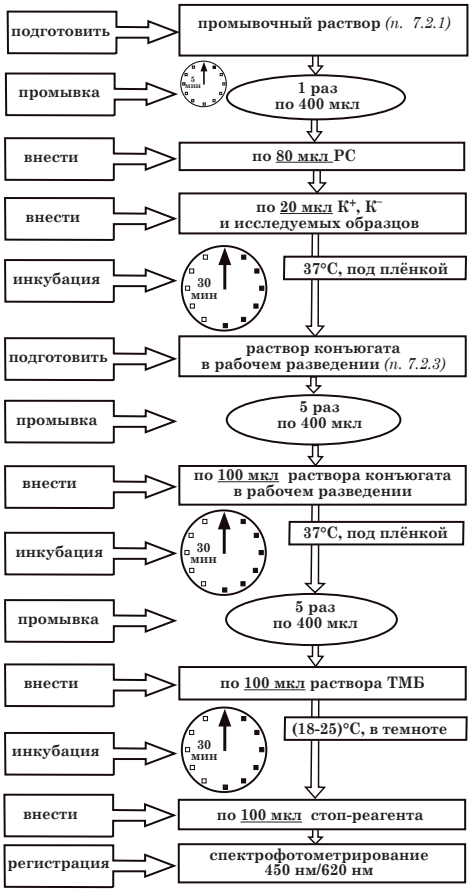
ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ ДЛЯ ПОТРЕБИТЕЛЕЙ:

– Набор реагентов предназначен для профессионального применения и должен использоваться обученным персоналом;
– При использовании набора образуются отходы классов А, Б и Г, которые классифицируются и уничтожаются *(утилизируются)* в соответствии с СанПиН 2.1.7.2790-10 «Санитарно-эпидемиологические требования к обращению с медицинскими отходами». Дезинфекцию наборов следует проводить по

МУ-287-113 «Методические указания по дезинфекции, предстерилизационной очистке и стерилизации изделий медицинского назначения»;

– Требования безопасности к медицинским лабораториям приведены в ГОСТ Р 52905-2007;
– Не применять набор реагентов по назначению после окончания срока годности;
– Транспортирование должно проводиться всеми видами крытого транспорта в соответствии с правилами перевозок, действующими на транспорте данного вида.
– Производитель гарантирует соответствие выпускаемых изделий требованиям нормативной и технической документации.

Схема анализа D-4358



ГРАФИЧЕСКИЕ СИМВОЛЫ

REF	Номер по каталогу	IVD	Медицинское изделие для диагностики *in vitro*
Σ n	Содержимого достаточно для проведения n количества тестов	NON STERILE	Не стерильно
LOT	Код партии		Температурный диапазон
	Дата изготовления: XXXX-XX-XX Формат даты: год-месяц-число		Изготовитель
	Использовать до: XXXX-XX-XX Формат даты: год-месяц-число		Обратитесь к Инструкции по применению
	Осторожно! Обратитесь к Инструкции по применению		

Консультацию специалиста по работе с набором можно получить по тел.: (383) 332-81-44.

18.04.16

АКЦИОНЕРНОЕ ОБЩЕСТВО
«ВЕКТОР-БЕСТ»

Международный сертификат
ISO 13485

Наш адрес: 630117, Новосибирск-117, а/я 492

Тел.: (383) 332-37-58, 332-37-10, 332-36-34,
332-67-49, 332-67-52

Тел./факс: (383) 227-73-60 (многоканальный)

E-mail: vbmarket@vector-best.ru
Internet: www.vector-best.ru

ВЕКТОР

БЕСТ

Набор реагентов для иммуноферментного выявления иммуноглобулинов класса G к *Mycoplasma hominis*

ИНСТРУКЦИЯ ПО ПРИМЕНЕНИЮ

Утверждена 10.12.2014

Mycoplasma hominis – IgG – ИФА – БЕСТ

НАБОР РЕАГЕНТОВ

D-4352

1. НАЗНАЧЕНИЕ

1.1. Набор реагентов предназначен для выявления иммуноглобулинов класса G (IgG) к антигену p120 *Mycoplasma hominis* в сыворотке *(плазме)* крови человека и может быть использован в клинических и эпидемиологических исследованиях.

1.2. Набор реагентов рассчитан на проведение 96 анализов, включая контроли. Возможны 12 независимых постановок ИФА, при каждой из которых 3 лунки используют для постановки контролей.

2. ХАРАКТЕРИСТИКА НАБОРА

2.1. Принцип действия.

Метод определения основан на твёрдофазном иммуноферментном анализе с применением рекомбинантного антигена. Во время первой инкубации, при наличии в исследуемых образцах иммуноглобулинов класса G к *Mycoplasma hominis*, происходит их связывание с иммобилизованным на поверхности лунок планшета рекомбинантным антигеном p120 *Mycoplasma hominis*. Не связавшийся материал удаляют отмывкой.

На второй стадии антитела к IgG человека, меченные пероксидазой хрена *(конъюгат),* свя-

зываются с комплексом «антиген-антитело». Не связавшийся конъюгат удаляют отмывкой.

Во время третьей инкубации с раствором тетраметилбензидина происходит окрашивание раствора в лунках, содержащих комплексы «антиген-антитело».

Реакцию останавливают добавлением стоп-реагента. Результаты ИФА регистрируют с помощью спектрофотометра, измеряя **оптическую плотность (ОП)** в двухволновом режиме: основной фильтр – 450 нм, референс-фильтр – в диапазоне 620–650 нм. Допустима регистрация результатов только с фильтром 450 нм. Интенсивность жёлтого окрашивания пропорциональна количеству содержащихся в исследуемом образце иммуноглобулинов класса G к *Mycoplasma hominis*.

После измерения оптической плотности раствора в лунках на основании рассчитанного значения $ОП_{крит}$ анализируемые образцы оцениваются как положительные, сомнительные или отрицательные.

2.2. Состав набора:

- планшет разборный с иммобилизованным рекомбинантным антигеном p120 *Mycoplasma hominis* – 1 шт.;

- положительный контрольный образец ($К^+$), инактивированный – на основе инактивированной сыворотки крови человека, содержащий иммуноглобулины класса G к *Mycoplasma hominis* – прозрачная жидкость красного цвета – 1 фл., 0,5 мл;
- отрицательный контрольный образец ($К^-$), инактивированный – на основе инактивированной сыворотки крови человека, не содержащий иммуноглобулины класса G к *Mycoplasma hominis* – прозрачная жидкость светло-жёлтого цвета – 1 фл., 1 мл;
- конъюгат, концентрат – антитела к IgG человека, меченные пероксидазой хрена – прозрачная жидкость синего цвета – 1 фл., 1,5 мл;
- раствор для разведения конъюгата (РК) – бесцветная слегка опалесцирующая жидкость — 1 фл., 13 мл;
- разводящий буфер для сывороток (РБС) – прозрачная жидкость красного цвета – 1 фл., 13 мл;
- 25-кратный концентрат фосфатно-солевого буферного раствора с твином (ФСБ-Т×25) – прозрачная или слегка опалесцирующая бесцветная жидкость, возможно выпадение осадка солей, растворяющегося при нагревании – 1 фл., 28 мл;
- раствор ТМБ – прозрачная бесцветная или с желтоватым оттенком жидкость – 1 фл., 13 мл;
- стоп-реагент – прозрачная бесцветная жидкость – 1 фл., 12 мл.

Набор дополнительно комплектуется:

- плёнкой для заклеивания планшета – 3 шт.;
- ванночками для реагентов – 2 шт.;
- наконечниками для пипетки на 4–200 мкл – 16 шт.

3. АНАЛИТИЧЕСКИЕ И ДИАГНОСТИЧЕСКИЕ ХАРАКТЕРИСТИКИ

3.1. Результат качественного определения набором иммуноглобулинов класса G к *Mycoplasma hominis* должен соответствовать требованиям СПП *(рег. № 05-2-176),* включающей образцы сывороток, содержащие специфические IgG к *Mycoplasma hominis*: **чувствительность** по иммуноглобулинам класса G к *Mycoplasma hominis* – 100%.

3.2. Результат качественного определения набором иммуноглобулинов класса G к *Mycoplasma hominis* должен соответствовать требованиям СПП *(рег. № 05-2-176)*, включающей образцы сывороток, не содержащие IgG к *Mycoplasma hominis*: **специфичность** по иммуноглобулинам класса G к *Mycoplasma hominis* – 100%.

4. МЕРЫ ПРЕДОСТОРОЖНОСТИ

Потенциальный риск применения набора – класс 2а *(Приказ МЗ РФ от 06.06.2012 № 4н)*.

При работе с исследуемыми сыворотками и контрольными образцами следует соблюдать меры предосторожности, принятые при работе с потенциально инфекционным материалом:

* работать в резиновых перчатках;
* не пипетировать растворы ртом;
* все использованные материалы дезинфицировать в соответствии с требованиями с СП 1.3.2322-08 от 01.05.08 и МУ-287-113 от 30.12.98;
* утилизацию или уничтожение, дезинфекцию наборов реагентов следует проводить в соответствии с СанПиН 2.1.7.2790-10 «Санитарно-эпидемиологические требования к обращению с медицинскими отходами» и МУ-287-113 «Методические указания по дезинфекции, предстерилизационной очистке и стерилизации изделий медицинского назначения».

5. ОБОРУДОВАНИЕ И МАТЕРИАЛЫ

– Спектрофотометр, позволяющий проводить измерения оптической плотности растворов в лунках планшета при длине волны 450 нм и/или в двухволновом режиме при основной длине волны 450 нм и длине волны сравнения в диапазоне 620–650 нм;
– термостат, поддерживающий температуру (37±1) °С;
– холодильник бытовой;
– пипетки полуавтоматические одноканальные с переменным или фиксированным объёмом со сменными наконечниками, позволяющие отбирать объёмы жидкости от 5 до 1000 мкл;
– пипетка полуавтоматическая многоканальная со сменными наконечниками, позволяющая отбирать объёмы жидкостей от 5 до 300 мкл;
– промывочное устройство для планшета;
– перчатки медицинские диагностические одноразовые;
– бумага фильтровальная лабораторная;
– цилиндр мерный 2-го класса точности вместимостью 100 мл;
– цилиндр вместимостью 1000 мл;
– вода дистиллированная;
– дезинфицирующий раствор.

6. АНАЛИЗИРУЕМЫЕ ОБРАЗЦЫ

– Допускается использование образцов, хранившихся при температуре (2–8) °С не более 5 суток, либо при температуре минус (20±4) °С, если необходимо более длительное хранение.

– Сыворотки, содержащие взвешенные частицы, могут дать неправильный результат. Такие образцы перед использованием следует центрифугировать при 3000 об/мин в течение 10–15 минут.

– Нельзя использовать проросшие, гемолизированные, гиперлипидные сыворотки или подвергавшиеся многократному замораживанию и оттаиванию.

7. ПРОВЕДЕНИЕ ИММУНОФЕРМЕНТНОГО АНАЛИЗА

7.1. **ВНИМАНИЕ! Тщательное соблюдение описанных ниже требований позволит избежать искажения результатов ИФА.**

– Перед постановкой реакции все компоненты набора необходимо выдержать при температуре (18–25)°С не менее 30 минут.

– Для приготовления растворов и проведения ИФА следует использовать чистую мерную посуду и автоматические пипетки с погрешностью измерения объёмов не более 5%.

– После отбора необходимого количества стрипов оставшиеся сразу упаковать в пакет с осушителем. Упакованные стрипы, плотно закрытые флаконы с исходными компонентами хранить при (2–8) °С.

– Раствор конъюгата в рабочем разведении готовить непосредственно перед использованием.

– Раствор ТМБ готов для использования. Необходимо исключить воздействие прямого света на раствор ТМБ.

– При промывке лунки *(стрипа, планшета)* заполнять полностью, не допуская переливания промывочного раствора через края лунок, и не касаясь лунок наконечником пипетки.

Время между заполнением и опорожнением лунок должно быть не менее 30 секунд.

– При использовании автоматического или ручного промывателя необходимо следить за состоянием ёмкости для промывочного раствора и соединительных шлангов: в них не должно быть «заростов». Раз в неделю желательно ёмкость для промывочного раствора и шланги промывать 70% спиртом.
– Не допускать высыхания лунок планшета между отдельными операциями.
– При постановке ИФА нельзя использовать компоненты из наборов разных серий или смешивать их при приготовлении растворов, кроме неспецифических компонентов *(ФСБ-Т×25), раствор ТМБ, стоп-реагент)*, которые взаимозаменяемы в наборах АО «Вектор-Бест».
– При приготовлении растворов и проведении ИФА следует использовать одноразовые наконечники для дозаторов.
– Посуду *(ванночки)*, используемые для работы с растворами конъюгата и ТМБ, не обрабатывать дезинфицирующими растворами и моющими средствами.
– В случае повторного использования посуду *(ванночки)* для раствора конъюгата промыть

проточной водой и тщательно ополоснуть дистиллированной водой, посуду *(ванночки)* для раствора ТМБ сразу после работы необходимо промыть 50% раствором этилового спирта, а затем дистиллированной водой.

– Для дезинфекции посуды и материалов, контактирующих с исследуемыми и контрольными образцами, рекомендуем использовать дезинфицирующие средства, не оказывающие негативного воздействия на качество ИФА, не содержащие активный кислород и хлор, например, комбинированные средства на основе ЧАС *(четвертичных аммониевых соединений)*, спиртов, третичных аминов.
– Пипетки и рабочие поверхности обрабатывать только 70% раствором этилового спирта. Не использовать перекись водорода, хлорамин и т.д.

7.2. Приготовление реагентов.

7.2.1. Промывочный раствор.

Взболтать содержимое флакона с ФСБ-Т×25. При выпадении осадка солей в концентрате прогреть его перед разведением до полного растворения осадка.

В соответствии с числом используемых стрипов отобрать необходимое количество

Таблица расхода реагентов

	Количество используемых стрипов											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Приготовление промывочного раствора												
ФСБ-Т×25, мл	2	4	6	8	10	12	14	16	18	20	22	24
Дистиллированная вода, мл	до 50	до 100	до 150	до 200	до 250	до 300	до 350	до 400	до 450	до 500	до 550	до 600
Приготовление раствора конъюгата в рабочем разведении												
Конъюгат (концентрат), мл	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,1	1,2
РК, мл	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0
Раствор ТМБ												
Раствор ТМБ, мл	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0

ФСБ-Т×25 *(см. таблицу)* и развести дистиллированной водой до указанного в таблице объёма или содержимое 1 флакона – до **700 мл.**

Хранение: при температуре (2–8) °С до 72 часов.

7.2.2. Контрольные образцы.

Контрольные образцы ($К^+$ и $К^-$) готовы к использованию.

Хранение: при температуре (2–8) °С в течение всего срока годности набора.

7.2.3. Раствор конъюгата в рабочем разведении.

Внимание! *Для работы с конъюгатом рекомендуем использовать* ***одноразовые*** *наконечники для пипеток.*

Внимание! *Раствор конъюгата в рабочем разведении готовить в пластиковой ванночке, входящей в состав набора, непосредственно перед использованием!*

Перед приготовлением раствора конъюгата в рабочем разведении необходимо аккуратно перемешать, не допуская вспенивания, содержимое флаконов с концентратом конъюгата и с РК.

В пластиковую ванночку внести необходимое количество РК, добавить соответствующее

количество конъюгата *(см. таблицу)* и аккуратно перемешать пипетированием до получения равномерного окрашивания.

7.2.4. Раствор ТМБ.

Внимание! *Раствор ТМБ готов к использованию. Необходимо исключить воздействие света на раствор ТМБ.*

Непосредственно перед использованием отобрать в пластиковую ванночку **только** необходимое в соответствии с числом используемых стрипов количество раствора ТМБ *(см. таблицу)*. Остатки раствора ТМБ из ванночки утилизировать *(не сливать во флакон с исходным раствором ТМБ)*.

Хранение: при температуре (2–8) °С в течение всего срока годности набора.

7.3. Проведение анализа.

7.3.1. Подготовить необходимое количество стрипов к работе. Оставшиеся – сразу упаковать во избежание губительного воздействия влаги. Для этого стрипы поместить в цефленовый пакет с влагопоглотителем, тщательно закрыть пакет пластиковой застёжкой. Упакованные таким образом стрипы хранить при (2–8) °С до конца срока годности набора.

Приготовить промывочный раствор *(п. 7.2.1)*, контрольные образцы *(п. 7.2.2)*.

7.3.2. Перед постановкой ИФА лунки стрипов промыть один раз промывочным раствором, заливая в каждую лунку по 400 мкл промывочного раствора. По истечении 5 минут раствор аккуратно удалить в сосуд с дезинфицирующим раствором.

По окончании промывки необходимо тщательно удалить влагу из лунок, постукивая перевёрнутыми стрипами по сложенной в несколько слоёв фильтровальной бумаге. *Не допускать высыхания лунок стрипов между отдельными операциями при постановке реакции.*

7.3.3. Во все лунки стрипов внести по **80 мкл РБС**. В одну лунку внести **20 мкл К$^+$**, в две другие лунки по **20 мкл К$^-$**, в остальные лунки – по **20 мкл исследуемых образцов**, получая таким образом, разведение 1:5. Внесение образцов должно сопровождаться аккуратным перемешиванием *(пипетирование не менее 4 раз)*. Не допускать вспенивания и касания наконечником дна и стенок лунки.

Лунки заклеить плёнкой и инкубировать при температуре (37±1) °С **30 минут**.

За 5 минут до окончания инкубации приготовить раствор конъюгата в рабочем разведении.

7.3.4. По окончании инкубации содержимое лунок собрать в сосуд с дезинфицирующим раствором, промыть лунки стрипов 5 раз промывочным раствором и тщательно удалить влагу.

Внимание! *Каждую лунку при промывке необходимо заполнять полностью (400 мкл промывочного раствора). Необходимо добиваться полного опорожнения лунок после каждого их заполнения. Время между заполнением и опорожнением лунок должно быть не менее 30 сек.*

7.3.5. Во все лунки планшета внести по **100 мкл раствора конъюгата в рабочем разведении.**

Внимание! *Для внесения раствора конъюгата в рабочем разведении использовать пластиковую ванночку и* ***одноразовые*** *наконечники, входящие в состав набора.*

Заклеить лунки плёнкой и инкубировать при температуре (37±1) °С **30 минут**.

По окончании инкубации содержимое лунок собрать в сосуд с дезинфицирующим раствором, лунки промыть 5 раз промывочным раствором и удалить влагу, как описано выше.

7.3.6. Во все лунки внести по **100 мкл раствора ТМБ**.

Внимание! *Для внесения раствора ТМБ использовать пластиковую ванночку и* ***одноразовые*** *наконечники, входящие в состав набора.*

Стрипы поместить в защищённое от света место при температуре (18–25) °С на **30 минут.**

7.3.7. Остановить реакцию добавлением во все лунки по **100 мкл стоп-реагента** и через 2–3 минуты измерить ОП.

Следует избегать попадания стоп-реагента на одежду и открытые участки тела. При попадании – промыть большим количеством воды.

8. РЕГИСТРАЦИЯ РЕЗУЛЬТАТОВ

Результаты ИФА регистрировать с помощью спектрофотометра, измеряя ОП в двухволновом режиме: основной фильтр – 450 нм, референс-фильтр – в диапазоне 620–650 нм. Допустима регистрация результатов только с фильтром 450 нм.

Выведение спектрофотометра на нулевой уровень *(«бланк»)* осуществлять по воздуху.

9. УЧЁТ РЕЗУЛЬТАТОВ РЕАКЦИИ

9.1. Результаты исследований учитывать только при соблюдении следующих условий:

– среднее значение ОП в лунках с отрицательным контрольным образцом не более 0,25 ($ОП_{ср}К^{-} \leq 0{,}25$).

– значение ОП в лунке с положительным контрольным образцом не менее 0,6 ($ОПК^{+} \geq 0{,}60$).

Вычислить **критическое значение оптической плотности ($ОП_{крит}$)** по формуле:

$$\mathbf{ОП_{крит} = ОП_{ср}(К^{-}) + 0{,}3},$$

где $ОП_{ср}(К^{-})$ — среднее значение ОП для отрицательного контрольного образца.

Исследуемый образец оценить как:

– **отрицательный**, т.е. не содержащий IgG к *Mycoplasma hominis*, если полученное для него значение $ОП_{обр} \leq ОП_{крит} - 0{,}05$;

– **положительный,** т.е. содержащий IgG к *Mycoplasma hominis*, если значение $ОП_{обр} \geq ОП_{крит} + 0{,}05$;

– **сомнительный**, если $ОП_{крит} - 0{,}05 < ОП_{обр} < ОП_{крит} + 0{,}05$.

9.2. Интерпретация результатов.

ОП образца	Результат	Титр IgG
от 0 до (ОП$_{крит}$ – 0,05)	отрицательный	–
от (ОП$_{крит}$ – 0,05) до (ОП$_{крит}$ + 0,05)	сомнительный	–
от (ОП$_{крит}$ + 0,05) до 2 × ОП$_{крит}$	слабоположительный	1:5
от 2 × ОП$_{крит}$ до 4 × ОП$_{крит}$	положительный	1:10
от 4 × ОП$_{крит}$ до 8 × ОП$_{крит}$	сильноположительный	1:20
от 8 × ОП$_{крит}$ до 11 × ОП$_{крит}$	сильноположительный	1:40
более 11 × ОП$_{крит}$	сильноположительный	1:80

Пациентам с сомнительными и положительными результатами рекомендуется дополнительное обследование *(выявление возбудителя, обследование парных сывороток).* Все клинические и лабораторные данные должны быть рассмотрены в совокупности.

10. УСЛОВИЯ ХРАНЕНИЯ И ЭКСПЛУАТАЦИИ НАБОРА

10.1. Транспортирование набора должно проводиться при температуре (2–8) °С. Допускается транспортирование при температуре до 25 °С не более 10 суток.

Замораживание не допускается.

10.2. Хранение набора в упаковке предприятия-изготовителя должно производиться при температуре (2–8) °С.

Замораживание не допускается.

10.3. Срок годности набора реагентов – 12 месяцев со дня выпуска.

11. ГАРАНТИЙНЫЕ ОБЯЗАТЕЛЬСТВА

11.1. Производитель гарантирует соответствие выпускаемых изделий требованиям нормативной и технической документации.

Безопасность и качество изделия гарантируются в течение всего срока годности.

11.2. Производитель отвечает за недостатки изделия, за исключением дефектов, возникших вследствие нарушения правил пользования, условий транспортирования и хранения, либо действия третьих лиц, либо непреодолимой силы.

11.3. Производитель обязуется за свой счёт заменить изделие, технические и функциональные характеристики *(потребительские свойства)* которого не соответствуют нормативной и технической документации, если указанные недостатки явились следствием скрытого дефекта материалов или некачественного изготовления изделия производителем.

По вопросам, касающимся качества набора ***«Mycoplasma hominis-IgG-ИФА-БЕСТ»****, обращаться в* ***АО «Вектор-Бест»*** *по адресу:*
630117, г. Новосибирск-117, а/я 492,
тел.: (383) 332-92-49, 227-60-30;
тел./факс: (383) 332-94-47, 332-94-44;
E-mail: plkobtk@vector-best.ru

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ ДЛЯ ПОТРЕБИТЕЛЕЙ:

– Набор реагентов предназначен для профессионального применения и должен использоваться обученным персоналом;

– При использовании набора образуются отходы классов А, Б и Г, которые классифицируются и уничтожаются *(утилизируются)* в соответствии с СанПиН 2.1.7.2790-10 «Санитарно-эпидемиологические требования к обращению с медицинскими отходами». Дезинфекцию наборов следует проводить по МУ-287-113 «Методические указания по дезинфекции, предстерилизационной очистке и стерилизации изделий медицинского назначения»;

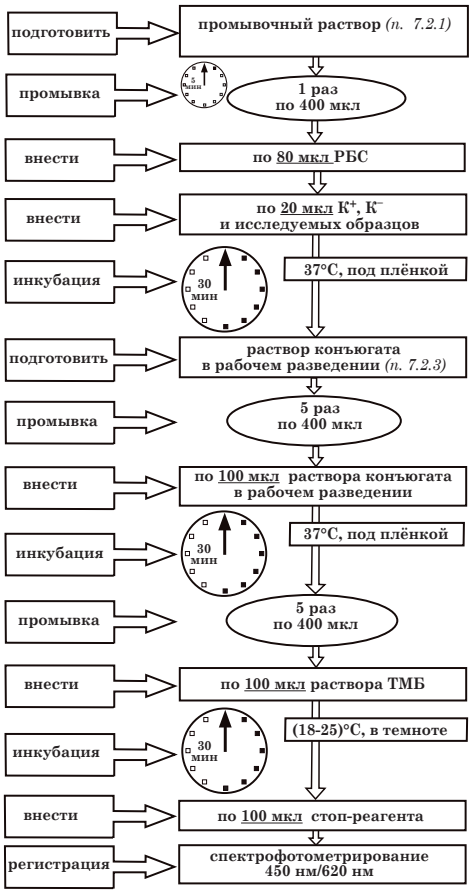
– Требования безопасности к медицинским лабораториям приведены в ГОСТ Р 52905-2007;

– Не применять набор реагентов по назначению после окончания срока годности;

– Транспортирование должно проводиться всеми видами крытого транспорта в соответствии с правилами перевозок, действующими на транспорте данного вида.

– Производитель гарантирует соответствие выпускаемых изделий требованиям нормативной и технической документации.

Схема анализа D-4352



ГРАФИЧЕСКИЕ СИМВОЛЫ

REF	Номер по каталогу	IVD	Медицинское изделие для диагностики *in vitro*
Σ n	Содержимого достаточно для проведения n количества тестов	NON STERILE	Не стерильно
LOT	Код партии		Температурный диапазон
	Дата изготовления: XXXX-XX-XX Формат даты: год-месяц-число		Изготовитель
	Использовать до: XXXX-XX-XX Формат даты: год-месяц-число		Обратитесь к Инструкции по применению
	Осторожно! Обратитесь к Инструкции по применению		

К онсультацию специалиста по работе с набором можно получить по тел.: (383) 332-81-44.

18.04.16

АКЦИОНЕРНОЕ ОБЩЕСТВО
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Международный сертификат
ISO 13485

Наш адрес: 630117, Новосибирск-117, а/я 492

Тел.: (383) 332-37-58, 332-37-10, 332-36-34,
332-67-49, 332-67-52

Тел./факс: (383) 227-73-60 (многоканальный)

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Internet: www.vector-best.ru

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NovaLisa®

Mycoplasma pneumoniae IgG

ELISA

CE

Only for in-vitro diagnostic use

Product Number: MYCG0350 (96 Determinations)

ENGLISH

1. INTRODUCTION

The mycoplasms belong to the class Mollicutes comprising three distinct families and four genera, one of which is Mycoplasma with over 60 species. Mycoplasms are the smallest free living organisms known (300 to 500 nm in diameter) and unlike regular bacteria they lack a cell wall. Mycoplasms are extracellular parasites, especially on mucous membranes, which can cause infections in human, animals, plants, and cell cultures. Mycoplasma pneumoniae is primarily a respiratory pathogen (obligat) in human involving the nasopharynx, throat, trachea, bronchi, bronchioles, and alveoli. Other Mycoplasms, M. buccale, M. faucium, M. orale and M. salivarium are commensals in the oral cavity. Mycoplasma hominis and Ureaplasma urealyticum inhabit primarily the genital tract and may act as opportunistic invaders. M. pneumoniae is by far the most important pathogen of this group. Infection with M. pneumoniae occurs worldwide, its epidemiology has been studied primarily in the USA, Europe, and Japan. Infections are endemic in larger urban areas, and epidemic increases are observed at varying intervalls. M. pneumoniae has been estimated to cause 15-20% of all pneumoniae; the rate is highest in children and young adults. 74% of infections with M. pneumoniae are asymptomatic, reinfection may occur. Naturally acquired immunity to infection with M. pneumoniae appears to be of limited duration (2-3 years).

Species	Disease	Symptoms (e.g.)	Transmission route
M. pneumoniae	Respiratory diseases by Mycoplasma pneumoniae	Fever, headache, and a persistent cough. Respiratory tract disease: from asymptomatic infection to colds, pharyngitis, bronchitis, croup, tracheobronchitis, pneumonitis and primary atypical pneumonia	Transmitted by aerosol droplets

Infection or presence of pathogen may be identified by:

- Microscopy
- Serology: e.g. by ELISA

2. INTENDED USE

The Mycoplasma pneumoniae IgG ELISA is intended for the qualitative determination of IgG class antibodies against Mycoplasma pneumoniae in human serum or plasma (citrate, heparin).

3. PRINCIPLE OF THE ASSAY

The qualitative immunoenzymatic determination of specific antibodies is based on the ELISA (Enzyme-linked Immunosorbent Assay) technique.
Microtiterplates are coated with specific antigens to bind corresponding antibodies of the sample. After washing the wells to remove all unbound sample material a horseradish peroxidase (HRP) labelled conjugate is added. This conjugate binds to the captured antibodies. In a second washing step unbound conjugate is removed. The immune complex formed by the bound conjugate is visualized by adding Tetramethylbenzidine (TMB) substrate which gives a blue reaction product.
The intensity of this product is proportional to the amount of specific antibodies in the sample. Sulphuric acid is added to stop the reaction. This produces a yellow endpoint colour. Absorbance at 450/620 nm is read using an ELISA Microtiterplate reader.

4. MATERIALS

4.1. Reagents supplied

- **Microtiterplate:** 12 break-apart 8-well snap-off strips coated with Mycoplasma pneumoniae antigens; in resealable aluminium foil.
- **IgG Sample Dilution Buffer:** 1 bottle containing 100 mL of phosphate buffer (10 mM) for sample dilution; pH 7.2 ± 0.2; coloured yellow; ready to use; white cap; ≤ 0.0015% (v/v) CMIT/ MIT (3:1).
- **Stop Solution:** 1 bottle containing 15 mL sulphuric acid, 0.2 mol/L; ready to use; red cap.
- **Washing Buffer (20x conc.):** 1 bottle containing 50 mL of a 20-fold concentrated phosphate buffer (0.2 M), pH 7.2 ± 0.2, for washing the wells; white cap.
- **Conjugate:** 1 bottle containing 20 mL of peroxidase labelled antibody to human in phosphate buffer (10 mM); coloured blue; ready to use; black cap.
- **TMB Substrate Solution:** 1 bottle containing 15 mL 3,3',5,5'-tetramethylbenzidine (TMB), < 0.1 %; ready to use; yellow cap.
- **Positive Control:** 1 vial containing 2 mL control; coloured yellow; ready to use; red cap; ≤ 0.02% (v/v) MIT.
- **Cut-off Control:** 1 vial containing 3 mL control; coloured yellow; ready to use; green cap; ≤ 0.02% (v/v) MIT.
- **Negative Control:** 1 vial containing 2 mL control; coloured yellow; ready to use; blue cap; ≤ 0.0015% (v/v) CMIT/ MIT (3:1).

For hazard and precautionary statements see 12.1
For potential hazardous substances please check the safety data sheet.

4.2. Materials supplied

- 1 Cover foil
- 1 Instruction for use (IFU)
- 1 Plate layout

4.3. Materials and Equipment needed

- ELISA Microtiterplate reader, equipped for the measurement of absorbance at 450/620 nm
- Incubator 37 °C
- Manual or automatic equipment for rinsing Microtiterplates
- Pipettes to deliver volumes between 10 and 1000 µL
- Vortex tube mixer
- Distilled water
- Disposable tubes

5. STABILITY AND STORAGE

Store the kit at 2...8 °C. The opened reagents are stable up to the expiry date stated on the label when stored at 2...8 °C.

6. REAGENT PREPARATION

It is very important to bring all reagents and samples to room temperature (20…25 °C) and mix them before starting the test run!

6.1. Microtiterplate

The break-apart snap-off strips are coated with Mycoplasma pneumoniae antigens. Immediately after removal of the strips, the remaining strips should be resealed in the aluminium foil along with the desiccant supplied and stored at 2...8 °C.

6.2. Washing Buffer (20x conc.)

Dilute Washing Buffer 1 + 19; e. g. 10 mL Washing Buffer + 190 mL distilled water. The diluted buffer is stable for 5 days at room temperature (20…25 °C). In case crystals appear in the concentrate, warm up the solution to 37 °C e.g. in a water bath. Mix well before dilution.

6.3. TMB Substrate Solution

The reagent is ready to use and has to be stored at 2...8 °C, away from the light. The solution should be colourless or could have a slight blue tinge. If the substrate turns into blue, it may have become contaminated and should be thrown away.

7. SAMPLE COLLECTION AND PREPARATION

Use human serum or plasma (citrate, heparin) samples with this assay. If the assay is performed within 5 days after sample collection, the samples should be kept at 2...8 °C; otherwise they should be aliquoted and stored deep-frozen (-70…-20 °C). If samples are stored frozen, mix thawed samples well before testing. Avoid repeated freezing and thawing.
Heat inactivation of samples is not recommended.

7.1. Sample Dilution

Before assaying, all samples should be diluted 1+100 with IgG Sample Dilution Buffer. Dispense 10 µL sample and 1 mL IgG Sample Dilution Buffer into tubes to obtain a 1+100 dilution and thoroughly mix with a Vortex.

8. ASSAY PROCEDURE

Please read the instruction for use carefully **before** performing the assay. Result reliability depends on strict adherence to the instruction for use as described. The following test procedure is only validated for manual procedure. If performing the test on ELISA automatic systems we recommend increasing the washing steps from three up to five and the volume of Washing Buffer from 300 µL to 350 µL to avoid washing effects. Pay attention to chapter 12. Prior to commencing the assay, the distribution and identification plan for all samples and standards/controls (duplicates recommended) should be carefully established on the plate layout supplied in the kit. Select the required number of microtiter strips or wells and insert them into the holder.

Perform all assay steps in the order given and without any delays.

A clean, disposable tip should be used for dispensing each standard/control and sample.

Adjust the incubator to 37 ± 1 °C.

1. Dispense 100 µL standards/controls and diluted samples into their respective wells. Leave well A1 for the Substrate Blank.
2. Cover wells with the foil supplied in the kit.
3. **Incubate for 1 hour ± 5 min at 37 ± 1 °C.**
4. When incubation has been completed, remove the foil, aspirate the content of the wells and wash each well three times with 300 µL of Washing Buffer. Avoid overflows from the reaction wells. The interval between washing and aspiration should be > 5 sec. At the end carefully remove remaining fluid by tapping strips on tissue paper prior to the next step!

   Note: Washing is important! Insufficient washing results in poor precision and false results.
5. Dispense 100 µL Conjugate into all wells except for the Substrate Blank well A1.
6. **Incubate for 30 min at room temperature (20...25 °C).** Do not expose to direct sunlight.
7. Repeat step 4.
8. Dispense 100 µL TMB Substrate Solution into all wells.
9. **Incubate for exactly 15 min at room temperature (20...25 °C) in the dark.** A blue colour occurs due to an enzymatic reaction.
10. Dispense 100 µL Stop Solution into all wells in the same order and at the same rate as for the TMB Substrate Solution, thereby a colour change from blue to yellow occurs.
11. Measure the absorbance at 450/620 nm within 30 min after addition of the Stop Solution.

8.1. Measurement

Adjust the ELISA Microtiterplate reader **to zero** using the **Substrate Blank**.

If - due to technical reasons - the ELISA Microtiterplate reader cannot be adjusted to zero using the Substrate Blank, subtract its absorbance value from all other absorbance values measured in order to obtain reliable results!

Measure the absorbance of all wells at **450 nm** and record the absorbance values for each standard/control and sample in the plate layout.

Bichromatic measurement using a reference wavelength of 620 nm is recommended.

Where applicable calculate the mean absorbance values of all duplicates.

9. RESULTS

9.1. Run Validation Criteria

In order for an assay run to be considered valid, these Instructions for Use have to be strictly followed and the following criteria must be met:

- **Substrate Blank**: Absorbance value **< 0.100**
- **Negative Control**: Absorbance value **< 0.200 and < Cut-off**
- **Cut-off Control**: Absorbance value **0.150 – 1.300**
- **Positive Control**: Absorbance value **> Cut-off**

If these criteria are not met, the test is not valid and must be repeated.

9.2. Calculation of Results

The Cut-off is the mean absorbance value of the Cut-off Control determinations.

Example: Absorbance value Cut-off Control 0.44 + absorbance value Cut-off control 0.42 = 0.86 / 2 = 0.43
Cut-off = 0.43

9.2.1. Results in Units [NTU]

$$\frac{\text{Sample (mean) absorbance value} \times 10}{\text{Cut-off}} = \text{[NovaTec Units = NTU]}$$

Example: $\frac{1.591 \times 10}{0.43} = 37$ NTU (Units)

9.3. Interpretation of Results

Cut-off	10 NTU	-
Positive	> 11 NTU	Antibodies against the pathogen are present. There has been a contact with the antigen (pathogen resp. vaccine).
Equivocal	9 – 11 NTU	Antibodies against the pathogen could not be detected clearly. It is recommended to repeat the test with a fresh sample in 2 to 4 weeks. If the result is equivocal again the sample is judged as **negative**.
Negative	< 9 NTU	The sample contains no antibodies against the pathogen. A previous contact with the antigen (pathogen resp. vaccine) is unlikely.
Diagnosis of an infectious disease should not be established on the basis of a single test result. A precise diagnosis should take into consideration clinical history, symptomatology as well as serological data. In immunocompromised patients and newborns serological data only have restricted value.		

9.3.1. Antibody Isotypes and State of Infection

Serology	Significance
IgM	Characteristic of the primary antibody response High IgM titer with low IgG titer: → suggests a current or very recent infection Rare: → persisting IgM
IgG	Characteristic of the secondary antibody response May persist for several years High IgG titer with low IgM titer: → may indicate a past infection
IgA	Produced in mucosal linings throughout the body (⇒ protective barrier) Usually produced early in the course of the infection

10. SPECIFIC PERFORMANCE CHARACTERISTICS

The results refer to the groups of samples investigated; these are not guaranteed specifications.

For further information about the specific performance characteristics please contact NovaTec Immundiagnostica GmbH.

10.1. Precision

Intraassay	**n**	**Mean (E)**	**CV (%)**
#1	24	0.434	3.80
#2	24	1.240	4.08
#3	24	1.635	6.03
Interassay	**n**	**Mean (NTU)**	**CV (%)**
#1	12	32.58	5.73
#2	12	31.56	13.32
#3	12	4.36	11.10

10.2. Diagnostic Specificity

The diagnostic specificity is defined as the probability of the assay of scoring negative in the absence of the specific analyte.

It is 97.8% (95% confidence interval: 92.29% - 99.73%).

10.3. Diagnostic Sensitivity

The diagnostic sensitivity is defined as the probability of the assay of scoring positive in the presence of the specific analyte.

It is 100% (95% confidence interval: 96.87% - 100%).

10.4. Interferences

Interferences with hemolytic, lipemic or icteric samples are not observed up to a concentration of 10 mg/mL hemoglobin, 5 mg/mL triglycerides and 0.5 mg/mL bilirubin.

10.5. Cross Reactivity

Investigation of a sample panel with antibody activities to potentially cross-reacting parameters did not reveal evidence of false-positive results due to cross-reactions.

11. LIMITATIONS OF THE PROCEDURE

Bacterial contamination or repeated freeze-thaw cycles of the sample may affect the absorbance values.

12. PRECAUTIONS AND WARNINGS

- The test procedure, the information, the precautions and warnings in the instructions for use have to be strictly followed. The use of the testkits with analyzers and similar equipment has to be validated. Any change in design, composition and test procedure as well as for any use in combination with other products not approved by the manufacturer is not authorized; the user himself is responsible for such changes. The manufacturer is not liable for false results and incidents for these reasons. The manufacturer is not liable for any results by visual analysis of the patient samples.
- Only for in-vitro diagnostic use.
- All materials of human or animal origin should be regarded and handled as potentially infectious.
- All components of human origin used for the production of these reagents have been tested for anti-HIV antibodies, anti-HCV antibodies and HBsAg and have been found to be non-reactive.
- Do not interchange reagents or Microtiterplates of different production lots.
- No reagents of other manufacturers should be used along with reagents of this test kit.
- Do not use reagents after expiry date stated on the label.
- Use only clean pipette tips, dispensers, and lab ware.
- Do not interchange screw caps of reagent vials to avoid cross-contamination.
- Close reagent vials tightly immediately after use to avoid evaporation and microbial contamination.
- After first opening and subsequent storage check conjugate and standard/control vials for microbial contamination prior to further use.
- To avoid cross-contamination and falsely elevated results pipette patient samples and dispense reagents without splashing accurately into the wells.
- The ELISA is only designed for qualified personnel following the standards of good laboratory practice (GLP).
- For further internal quality control each laboratory should additionally use known samples.

12.1. Safety note for reagents containing hazardous substances

Reagents may contain CMIT/MIT (3:1) or MIT (refer to 4.1)
Therefore, the following hazard and precautionary statements apply.

Warning		
	H317	May cause an allergic skin reaction.
	P261	Avoid breathing spray
	P280	Wear protective gloves/ protective clothing.
	P302+P352	IF ON SKIN: Wash with plenty of soap and water.
	P333+P313	If skin irritation or rash occurs: Get medical advice/ attention.
	P362+P364	Take off contaminated and Wash it before reuse.

Further information can be found in the safety data sheet.

12.2. Disposal Considerations

Residues of chemicals and preparations are generally considered as hazardous waste. The disposal of this kind of waste is regulated through national and regional laws and regulations. Contact your local authorities or waste management companies which will give advice on how to dispose hazardous waste.

13. ORDERING INFORMATION

Prod. No.: MYCG0350 Mycoplasma pneumoniae IgG ELISA (96 Determinations)

DEUTSCH

1. EINLEITUNG

Die Mykoplasmen gehören zur Klasse der Mollicutes, welche drei unterschiedliche Familien und vier Genera einschließt. Eines davon ist Mycoplasma mit über 60 Arten. Mycoplasmen sind die kleinsten bekannten frei lebenden Organismen (300 bis 500 nm Durchmesser). Die besitzen im Gegensatz zu Bakterien keine Zellwand. Mycoplasmen sind extrazelluläre Parasiten speziell der Schleimhäute und können bei Menschen, Tieren, Pflanzen und in Zellkulturen Infektionen hervorrufen. Mycoplasma pneumoniae ist in erster Linie ein obligat pathogener Erreger respiratorischer Erkrankungen unter Einbeziehung von Nasopharynx, Rachen, Luftröhre, Bronchien, Bronchiolen und Aveolen. Andere Mycoplasmen (M. buccale, M. faucium, M. orale, M. salivarium) sind Kommensalen in der Mundhöhle. Mycoplasma hominis und Ureaplasma urealyticum besiedeln vorwiegend den Genitaltrakt und können als opportunistische Invasoren auftreten. Mycoplasma pneumoniae ist mit Abstand das wichtigste Pathogen dieser Gruppe. Infektionen mit M. pneumoniae treten weltweit auf, deren Epidemiologie ist hauptsächlich in den USA, Europa und Japan untersucht worden. In größeren urbanen Regionen sind die Infektionen endemisch und epidemieartige Zuwächse werden in unregelmäßigen Abständen beobachtet. Es wird geschätzt, dass M. pneumoniae 15 bis 20 % aller Pneumonien verursacht; die Rate ist bei Kindern und jungen Erwachsenen am größten. 74 % der Infektionen mit M. pneumoniae verlaufen symptomlos; Reinfektionen können auftreten. Eine natürlich erworbene Immunität gegen Infektionen mit M. pneumoniae hält nur für 2 bis 3 Jahre an.

Spezies	**Erkrankung**	**Symptome (z.B.)**	**Infektionsweg**
M. pneumoniae	Erkrankungen der Atemwege duch Mycoplasma pneumoniae	Fieber, Kopfschmerzen und hartnäckiger Husten. Atemwegserkrankung, von asymptomatischer Infektion über Erkältungskrankheit, Pharyngitis, Bronchitis, Krupp, Tracheobronchitis, Pneumonitis und primäre atypische Pneumonie	Aerogen durch Tröpfchen

Nachweis des Erregers bzw. der Infektion durch:

- Mikroskopie
- Serologie: z.B. ELISA

2. VERWENDUNGSZWECK

Der Mycoplasma pneumoniae IgG ELISA ist für den qualitativen Nachweis spezifischer IgG-Antikörper gegen Mycoplasma pneumoniae in humanem Serum oder Plasma (Citrat, Heparin) bestimmt.

3. TESTPRINZIP

Die qualitative immunenzymatische Bestimmung von spezifischen Antikörpern beruht auf der ELISA (Enzyme-linked Immunosorbent Assay) Technik.
Die Mikrotiterplatten sind mit spezifischen Antigenen beschichtet, an welche die korrespondierenden Antikörper aus der Probe binden. Ungebundenes Probenmaterial wird durch Waschen entfernt. Anschließend erfolgt die Zugabe eines Meerettich-Peroxidase (HRP) Konjugates. Dieses Konjugat bindet an die an der Mikrotiterplatte gebundenen spezifischen Antikörper. In einem zweiten Waschschritt wird ungebundenes Konjugat entfernt. Die Immunkomplexe, die durch die Bindung des Konjugates entstanden sind, werden durch die Zugabe von Tetramethylbenzidin (TMB)-Substratlösung und eine resultierende Blaufärbung nachgewiesen.
Die Intensität des Reaktionsproduktes ist proportional zur Menge der spezifischen Antikörper in der Probe. Die Reaktion wird mit Schwefelsäure gestoppt, wodurch ein Farbumschlag von blau nach gelb erfolgt. Die Absorption wird bei 450/620 nm mit einem Mikrotiterplatten-Photometer gemessen.

4. MATERIALIEN

4.1. Mitgelieferte Reagenzien

- **Mikrotiterplatte:** 12 teilbare 8er-Streifen, beschichtet mit Mycoplasma pneumoniae Antigenen; in wieder verschließbarem Aluminiumbeutel.
- **IgG-Probenverdünnungspuffer:** 1 Flasche mit 100 mL Phosphatpuffer (10 mM) zur Probenverdünnung; pH 7,2 ± 0,2; gelb gefärbt; gebrauchsfertig; weiße Verschlusskappe; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Stopplösung:** 1 Flasche mit 15 mL Schwefelsäure, 0,2 mol/L; gebrauchsfertig; rote Verschlusskappe.
- **Waschpuffer (20x konz.):** 1 Flasche mit 50 mL eines 20-fach konzentrierten Phosphatpuffers (0,2 M), zum Waschen der Kavitäten; pH 7,2 ± 0,2; weiße Verschlusskappe.
- **Konjugat:** 1 Flasche mit 20 mL Peroxidase-konjugierten Antikörpern gegen humanes IgG in Phosphatpuffer (10 mM); blau gefärbt; gebrauchsfertig; schwarze Verschlusskappe.
- **TMB-Substratlösung:** 1 Flasche mit 15 mL 3,3`,5,5`-Tetramethylbenzidin (TMB), < 0,1 %; gebrauchsfertig; gelbe Verschlusskappe.
- **Positivkontrolle:** 1 Fläschchen mit 2 mL Kontrolle; gelb gefärbt; rote Verschlusskappe; gebrauchsfertig; ≤ 0,02% (v/v) MIT.
- **Cut-off Kontrolle:** 1 Fläschchen mit 3 mL Kontrolle; gelb gefärbt; grüne Verschlusskappe; gebrauchsfertig; ≤ 0,02% (v/v) MIT.
- **Negativkontrolle:** 1 Fläschchen mit 2 mL Kontrolle; gelb gefärbt; blaue Verschlusskappe; gebrauchsfertig; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Für Gefahren- und Sicherheitshinweise siehe 12.1.
Für potenzielle Gefahrstoffe überprüfen Sie bitte das Sicherheitsdatenblatt.

4.2. Mitgeliefertes Zubehör

- 1 selbstklebende Abdeckfolie
- 1 Arbeitsanleitung
- 1 Plattenlayout

4.3. Erforderliche Materialien und Geräte

- Mikrotiterplatten-Photometer mit Filtern 450/620 nm
- Inkubator 37 °C
- Manuelle oder automatische Waschvorrichtung für Mikrotiterplatten
- Mikropipetten (10 - 1000 µL)
- Vortex-Mischer
- Destilliertes Wasser
- Plastikröhrchen für den einmaligen Gebrauch

5. STABILITÄT UND LAGERUNG

Testkit bei 2...8 °C lagern. Die geöffneten Reagenzien sind bis zu den auf den Etiketten angegebenen Verfallsdaten verwendbar, wenn sie bei 2...8 °C gelagert werden.

6. VORBEREITUNG DER REAGENZIEN

Es ist sehr wichtig, alle Reagenzien und Proben vor ihrer Verwendung auf Raumtemperatur (20...25 °C) zu bringen und zu mischen!

6.1. Mikrotiterplatte

Die abbrechbaren Streifen sind mit Mycoplasma pneumoniae Antigenen beschichtet. Nicht verbrauchte Vertiefungen im Aluminiumbeutel zusammen mit dem Trockenmittel sofort wieder verschließen und bei 2...8 °C lagern.

6.2. Waschpuffer (20x konz.)

Der Waschpuffer ist im Verhältnis 1 + 19 zu verdünnen; z.B. 10 mL Waschpuffer + 190 mL destilliertes Wasser.
Der verdünnte Puffer ist bei Raumtemperatur (20…25 °C) 5 Tage haltbar. Sollten Kristalle im Konzentrat auftreten, die Lösung z.B. in einem Wasserbad auf 37 °C erwärmen und vor dem Verdünnen gut mischen.

6.3. TMB-Substratlösung

Die gebrauchsfertige Lösung ist bei 2...8 °C vor Licht geschützt aufzubewahren. Die Lösung ist farblos, kann aber auch leicht hellblau sein. Sollte die TMB-Substratlösung blau sein, ist sie kontaminiert und kann nicht im Test verwendet werden.

7. ENTNAHME UND VORBEREITUNG DER PROBEN

Es sollten humane Serum- oder Plasmaproben (Citrat, Heparin) verwendet werden. Werden die Bestimmungen innerhalb von 5 Tagen nach Blutentnahme durchgeführt, können die Proben bei 2...8 °C aufbewahrt werden, sonst aliquotieren und tiefgefrieren (-70…-20 °C). Wieder aufgetaute Proben vor dem Verdünnen gut schütteln. Wiederholtes Tiefgefrieren und Auftauen vermeiden!
Hitzeinaktivierung der Proben wird nicht empfohlen.

7.1. Probenverdünnung

Proben vor Testbeginn im Verhältnis 1 + 100 mit IgG-Probenverdünnungspuffer verdünnen, z. B. 10 µL Probe und 1 mL IgG-Probenverdünnungspuffer in die entsprechenden Röhrchen pipettieren, um eine Verdünnung von 1 + 100 zu erhalten; gut mischen (Vortex).

8. TESTDURCHFÜHRUNG

Arbeitsanleitung **vor** Durchführung des Tests sorgfältig lesen. Für die Zuverlässigkeit der Ergebnisse ist es notwendig, die Arbeitsanleitung genau zu befolgen. Die folgende Testdurchführung ist für die manuelle Methode validiert. Beim Arbeiten mit ELISA Automaten empfehlen wir, um Wascheffekte auszuschließen, die Zahl der Waschschritte von drei auf bis zu fünf und das Volumen des Waschpuffers von 300 µL auf 350 µL zu erhöhen. Kapitel 12 beachten. Vor Testbeginn auf dem mitgelieferten Plattenlayout die Verteilung bzw. Position der Proben und der Standards/Kontrollen (Doppelbestimmung empfohlen) genau festlegen. Die benötigte Anzahl von Mikrotiterstreifen (Kavitäten) in den Streifenhalter einsetzen.

Den Test in der angegebenen Reihenfolge und ohne Verzögerung durchführen.

Für jeden Pipettierschritt der Standards/Kontrollen und Proben saubere Einmalspitzen verwenden.

Den Inkubator auf 37 ± 1 °C einstellen.

1. Je 100 µL Standards/Kontrollen und vorverdünnte Proben in die entsprechenden Vertiefungen pipettieren. Vertiefung A1 ist für den Substratleerwert vorgesehen.
2. Die Streifen mit der mitgelieferten Abdeckfolie bedecken.
3. **1 h ± 5 min bei 37 ± 1 °C inkubieren.**
4. Am Ende der Inkubationszeit Abdeckfolie entfernen und die Inkubationsflüssigkeit aus den Teststreifen absaugen. Anschließend dreimal mit 300 µL Waschpuffer waschen. Überfließen von Flüssigkeit aus den Vertiefungen vermeiden. Das Intervall zwischen Waschen und Absaugen sollte > 5 sec betragen. Nach dem Waschen die Teststreifen auf Fließpapier ausklopfen, um die restliche Flüssigkeit zu entfernen.

   Beachte: Der Waschvorgang ist wichtig, da unzureichendes Waschen zu schlechter Präzision und falschen Messergebnissen führt!
5. 100 µL Konjugat in alle Vertiefungen, mit Ausnahme der für die Berechnung des Leerwertes A1 vorgesehenen, pipettieren.
6. **30 min bei Raumtemperatur (20...25 °C) inkubieren.** Nicht dem direkten Sonnenlicht aussetzen.
7. Waschvorgang gemäß Punkt 4 wiederholen.
8. 100 µL TMB-Substratlösung in alle Vertiefungen pipettieren.
9. **Genau 15 min im Dunkeln bei Raumtemperatur (20...25 °C) inkubieren.** Bei enzymatischer Reaktion findet eine Blaufärbung statt.
10. In alle Vertiefungen 100 µL Stopplösung in der gleichen Reihenfolge und mit den gleichen Zeitintervallen wie bei Zugabe der TMB-Substratlösung pipettieren, dadurch erfolgt ein Farbwechsel von blau nach gelb.
11. Die Extinktion der Lösung in jeder Vertiefung bei 450/620 nm innerhalb von 30 min nach Zugabe der Stopplösung messen.

8.1. Messung

Mit Hilfe des Substratleerwertes den **Nullabgleich** des Mikrotiterplatten-Photometers vornehmen.

Falls diese Eichung aus technischen Gründen nicht möglich ist, muss nach der Messung der Extinktionswert des Substratleerwertes von allen anderen Extinktionswerten subtrahiert werden, um einwandfreie Ergebnisse zu erzielen!

Extinktion aller Kavitäten bei **450 nm** messen und die Messwerte der Standards/Kontrollen und Proben in das Plattenlayout eintragen.

Eine **bichromatische** Messung mit der Referenzwellenlänge 620 nm wird empfohlen.

Falls Doppel- oder Mehrfachbestimmungen durchgeführt wurden, den **Mittelwert der Extinktionswerte** berechnen.

9. BERECHNUNG DER ERGEBNISSE

9.1. Testgültigkeitskriterien

Damit ein Testlauf als valide betrachtet werden kann, muss diese Gebrauchsanweisung strikt befolgt werden, und die folgenden Kriterien müssen erfüllt sein:

- **Substrat-Leerwert**: Extinktionswert **< 0,100**
- **Negativkontrolle**: Extinktionswert **< 0,200 und < Cut-off**
- **Cut-off Kontrolle**: Extinktionswert **0,150 – 1,300**
- **Positivkontrolle**: Extinktionswert **> Cut-off**

Sind diese Kriterien nicht erfüllt, ist der Testlauf ungültig und muss wiederholt werden.

9.2. Messwertberechnung

Der Cut-off ergibt sich aus dem Mittelwert der gemessenen Extinktionen der Cut-off Kontrolle.

Beispiel: 0,44 OD Cut-off Kontrolle + 0,42 OD Cut-off Kontrolle = 0,86: 2 = 0,43
Cut-off = 0,43

9.2.1. Ergebnisse in Einheiten [NTU]

$$\frac{\text{Mittlere Extinktion der Probe} \times 10}{\text{Cut-off}} = \text{[NovaTec Einheiten = NTU]}$$

Beispiel: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretation der Ergebnisse

Cut-off	10 NTU	-
Positiv	> 11 NTU	Es liegen Antikörper gegen den Erreger vor. Ein Kontakt mit dem Antigen (Erreger bzw. Impfstoff) hat stattgefunden.
Grenzwertig	9 – 11 NTU	Antikörper gegen den Erreger können nicht eindeutig nachgewiesen werden. Es wird empfohlen den Test nach 2 bis 4 Wochen mit einer frischen Patientenprobe zu wiederholen. Finden sich die Ergebnisse erneut im grenzwertigen Bereich, gilt die Probe als **negativ**.
Negativ	< 9 NTU	Es liegen keine Antikörper gegen den Erreger vor. Ein vorausgegangener Kontakt mit dem Antigen (Erreger bzw. Impfstoff) ist unwahrscheinlich.
Die Diagnose einer Infektionskrankheit darf nicht allein auf der Basis des Ergebnisses einer Bestimmung gestellt werden. Die anamnestischen Daten sowie die Symptomatologie des Patienten müssen zusätzlich zu den serologischen Ergebnissen in Betracht gezogen werden. Bei Immunsupprimierten und Neugeborenen besitzen die Ergebnisse serologischer Tests nur einen begrenzten Wert.		

9.3.1. Antikörper-Isotypen und Infektionsstatus

Serologie	Bedeutung
IgM	Typisch für Primärantwort Hoher IgM-Titer bei gleichzeitig niedrigem IgG-Titer: → Hinweis auf relativ frische Infektion Selten: → persistierendes IgM
IgG	Typisch für Sekundärantwort Können auch noch nach Jahren nachweisbar sein Hoher IgG-Titer bei gleichzeitig niedrigem IgM-Titer: → wahrscheinlich länger zurückliegende Infektion
IgA	Sezerniert in allen Schleimhäuten (⇒ Schutzbarriere) Meist früh im Verlauf einer Infektion gebildet

10. TESTMERKMALE

Die Ergebnisse beziehen sich auf die untersuchten Probenkollektive; es handelt sich nicht um garantierte Spezifikationen.
Für weitere Informationen zu den Testmerkmalen kontaktieren Sie bitte NovaTec Immundiagnostica GmbH.

10.1. Präzision

Intraassay	**n**	**Mittelwert (E)**	**CV (%)**
#1	24	0,434	3,80
#2	24	1,240	4,08
#3	24	1,635	6,03
Interassay	**n**	**Mittelwert (NTU)**	**CV (%)**
#1	12	32,58	5,73
#2	12	31,56	13,32
#3	12	4,36	11,10

10.2. Diagnostische Spezifität

Die diagnostische Spezifität ist definiert als die Wahrscheinlichkeit des Tests, ein negatives Ergebnis bei Fehlen des spezifischen Analyten zu liefern. Sie beträgt 97,8% (95% Konfidenzintervall: 92,29% - 99,73%).

10.3. Diagnostische Sensitivität

Die diagnostische Sensitivität ist definiert als die Wahrscheinlichkeit des Tests, ein positives Ergebnis bei Vorhandensein des spezifischen Analyten zu liefern. Sie ist 100% (95% Konfidenzintervall: 96,87% - 100%).

10.4. Interferenzen

Hämolytische, lipämische und ikterische Proben ergaben bis zu einer Konzentration von 10 mg/mL Hämoglobin, 5 mg/mL Triglyceride und 0,5 mg/mL Bilirubin keine Interferenzen im vorliegenden ELISA.

10.5. Kreuzreaktivität

Die Untersuchung eines Probenpanels mit Antikörperaktivitäten gegen potenziell kreuzreagierende Parameter ließ keine Anzeichen von falsch-positiven Ergebnissen aufgrund von Kreuzreaktivitäten erkennen.

11. GRENZEN DES VERFAHRENS

Kontamination der Proben durch Bakterien oder wiederholtes Einfrieren und Auftauen können zu einer Veränderung der Messwerte führen.

12. SICHERHEITSMASSNAHMEN UND WARNHINWEISE

- Die Testdurchführung, die Information, die Sicherheitsmaßnahmen und Warnhinweise in der Arbeitsanleitung sind strikt zu befolgen. Bei Anwendung des Testkits auf Diagnostika-Geräten ist die Testmethode zu validieren. Jede Änderung am Aussehen, der Zusammensetzung und der Testdurchführung sowie jede Verwendung in Kombination mit anderen Produkten, die der Hersteller nicht autorisiert hat, ist nicht zulässig; der Anwender ist für solche Änderungen selbst verantwortlich. Der Hersteller haftet für falsche Ergebnisse und Vorkommnisse aus solchen Gründen nicht. Auch für falsche Ergebnisse aufgrund von visueller Auswertung wird keine Haftung übernommen.
- Nur für in-vitro-Diagnostik.
- Alle Materialien menschlichen oder tierischen Ursprungs sind als potentiell infektiös anzusehen und entsprechend zu behandeln.
- Alle verwendeten Bestandteile menschlichen Ursprungs sind auf Anti-HIV-AK, Anti-HCV-AK und HBsAg nicht-reaktiv getestet.
- Reagenzien und Mikrotiterplatten unterschiedlicher Chargen nicht untereinander austauschen.
- Keine Reagenzien anderer Hersteller zusammen mit den Reagenzien dieses Testkits verwenden.
- Nicht nach Ablauf des Verfallsdatums verwenden.
- Nur saubere Pipettenspitzen, Dispenser und Labormaterialien verwenden.
- Verschlusskappen der einzelnen Reagenzien nicht untereinander vertauschen, um Kreuzkontaminationen zu vermeiden.
- Flaschen sofort nach Gebrauch fest verschließen, um Verdunstung und mikrobielle Kontamination zu vermeiden.
- Nach dem ersten Öffnen Konjugat und Standards/Kontrollen vor weiterem Gebrauch auf mikrobielle Kontamination prüfen.
- Zur Vermeidung von Kreuzkontamination und falsch erhöhten Resultaten, Reagenzien sorgfältig in die Kavitäten pipettieren.
- Der ELISA ist nur für qualifiziertes Personal bestimmt, das den Standards der Guten Laborpraxis (GLP) folgt.
- Zur weiteren internen Qualitätskontrolle sollte jedes Labor zusätzlich bekannte Proben verwenden.

12.1. Sicherheitshinweis für Reagenzien, die Gefahrstoffe enthalten

Die Reagenzien können CMIT/MIT (3:1) oder MIT enthalten (siehe 4.1)
Daher gelten die folgenden Gefahren- und Sicherheitshinweise.

Achtung

H317	Kann allergische Hautreaktionen verursachen.
P261	Einatmen von Aerosol vermeiden.
P280	Schutzhandschuhe/ Schutzkleidung tragen.
P302+P352	BEI BERÜHRUNG MIT DER HAUT: Mit viel Seife und Wasser waschen.
P333+P313	Bei Hautreizung oder -ausschlag: Ärztlichen Rat einholen/ ärztliche Hilfe hinzuziehen.
P362+P364	Kontaminierte Kleidung ausziehen und vor erneutem Tragen waschen

Weitere Informationen können dem Sicherheitsdatenblatt entnommen werden.

12.2. Entsorgungshinweise

Chemikalien und Zubereitungen sind in der Regel Sonderabfälle. Deren Beseitigung unterliegt den nationalen abfallrechtlichen Gesetzen und Verordnungen. Die zuständige Behörde informiert über die Entsorgung von Sonderabfällen.

13. BESTELLINFORMATIONEN

Produktnummer: MYCG0350 Mycoplasma pneumoniae IgG ELISA (96 Bestimmungen)

FRANÇAIS

1. INTRODUCTION

Les mycoplasmes appartiennent à la classe des Mollicutes qui comprend trois familles distinctes et quatre genres, dont l'un est le mycoplasme avec plus de 60 espèces. Les Mycoplasmes sont les plus petits organismes libres connus (300 à 500 nm de diamètre) et contrairement aux bactéries régulières ils n'ont pas de membrane cellulaire. Les mycoplasmes sont des parasites extracellulaires, particulièrement sur les membranes muqueuses, qui peuvent causer des infections dans l'homme, les animaux, les plantes, et les cultures cellulaires. Mycoplasma pneumoniae est d'abord un pathogène respiratoire (obligatoire) dans l'homme qui peut atteindre le nasopharynx, la gorge, la trachée, les bronches, les bronchioles, et les alvéoles. D'autres mycoplasmes, M. buccale, M. faucium, M. orale et M. salivarium sont des commensales dans la cavité buccale. Mycoplasma hominis et Ureaplasma urealyticum habitent surtout la région génitale et peuvent agir en tant qu'envahisseurs opportunistes. Mycoplasma pneumoniae est de loin le microbe pathogène le plus important de ce groupe. L'infection avec Mycoplasma pneumoniae se produit dans le monde entier, son épidémiologie a surtout été étudiée aux Etats-Unis, en Europe, et au Japon. Les infections sont endémiques dans les grands secteurs urbains, et des augmentations épidémiques sont observées à intervalles variables. On a estimé que Mycoplasma pneumoniae cause 15-20% de toutes les pneumonies; le taux est le plus élevé chez les enfants et de jeunes adultes. 74% des infections avec Mycoplasma pneumoniae sont asymptomatiques, et des réinfections peuvent se produire. L'immunité naturellement acquise contre l'infection avec Mycoplasma pneumoniae semble être de durée limitée (2 ou 3 ans).

Espèce	**La maladie**	**Symptômes (p.ex.)**	**Modes de transmission**
Mycoplasma pneumoniae	les maladies de région respiratoire par Mycoplasma pneumoniae	Fièvre, maux de tête et toux persistante. Maladie de région respiratoire: de l'infection asymptomatique à la pharyngite, la bronchite, le croup, la trachéo-bronchite et à la pneumonie atypique primaire	La transmission du virus se produit principalement par le contact de gouttelettes.

L'infection ou la présence d'un agent pathogène peut être identifiée par:

- Microscopie
- Sérologie: p.ex. ELISA

2. INDICATION D'UTILISATION

La trousse Mycoplasma pneumoniae IgG ELISA est prévue pour la détection qualitative des anticorps IgG anti-Mycoplasma pneumoniae dans le sérum humain ou plasma (citrate, héparine).

3. PRINCIPE DU TEST

La détermination immunoenzymatique qualitative des anticorps spécifiques est basée sur le la technique ELISA (du anglais, Enzyme-Linked Immunosorbent Assay).
Plaques de Microtitrage sont recouvertes d'antigènes spécifiques pour lier les anticorps correspondants de l'échantillon. Après le lavage des puits pour éliminer l'échantillon détaché, le conjugué peroxydase de raifort (HRP) est ajouté. Ce conjugué se lie aux anticorps capturés. Dans une deuxième étape de lavage, le conjugué non lié est éliminé. Le complexe immun formé par le conjugué lié est visualisé par l'addition tétraméthylbenzidine (TMB) qui donne un produit de réaction bleu.
L'intensité de ce produit est proportionnelle à la quantité d'anticorps spécifiques dans l'échantillon. L'acide sulfurique est ajouté pour arrêter la réaction. Cela produit un changement du bleu au jaune. L'absorbance à 450/620 nm est lue en utilisant un Photomètre de Plaque de Microtitrage ELISA.

4. MATERIEL

4.1. Réactifs fournis

- **Plaque de Microtitrage:** 12 barrettes de 8 puits sécables revêtus d'antigène d'Mycoplasma pneumoniae; en sachets d'aluminium refermables.
- **Tampon de Dilution d'Échantillon IgG:** 1 flacon contenant 100 mL de tampon phosphaté (10 mM) pour la dilution de l'échantillon; pH 7,2 ± 0,2; prêt à l'emploi; couleur jaune; bouchon blanc; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Solution d'arrêt:** 1 flacon contenant 15 mL d'acide sulfurique, 0,2 mol/L; prêt à l'emploi; bouchon rouge.
- **Tampon de Lavage (concentré x 20):** 1 flacon contenant 50 mL d'un tampon phosphaté (0,2 M) concentré 20 fois (pH 7,2 ± 0,2) pour laver les puits; bouchon blanc.
- **Conjugué:** 1 flacon contenant 20 mL d'anticorps IgG anti-humaines conjuguées à de la peroxydase du raifort dans le tampon phosphaté (10 mM); prêt à l'emploi; couleur bleue, bouchon noir.
- **Solution de Substrat TMB:** 1 flacon contenant 15 mL de 3,3',5,5'-tétraméthylbenzidine (TMB), < 0,1 %; prêt à l'emploi; bouchon jaune.
- **Contrôle Positif:** 1 flacon contenant 2 mL contrôle; prêt à l'emploi; couleur jaune; bouchon rouge; ≤ 0,02% (v/v) MIT.
- **Contrôle Cut-off:** 1 flacon contenant 3 mL contrôle; prêt à l'emploi; couleur jaune; bouchon vert; ≤ 0,02% (v/v) MIT.
- **Contrôle Négatif:** 1 flacon contenant 2 mL contrôle; prêt à l'emploi; couleur jaune; bouchon bleu; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Pour les mentions de danger et les conseils de prudence voir chapitre 12.1.
Pour les substances potentiellement dangereuses s'il vous plaît vérifiez la fiche de données de sécurité.

4.2. Matériel fourni

- 1 couvercle autocollante
- 1 instructions d'utilisation
- 1 présentation de la plaque

4.3. Matériel et équipement requis

- Photomètre de Plaque de Microtitrage ELISA, pour mesurer l'absorbance à 450/620 nm
- Incubateur 37 °C
- Laveur manuel ou automatique pour le lavage des Plaques de Microtitrage
- Pipettes pour utilisation entre 10 et 1000 µL
- Mélangeur Vortex
- Eau distillée
- Tubes jetables

5. STABILITE ET CONSERVATION

Conserver le kit à 2...8 °C. Les réactifs ouverts sont stables jusqu'à la date de péremption indiquée sur l'étiquette lorsqu'il est conservé à 2...8 °C.

6. PREPARATION DES REACTIFS

Il est très important porter tous les réactifs et échantillons à température ambiante (20... 25 °C) et les mélanger avant de commencer le test!

6.1. Plaque de Microtitrage

Les barrettes sécables sont revêtues d'antigène d'Mycoplasma pneumoniae. Immédiatement après avoir prélevé les barrettes nécessaires, les barrette restantes doivent être scellés le vide dans de feuille d'aluminium avec le sac de silicium (le déshydratant) fourni et emmagasiner à 2...8 °C.

6.2. Tampon de Lavage (conc. x 20)

Diluer le Tampon de Lavage 1+19; par exemple 10 mL du Tampon de Lavage + 190 mL d'eau distillée. Le Tampon de Lavage diluée est stable pendant 5 jours à la température ambiante (20…25 °C). Cas apparaissent des cristaux dans le concentré, chauffer la solution à 37 °C par exemple dans un bain-marie mélangez bien avant dilution.

6.3. Solution de Substrat TMB

La solution est prête à utiliser et doit être emmagasiné à 2...8 °C, à l'abri de la lumière. La solution doit être incolore ou pourrait avoir une légère couleur bleu clair. Si le substrat devient bleu, il peut avoir été contaminé et ne peut pas être utilisé dans le test.

7. PRELEVEMENT ET PREPARATION DES ECHANTILLONS

Utiliser des échantillons humains de sérum ou plasma (citrate, héparine) pour ce test. Si le test est réalisé dans les 5 jours après le prélèvement, les échantillons doivent être conservés à 2...8 °C; autrement ils doivent être aliquotés et conservés surgelés (-70…-20 °C). Si les échantillons sont conservés congelés, bien mélanger les échantillons décongelés avant le test. Éviter les cycles répétés de congélation et décongélation.
L'inactivation par la chaleur des échantillons n'est pas recommandée.

7.1. Dilution de l'échantillon

Avant du test, tous les échantillons doivent être dilués 1 + 100 avec Tampon de Dilution d'Échantillon IgG. Diluer 10 µL d'échantillon avec 1 mL I Tampon de Dilution d'Échantillon IgG dans des tubes pour obtenir une dilution 1 + 100 et mélanger soigneusement sur un Vortex.

8. PROCEDE DE TEST

Lire attentivement les instructions d'utilisation **avant de** réaliser le test. La fiabilité des résultats dépend du suivi strict d'utilisation comme décrit. La technique de test suivante a été validée uniquement pour une procédure manuelle. Si le test doit être effectué sur un systèmes automatiques pour ELISA, nous conseillons d'augmenter le nombre d'étapes de lavage de trois à cinq et le volume du Tampon de Lavage de 300 à 350 µL. Faites attention au chapitre 12. Avant de commencer le test, le plan de distribution et d'identification de tous les échantillons et les étalons/contrôles (il est recommandé déterminer en double) doivent être soigneusement établi sur la feuille présentation de la plaque prévue dans le conseil de kit. Sélectionner le nombre de barrettes ou de puits nécessaires et les placer sur le support.

Réaliser toutes les étapes du test dans l'ordre donné et sans délai.

Un embout de pipette propre et jetable doit être utilisé pour distribuer chaque étalon/contrôle et échantillon.

Régler l'incubateur à 37 ± 1 °C.

1. Pipeter 100 µL de étalons/contrôles et d'échantillons dilués dans leurs puits respectifs. Garder le puits A1 pour le blanc substrat.
2. Couvrir les puits avec le couvercle, fourni dans le kit.
3. **Incuber pendant 1 heure ± 5 minutes à 37 ± 1 °C.**
4. A la fin de l'incubation, enlever le couvercle, aspirer le contenu des puits et laver chaque puits trois fois avec 300 µL du Tampon de Lavage. Éviter les débordements des puits de réaction. L'intervalle entre le cycle de lavage et l'aspiration doit être > 5 sec. À la fin, enlever soigneusement le liquide restant en tapotant les barrettes sur du papier absorbant avant la prochaine étape.

   Note: L'étape de lavage est très importante! Un lavage insuffisant peut conduire à une précision faible et de faux résultats !
5. Pipeter 100 µL du conjugué dans tous les puits sauf le puits Blanc A1.
6. **Incuber pendant 30 minutes à température ambiante (20…25°C).** N'exposer pas à la lumière directe du soleil.
7. Répéter l'étape numéro 4.
8. Pipeter 100 µL de la Solution de Substrat TMB dans tous les puits.
9. **Incuber pendant exactement 15 minutes à température ambiante (20…25°C) dans l'obscurité.** Une couleur bleue se produit en raison d'une réaction enzymatique.
10. Pipeter 100 µL de la solution d'arrêt dans tous les puits dans le même ordre et à la même vitesse que pour la Solution de Substrat TMB, ainsi, il y a un changement du bleu au jaune.
11. Mesurer l'absorbance à 450/620 nm dans les 30 minutes après l'addition de la solution d'arrêt.

8.1. Mesure

Réglez le Photomètre de Plaque de Microtitrage ELISA **à zéro** en utilisant **le Blanc substrat.**
Si - pour des raisons techniques - le Photomètre de Plaque de Microtitrages ELISA ne peut pas être ajusté à zéro en utilisant le Blanc substrat, la valeur d'absorbance de cette doit être soustraire la valeur d'absorbance de toutes les autres valeurs d'absorbance mesurées afin d'obtenir des résultats fiables!

Mesurer l'absorbance de tous les puits **à 450 nm** et enregistrer les valeurs d'absorbance pour chaque étalon/contrôle et échantillon dans la présentation de la plaque.

Il est recommandé d'effectuer la mesure **dichromatique** utilisant 620 nm comme longueur d'onde de référence.
Si doubles déterminations ont été effectuées, calculer **les valeurs moyennes d'absorbance**.

9. RESULTATS

9.1. Critères de validation

Pour qu'une série d'analyses soit considérée comme valide, ces instructions d'utilisation doivent être strictement suivies, et les critères suivants doivent être respectés:

- **Blanc Substrat**: Valeur d'absorbance **< 0,100**
- **Contrôle Négatif**: Valeur d'absorbance **< 0,200 et < Cut-off**
- **Contrôle Cut-off**: Valeur d'absorbance **0,150 – 1,300**
- **Contrôle Positif**: Valeur d'absorbance **> Contrôle Cut-off**

Lorsque ces critères ne sont pas remplis, le test n'est pas valide et doit être recommencé.

9.2. Calcul des résultats

La valeur seuil correspond à la moyenne des valeurs d'absorbance du Contrôle Cut-off.

Exemple: 0,44 DO Contrôle Cut-off + 0,42 DO Contrôle Cut-off = 0,86: 2 = 0,43

Cut-off = 0,43

9.2.1. Résultats en unités [NTU]

$$\frac{\text{Valeur (moyenne) d'absorbance de l' échantillon} \times 10}{\text{Cut-off}} = \text{[unités NovaTec = NTU]}$$

Exemple: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interprétation des résultats

Cut-off	10 NTU	-
Positif	> 11 NTU	Les anticorps dirigés contre l'agent pathogène sont présents. Il ya eu un contact avec l'antigène (pathogène resp. vaccin).
Zone grise	9 – 11 NTU	Les anticorps dirigés contre l'agent pathogène ne pouvaient pas être détectés clairement. Il est recommandé de répéter le test avec un échantillon frais dans 2 à 4 semaines. Si le résultat est encore dans la zone grise l'échantillon est jugé **négatif**.
Negatif	< 9 NTU	L'échantillon ne contient pas d'anticorps contre l'agent pathogène. Un contact préalable avec l'antigène (pathogène resp. vaccin) est peu probable.
Le diagnostic d'une maladie infectieuse ne devrait pas être établi sur la base du résultat d'une seule analyse. Un diagnostic précis devrait prendre en considération l'histoire clinique, la symptomatologie ainsi que les données sérologiques. Les données sérologiques sont de valeur limité dans le cas des patients immunodéprimés et des nouveaux-nés.		

9.3.1. Isotypes d'anticorps et l'Etat de l'infection

Sérologie	Signification
IgM	Caractéristique de la réponse primaire du anticorps Titre élevé d'IgM avec une faible titre d'IgG: → suggère une infection très récente ou aigüe Rare: → persistante IgM
IgG	Caractéristique de la réponse secondaire du anticorps Peut persister pendant plusieurs années Des titres élevés d'IgG à faible titre d'IgM: → peuvent indiquer une infection ancienne
IgA	Ils sont produits au niveau des muqueuses dans tout le corps (⇒ barrière de protection) Habituellement ils sont produits en début d'infection

10. PERFORMANCES DU TEST

Ces résultats s'appuient sur les groupes d'échantillons étudiés; il n'agit pas de caractéristiques techniques garanties.

Pour plus d'informations sur les performances du test s'il vous plaît contactez NovaTec Immundiagnostica GmbH.

10.1. Précision

Intra-essai	**n**	**moyenne (DO)**	**CV (%)**
#1	24	0,434	3,80
#2	24	1,240	4,08
#3	24	1,635	6,03
Inter-essai	**n**	**moyenne (NTU)**	**CV (%)**
#1	12	32,58	5,73
#2	12	31,56	13,32
#3	12	4,36	11,10

10.2. Spécificité diagnostique

La spécificité diagnostique est définie comme la probabilité d'obtenir un résultat négatif en l'absence d'un analyte spécifique. Elle est 97,8% (95% Intervalle de confiance: 92,29% - 99,73%).

10.3. Sensibilité diagnostique

La sensibilité diagnostique est définie comme la probabilité d'obtenir un résultat positif en présence d'un analyte spécifique. Elle est 100% (95% Intervalle de confiance: 96,87% - 100%).

10.4. Interférences

Des échantillons hémolytiques ou lipémiques ou ictériques n'ont pas montré d'interférences, avec des concentrations jusqu'à 10 mg/mL de hémoglobine, 5 mg/mL de triglycérides et 0,5 mg/mL de bilirubine.

10.5. Réaction croisée

L'étude d'un panel d'échantillons avec des anticorps dirigés contre différents paramètres interférents n'a pas révélé de preuves de résultats faussement positifs dus à des réactions croisées.

11. LIMITES DE LA TECHNIQUE

Une contamination bactérienne ou des cycles de congélation/décongélation répétés de l´échantillon peuvent affecter les valeurs d'absorption.

12. PRECAUTIONS ET AVERTISSEMENTS

- La procédure de test, l'information, les précautions et mises en garde de la notice d'emploi, doivent être suivies de façon stricte. L'utilisation de ces trousses avec des automates ou dispositifs similaires doit être validée. Aucun changement de la conception, composition et procédure de test, ainsi que l'utilisation avec d'autres produits non approuvés par le fabricant, ne sont pas autorisés; seul l'utilisateur est responsable de tels changements. Le fabricant n'est pas responsable des faux résultats et des incidents dus à ces motifs. Le fabricant n'est pas responsable des résultats fournis par analyse visuelle des échantillons des patients.
- Uniquement pour diagnostic in vitro.
- Tous les matériaux d'origine humaine ou animale doivent être considérés et traités comme étant potentiellement infectieux.
- Tous les composants d'origine humaine utilisés pour la fabrication de ces réactifs ont été analysés et ont été trouvés non réactifs en Ag HBs, en anticorps anti-VHI 1 et 2 et en anticorps anti-VHC.
- Ne pas échanger les réactifs ou les Plaque de Microtitrage provenant de différents lots de production.
- Ne pas utiliser de réactifs provenant d'autres fabricants avec les réactifs de cette trousse.
- Ne pas utiliser les réactifs après la date de péremption indiquée sur l'étiquette.
- Utiliser seulement des embouts de pipette, des distributeurs et du matériel de laboratoire propres.
- Ne pas échanger les bouchons des flacons, pour éviter la contamination croisée.
- Fermer soigneusement les flacons après utilisation pour éviter l'évaporation et la contamination microbienne.
- Avant une nouvelle utilisation, vérifier les flacons de conjugué et de étalon/contrôle, déjà utilisés, pour exclure une contamination microbienne.
- Pour éviter la contamination croisée et des résultats faussement élevés, introduire les échantillons de patients et les réactifs exactement au fond des puits sans éclabousser.
- L'ELISA est uniquement conçu pour le personnel qualifié suivant les normes de bonnes pratiques de laboratoire (Good Laboratory Practice, GLP).
- Pour un contrôle de qualité interne plus poussé, chaque laboratoire doit en outre utiliser des échantillons connus.

12.1. Note de sécurité pour les réactifs contenant des substances dangereuses

Les réactifs peuvent contenir du CMIT/MIT (3 :1) ou du MIT (voir chapitre 4.1)
Par conséquent, les mentions de danger et les conseils de prudence suivants s'appliquent.

Attenttion

H317	Peut provoquer une allergie cutanée
P261	Éviter de respirer les aérosols
P280	Porter des gants de protection/ des vêtements de protection.
P302+P352	EN CAS DE CONTACT AVEC LA PEAU: Laver abondamment savon à l'eau.
P333+P313	En cas d'irritation ou d'éruption cutanée: consulter un médecin.
P362+P364	Enlever les vêtements contaminés et les laver avant réutilisation.

De plus amples informations peuvent être trouvées dans la fiche de données de sécurité.

12.2. Elimination des déchets

Les résidus des produits chimiques et des préparations sont considérés en général comme des déchets dangereux. L'élimination de ce type de déchet est réglementée par des lois et réglementations nationales et régionales. Contacter les autorités compétentes ou les sociétés de gestion des déchets pour obtenir des renseignements sur l'élimination des déchets dangereux.

13. INFORMATION POUR LES COMMANDES

Référence:	MYCG0350	Mycoplasma pneumoniae IgG ELISA (96 déterminations)

ITALIANO

1. INTRODUZIONE

Il Mycoplasma pneumoniae è un membro della classe dei Mollicuti, in quanto privo di parete cellulare e rivestito soltanto da membrana plasmatica. Pertanto rappresenta la più piccola cellula vivente al momento conosciuta. La famiglia dei Mycoplasmataceae si divide nei generi Mycoplasma ed Ureaplasma. Al momento sono conosciute più di 80 specie. Le specie più importanti e patogene per l'uomo sono: M. pneumonite, M. hominis e M. genitalis. Oltre a queste esistono altre specie eventualmente patogene: M. orale, M. salivarum, M. faucium e M. buccale. M. hominis e M. genitalis sono gli agenti eziologici di infezioni non specifiche del tratto urogenitale. Il Mycoplasma pneumoniae è l'agente eziologico della polmonite atipica primaria e può anche essere causa di bronchite, laringite e tracheite. Colpisce soprattutto i bambini sopra i 5-6 anni di vita e predilige, in particolare, gli adolescenti e gli adulti. Dopo un periodo di incubazione di 2-3 settimane esordisce con febbre, cefalea, scarso appetito e malessere generale. Il quadro clinico della polmonite atipica si manifesta nel 5-25% delle persone infette. L'agente è ubiquitario, molto contagioso e è trasmesso per via aerea.

Specie	Malattia	Sintomi (p.es.)	Via di trasmissione
Mycoplasma pneumoniae	Infezioni del tratto respiratorio per Mycoplasma pneumoniae	Febbre, mal di testa, e una tosse persistente. Infezioni del tratto respiratorio: Da infezione asintomatica da faringiti, bronchiti, groppa, tracheobronchite, polmonite e polmonite atipica primaria	Trasmissione: aerea; Trasmesso da gocce infette nell'aria

L'infezione o la presenza di un agente patogeno può essere identificata da:
- Microscopia:
- Sierologia: p.es.ELISA

2. USO PREVISTO

Il Mycoplasma pneumoniae IgG ELISA è un kit per la determinazione qualitativa degli anticorpi specifici della classe IgG per Mycoplasma pneumoniae nel siero o plasma (citrato, eparina) umano.

3. PRINCIPIO DEL TEST

La determinazione immunoenzimatico qualitativa degli anticorpi specifici si basa sulla tecnica ELISA (d'inglese Enzyme-linked immunosorbent assay).
Piastre di Microtitolazione sono rivestiti con antigeni specifici che si legano agli anticorpi presenti nel campione. Dopo aver lavato i pozzetti per rimuovere tutto il materiale campione non legato, il coniugato di perossidasi di rafano (HRP) è aggiunto. Questo coniugato si lega agli anticorpi catturati. In una seconda fase di lavaggio coniugato, non legato è rimosso. Il complesso immunitario formato dal coniugato legato sarà evidenziato aggiungendo tetrametilbenzidina (TMB) substrato che dà una colorazione blu.
L'intensità di questa colorazione è direttamente proporzionale alla quantità di anticorpi specifici presenti nel campione. Acido solforico è aggiunto per bloccare la reazione. Questo produce un cambiamento di colore dal blu al giallo. Assorbanza a 450/620 nm è letto utilizzando un fotometro di Piastre di Microtitolazione ELISA.

4. MATERIALI

4.1. Reagenti forniti

- **Piastre di Microtitolazione:** 12 strisce divisibili in 8 pozzetti, con adesi antigeni della Mycoplasma pneumoniae; dentro una busta d'alluminio richiudibile.
- **Tampone di Diluizione del Campione IgG:** 1 flacone contenente 100 mL di tampone fosfato (10 mM) per diluire i campioni; pH 7,2 ± 0,2; colore giallo; pronto all'uso; tappo bianco; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Soluzione Bloccante:** 1 flacone contenente 15 mL di acido solforico, 0,2 mol/L, pronto all'uso; tappo rosso.
- **Tampone di Lavaggio (20x conc.):** 1 flacone contenente 50 mL di un tampone fosfato concentrato 20 volte (0,2 M) per il lavaggio dei pozzetti; pH 7,2 ± 0,2; tappo bianco.
- **Coniugato:** 1 flacone contenente 20 mL di anticorpi IgG anti-umani, coniugati a perossidasi in tampone fosfato (10 mM); colore azzurro; pronto all'uso; tappo nero.
- **Soluzione Substrato TMB:** 1 flacone contenente 15 mL di 3,3`,5,5`-Tetrametilbenzidina (TMB), < 0,1 %; pronto all'uso; tappo giallo.
- **Controllo Positivo:** 1 flacone da 2 mL controllo; colore giallo; tappo rosso; pronto all'uso; ≤ 0,02% (v/v) MIT.
- **Controllo Cut-off:** 1 flacone da 3 mL controllo; colore giallo; tappo verde; pronto all'uso; ≤ 0,02% (v/v) MIT.
- **Controllo Negativo:** 1 flacone da 2 mL controllo; colore giallo; tappo blu; pronto all'uso; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Le indicazioni di pericolo e consigli di prudenza vedi capitolo 12.1.

Per le sostanze potenziali pericolose si prega di leggere la scheda di dati di sicurezza.

4.2. Accessori forniti

- 1 pellicola adesiva
- 1 istruzione per l'uso
- 1 schema della piastra

4.3. Materiali e attrezzature necessari

- Fotometro per Piastre di Microtitolazione con filtri da 450/620 nm
- Incubatrice 37 °C
- Lavatore, manuale o automatico, di Piastre di Microtitolazione
- Micropipette per l'uso tra 10-1000 µL
- Vortex-Mixer
- Acqua distillata
- Provette monouso

5. MODALITÀ DI CONSERVAZIONE

Conservare il kit a 2...8 °C. I reagenti aperti sono stabili fino alla data di scadenza indicata sull'etichetta quando sono conservati a 2...8 °C.

6. PREPARAZIONE DEI REAGENTI

È molto importante, portare tutti i reagenti e campioni a temperatura ambiente (20…25 °C) e mescolare prima di iniziare il test.

6.1. Piastre di Microtitolazione

Le strisce divisibili sono rivestite con gli antigeni della Mycoplasma pneumoniae. Immediatamente dopo la rimozione degli strisce necessari, le strisce rimanenti devono essere sigillare nuovamente in un foglio di alluminio insieme con il sacchetto di gel di silice conservati a 2...8 °C.

6.2. Tampone di Lavaggio (20x conc.)

Diluire il Tampone di Lavaggio 1+19; per esempio: 10 mL del Tampone di Lavaggio + 190 mL di acqua distillata. Il Tampone di Lavaggio diluito è stabile per 5 giorni a temperatura ambiente (20…25 °C). Se cristalli appaiono nel concentrato, riscaldare la soluzione a 37 °C per esempio in un bagnomaria. Mescolare bene prima della diluizione.

6.3. Soluzione Substrato TMB

La soluzione sta pronta all'uso e deve essere conservata a 2...8 °C, al riparo dalla luce. La soluzione deve essere incolore o potrebbe avere un leggero colore blu chiaro. Se il substrato diventa blu, potrebbe essere stato contaminato e non può essere utilizzato nel test.

7. PRELIEVO E PREPARAZIONE DEI CAMPIONI

Per questo test si prega di usare campioni di siero o plasma (citrato, eparina) umano. Se il test è fatto entro 5 giorni dal prelievo i campioni possono essere conservati tra 2...8 °C. Altrimenti devono essere aliquotati e congelati tra (-70…-20 °C). Se i campioni sono conservati congelati, mescolare bene i campioni scongelati prima del test. Evitare cicli ripetuti di congelamento/scongelamento.
L'inattivazione dei campioni per mezzo del calore non è raccomandata.

7.1. Diluizione dei campioni

Prima del test, diluire i campioni 1+100 con Tampone di Diluizione del Campione IgG. Per esempio, pipettare nelle provette 10 µL di campione + 1 mL di Tampone di Diluizione del Campione IgG e mescolare bene (Vortex).

8. PROCEDIMENTO

Leggere bene le istruzioni per l'uso **prima** di iniziare il teste. L'affidabilità dei risultati dipende dalla stretta aderenza le istruzioni per l'uso di prova come descritto. La seguente procedura è stata validata per l'esecuzione manuale. Per un'esecuzione su strumentazione automatica si consiglia di incrementare il numero di lavaggi de 3 a 5 volte e il volume del Tampone di Lavaggio da 300 a 350 µL per evitare effetti di lavaggio. Prestare attenzione al capitolo 12. Stabilire innanzitutto il piano di distribuzione e identificazione dei campioni e standards/controlli (è raccomandato determinare in duplicato) sullo schema della piastra fornito con il kit. Inserire i pozzetti necessari nel supporto.

Eseguire il test nell'ordine stabilito dalle istruzioni, senza ritardi.

Sul pipettaggio utilizzare puntali nuovi e puliti per ogni campione e standard/controllo.

Regolare l'incubatore a 37 ± 1 °C.

1. Pipettare 100 µL di standard/controllo e di campione diluito nei relativi pozzetti. Usare il pozzetto A1 per il Bianco-substrato.
2. Coprire i pozzetti con la pellicola adesiva, fornita nel kit.
3. **Incubare 1 ora ± 5 min a 37 ± 1°C.**
4. Al termine dell'incubazione, togliere la pellicola e aspirare il liquido dai pozzetti. Successivamente lavare i pozzetti tre volte con 300 µL di Tampone di Lavaggio. Evitare che la soluzione trabocchi dai pozzetti. L'intervallo tra il lavaggio e l'aspirazione deve essere > 5 sec. Dopo il lavaggio picchiettare delicatamente i pozzetti su una carta assorbente per togliere completamente il liquido, prima del passo successivo.

   Attenzione: Il lavaggio è una fase molto importante. Da lavaggio insufficiente risulta una bassa precisione e risultati falsi!
5. Pipettare 100 µL di Coniugato in tutti i pozzetti, escludendo quello con il Bianco-substrato (Blank) A1.
6. **Incubare per 30 min a temperatura ambiente (20...25 °C).** Non esporre a fonti di luce diretta.
7. Ripetere il lavaggio secondo punto 4.
8. Pipettare 100 µL di Soluzione Substrato TMB in tutti i pozzetti.
9. **Incubare precisamente per 15 min a temperatura ambiente (20...25 °C) al buio.** Un colore blu verifica a causa della reazione enzimatica.
10. Pipettare 100 µL di Soluzione Bloccante in tutti i pozzetti, nello stesso ordine della Soluzione Substrato TMB, in tal modo un cambiamento di colore dal blu al giallo si verifica.
11. Misurare l'assorbanza a 450/620 nm entro 30 min dopo l'aggiunta della Soluzione Bloccante.

8.1. Misurazione

Regolare il fotometro per le Piastre di Microtitolazione ELISA **a zero** usando il substrato-Bianco (Blank).

Se, per motivi tecnici, non è possibile regolare il fotometro per le Piastre di Microtitolazione a zero usando il Bianco-substrato, il valore de assorbanza de questo deve essere sottratto dai valori dell'assorbanza da tutti i valori delle altre assorbanze per ottenere risultati affidabili!

Misurare l'assorbanza di tutti i pozzetti a **450 nm** e inserire tutti i valori misurati nello schema della piastra.

È raccomandato fare le misurazioni delle onde **bichrome** (due colori). Utilizzando la lunghezza d'onda de 620 nm come misura di riferimento.

Dove sono state misurate in doppio, calcolare **la media delle assorbanze**.

9. RISULTATI

9.1. Validazione del test

Affinché un test possa essere considerato valido, le presenti Istruzioni per l'uso devono essere rigorosamente seguite e devono essere soddisfatti i seguenti criteri:

- **Substrato Bianco (Blank)**: Valore di assorbanza **< 0,100**
- **Controllo Negativo**: Valore di assorbanza **< 0,200 e < Cut-off**
- **Controllo Cut-off**: Valore di assorbanza **0,150 – 1,300**
- **Controllo Positivo**: Valore di assorbanza **> Cut-off**

Se non sono soddisfatti questi criteri, il test non è valido e deve essere ripetuto.

9.2. Calcolo dei risultati

Il Cut-off è la media dei valori di assorbanza dei Controlli Cut-off.

Esempio: Valore di assorbanza del Controllo Cut-off 0,44 + valore di assorbanza del Controllo Cut-off 0,42 = 0,86/2 = 0,43
Cut-off = 0,43

9.2.1. Risultati in unità [NTU]

$$\frac{\text{Assorbanza media del campione} \times 10}{\text{Cut-off}} = \text{[unità NovaTec = NTU]}$$

Esempio: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretazione dei risultati

Cut-off	10 NTU	-
Positivo	> 11 NTU	Anticorpi contro il patogeno sono presenti. C'è stato un contatto con l'antigene (patogeno resp. vaccino).
Zona grigia	9 – 11 NTU	Anticorpi contro il patogeno non è stato possibile rilevare chiaramente. Si consiglia di ripetere il test con un nuovo campione in 2-4 settimane. Se il risultato è nuovamente nella zona grigia, il campione viene giudicato come **negativo**.
Negativo	< 9 NTU	Il campione non contiene anticorpi contro il patogeno. Un precedente contatto con l'antigene (patogeno resp. vaccino) è improbabile.
La diagnosi di una malattia infettiva non deve essere fatta soltanto sulla risultanza di un unico test. È importante considerare anche l'anamnesi ed i sintomi del paziente. I risultati del test da pazienti immunosoppressi e neonati hanno un valore limitato.		

9.3.1. Isotipi degli anticorpi e Stato dell'infezione

Sierologia	Significato
IgM	Caratteristica della risposta primaria dell'anticorpo Alto titolo IgM con basso titolo IgG: →suggerisce una infezione molto recente o acuta Raro: → IgM persistente
IgG	Caratteristica della risposta secondaria dell'anticorpo Può persistere per diversi anni Alto titolo IgG con basso titolo IgM: → può indicare un'infezione passata
IgA	Sono prodotte a livello delle mucose in tutto il corpo (⇒ barriera protettiva) Solitamente sono prodotte all'inizio dell'infezione

10. CARATTERISTICHE DEL TEST

I risultati si riferiscono al gruppo di campioni investigato; questi non sono specifiche garantite.

Per ulteriori informazioni su caratteristiche del test, si prega, di contattare NovaTec Immundiagnostica GmbH.

10.1. Precisione

Intradosaggio	**n**	**Media (OD)**	**CV (%)**
#1	24	0,434	3,80
#2	24	1,240	4,08
#3	24	1,635	6,03
Interdosaggio	**n**	**Media (NTU)**	**CV (%)**
#1	12	32,58	5,73
#2	12	31,56	13,32
#3	12	4,36	11,10

10.2. Specificità diagnostica

La specificità diagnostica è la probabilità del test di fornire un risultato negativo in assenza di analita specifici.
La specificità diagnostica è 97,8% (95% intervallo di confidenza: 92,29% - 99,73%).

10.3. Sensibilità diagnostica

La sensibilità diagnostica è la probabilità del test di fornire un risultato positivo alla presenza di analita specifici.
La sensibilità diagnostica è 100% (95% intervallo di confidenza: 96,87% - 100%).

10.4. Possibili interferenze

Campioni emolitici, lipidici et itterici contenenti fino a 10 mg/mL di emoglobina, 5 mg/mL di trigliceridi e 0,5 mg/mL di bilirubina non hanno presentato fenomeni d'interferenza nel presente test.

10.5. Reattività crociata

L'investigazione di un gruppo di campioni con attività di anticorpi contro parametri potenzialmente interferenti non ha rivelato alcuna evidenza di risultati falsamente positivi dovuto a reattività crociata.

11. LIMITAZIONI

Una contaminazione da microorganismi o ripetuti cicli di congelamento-scongelamento possono alterare i valori delle assorbanze.

12. PRECAUZIONI E AVVERTENZE

- La procedura analitica, le informazioni, le precauzioni e le avvertenze contenute nelle istruzioni per l'uso devono essere seguite scrupolosamente. L'uso dei kit con analizzatori e attrezzature similari deve essere previamente convalidato. Qualunque cambiamento nello scopo, nel progetto, nella composizione o struttura e nella procedura analitica, così come qualunque uso dei kit in associazione ad altri prodotti non approvati dal produttore non è autorizzato; l'utilizzatore stesso è responsabile di questi eventuali cambiamenti. Il produttore non è responsabile per falsi risultati e incidenti che possano essere causati da queste ragioni. Il produttore non è responsabile per qualunque risultato ottenuto attraverso esame visivo dei campioni dei pazienti.
- Solo per uso diagnostico in-vitro.
- Tutti i materiali di origine umana o animale devono essere considerati potenzialmente contagiosi e infettivi.
- Tutti gli elementi di origine umana sono stati trovati non reattivi con Anti-HIV-Ab, Anti-HCV-Ab e HBsAg.
- Non scambiare reagenti e Piastre di Microtitolazione di lotti diversi.
- Non utilizzare reagenti d'altri produttori insieme con i reagenti di questo kit.
- Non usare dopo la data di scadenza.
- Utilizzare soltanto punte per pipette, distributori, e articoli da laboratorio puliti.
- Non scambiare i tappi dei flaconi, per evitare contaminazione crociata.
- Richiudere i flaconi immediatamente dopo l'uso per evitare la vaporizzazione e contaminazione.
- Una volta aperti e dopo relativo stoccaggio verificare i reagenti per una loro eventuale contaminazione prima dell'uso.
- Per evitare contaminazioni crociate e risultati erroneamente alti pipettare i campioni e reagenti con molta precisione nei pozzetti senza spruzzi.
- L'ELISA è progettato solo per il personale qualificato che segue le norme di buona pratica di laboratorio (Good Laboratory Practice, GLP).
- Per un ulteriore controllo di qualità interno ogni laboratorio dovrebbe inoltre utilizzare campioni noti.

12.1. Nota di sicurezza per i reagenti contenenti sostanze pericolose

I reagenti possono contenere CMIT/MIT (3:1) o MIT (vedi capitolo 4.1)
Pertanto, si applicano le seguenti indicazioni di pericolo e le consigli di prudenza.

Attenzione	H317	Può provocare una reazione allergica cutanea.
	P261	Evitare di respirare gli aerosol.
	P280	Indossare guanti/ indumenti protettivi.
	P302+P352	IN CASO DI CONTATTO CON LA PELLE: lavare abbondantemente con sapone acqua.
	P333+P313	In caso di irritazione o eruzione della pelle: consultare un medico.
	P362+P364	Togliere tutti gli indumenti contaminati e lavarli prima di indossarli nuovamente.

Ulteriori informazioni sono disponibili nella scheda di dati di sicurezza.

12.2. Smaltimento

In genere tutte le sostanze chimiche sono considerati rifiuti pericolosi. Lo smaltimento è regolato da leggi nazionali. Per ulteriori informazioni contattare l'autorità locale.

13. INFORMAZIONI PER GLI ORDINI

Numero del prodotto: MYCG0350 Mycoplasma pneumoniae IgG ELISA (96 determinazioni)

ESPAÑOL

1. INTRODUCCIÓN

Las Mycoplasma son procariotas con la caracteristica principal de no tener pared celular. Por esta facultad se forma la nueva clase de los “Mollicutes” (mollis: suave, cutis: piel). La familia de los Mycoplasmataceae se divide en los géneros Mycoplasma y Ureaplasma. En los Mycoplasma se conocen más de 80 especies dentro de las más importantes como patógenos para el hombre son M. pneumoniae, M. hominis y M. genitalis. Aparte de estos patógenos obligatorios existen varias especies que son facultativo patógeno (M. orale, M. salivarium, M. faucium, M. buccale).

M. pneumoniae produce infecciones del tracto respiratoiro (neumonías atípicas), M. hominis y M. genitalis infectan al tracto urogenital. M. pneumoniae coloniza la traquea y los bronquios destruyendo el epitelio sin entrar en el tejido peribronquial. Las infiltraciones en el tejido peribronquial son probablemente reacciones fuertes del sistema inmunitario con presencia de linfocitos, células plasma y macrófagos. Muchas veces se muestran fenómenos autoinmunitarios en forma de la formación de anticuerpos con reacciones cruzadas con tejidos corporales. Después de un período de incubación medio de 3 semanas se producen en el 75% de los casos infecciones gripales fuertes con faringitis o traqueobronquitis. Del 5 al 25 % de los casos solamente de desarolla una neumonía atípica que comienza con cansancio, dolores de cabeza, fiebre y tos pertinante.

El M. pneumoniae no pertenece a la flora normal del hombre. Las Mycoplasma son de manifestación mundial y se transmiten con alta contagiosidad por el aire y por gotats de fluido contaminado. El grupo más afectado son los jovenes de 5 a 20 años. Las infecciones dentro de una familia o en comunidades se explican por la alta contagiosidad y el modo de infección. Son comunes las reinfecciones.

Especies	Enfermedad	Síntomas (p.ej.)	Vía de transmisión
M. pneumoniae	Enfermedad respiratoria por Mycoplasma pneumoniae	Fiebre, dolor de cabeza y tos persistente Enfermedad respiratoria, de infección asintomática a resfriados, faringitis, bronquitis, krupp, traqueobronquitis, pneumonitis y neumonía atípica primaria	A erógena, por gotitas de fluido contaminado

La infección o la presencia de un patógeno puede identificarse mediante:

- Microscopia
- Serología: p.ej. ELISA

2. USO PREVISTO

El enzimoinmunoensayo Mycoplasma pneumoniae IgG ELISA se utiliza para la determinación cualitativa de anticuerpos IgG específicos contra Mycoplasma pneumoniae en suero o plasma (citrato, heparina) humano.

3. PRINCIPIO DEL ENSAYO

La determinación inmunoenzimática cualitativa de anticuerpos específicos se basa en la técnica ELISA (Enzyme-linked Immunosorbent Assay).
Las Placas de Microtitulación están recubiertas con antígenos específicos unen a los anticuerpos de la muestra. Después de lavar los pocillos para eliminar todo el material de muestra no unida, el conjugado de peroxidasa de rábano (HRP) se añade. Este conjugado se une a los anticuerpos capturados. En una segunda etapa de lavado se retira el conjugado no unido. El complejo inmune formado por el conjugado unido se visualiza añadiendo substrato tetrametilbencidina (TMB), que da un producto de reacción azul.
La intensidad de este producto es proporcional a la cantidad de anticuerpos específicos en la muestra. se añade ácido sulfúrico para detener la reacción. Esto produce un cambio de color de azul a amarillo. La extinción a 450/620 nm se mide con un fotómetro de Placa de Microtitulación ELISA.

4. MATERIALES

4.1. Reactivos suministrados

- **Placa de Microtitulación :** 12 tiras de 8 pocillos rompibles, recubiertos con antígenos de Mycoplasma pneumoniae, en bolsa de aluminio.
- **Tampón de Dilución de Muestras IgG:** 1 botella de 100 mL de solución de tampón de fosfato (10 mM) para diluir la muestra; pH 7,2 ± 0,2; color amarillo; listo para ser utilizado; tapa blanca; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Solución de Parada:** 1 botella de 15 mL de ácido sulfúrico, 0,2 mol/L, listo para ser utilizado; tapa roja.
- **Tampón de Lavado (20x conc.):** 1 botella de 50 mL de una solución de tampón de fosfato 20x concentrado (0,2 M) para lavar los pocillos; pH 7,2 ± 0,2; tapa blanca.
- **Conjugado:** 1 botella de 20 mL de conjugado de anticuerpos IgG anti-humano con peroxidasa en tampón de fosfato (10 mM); color azul; tapa negra; listo para ser utilizado.
- **Solución de Sustrato de TMB:** 1 botella de 15 mL 3,3',5,5'-tetrametilbenzindina (TMB), < 0,1 %; listo para ser utilizado; tapa amarilla.
- **Control Positivo:** 1 botella de 2 mL control; color amarillo; tapa roja; listo para ser utilizado; ≤ 0,02% (v/v) MIT.
- **Control Cut-off:** 1 botella de 3 mL control; color amarillo; tapa verde; listo para ser utilizado; ≤ 0,02% (v/v) MIT.
- **Control Negativo:** 1 botella de 2 mL control; color amarillo; tapa azul; listo para ser utilizado; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Para indicaciones de peligro y consejos de prudencia consulte el cap. 12.1.
Para sustancias potencialmente peligrosas por favor revise la ficha de datos de seguridad.

4.2. Accesorios suministrados

- 1 lámina autoadhesiva
- 1 instrucciones de uso
- 1 esquema de la placa

4.3. Materiales e instrumentos necesarios

- Fotómetro de Placa de Microtitulación con filtros de 450/620 nm
- Incubadora 37 °C
- Dispositivo de lavado manual o automático de Placas de Microtitulación
- Micropipetas para uso de (10-1000 µL)
- Mezcladora Vortex
- Agua destilada
- Tubos de plástico desechables

5. ESTABILIDAD Y ALMACENAJE

Almacene el kit a 2...8 °C. Los reactivos abiertos son estables hasta la fecha de caducidad indicada en la etiqueta cuando se almacena a 2...8 °C.

6. PREPARACIÓN DE LOS REACTIVOS

Es muy importante llevar todos los reactivos y las muestras a temperatura ambiente (20...25 °C) y mezclarlos antes de ser utilizados!

6.1. Placa de Microtitulación

Las tiras rompibles están recubiertas con antígeno de Mycoplasma pneumoniae. Inmediatamente después de la eliminación de las tiras, las tiras restantes deben sellarse de nuevo en el papel de aluminio junto con la bolsita di dióxio de silicio y almacenar a 2...8 °C.

6.2. Tampón de Lavado (20x conc.)

Diluir el Tampón de Lavado 1+19; por ejemplo 10 mL del Tampón de Lavado + 190 mL de agua destilada. El Tampón de Lavado diluido es estable durante 5 días a temperatura ambiente (20…25 °C). En caso de aparecer cristales en el concentrado, calentar la solución a 37 °C, por ejemplo, en un baño María. Mezclar bien antes de la dilución.

6.3. Solución de Sustrato de TMB

La solución está lista para su uso y debe almacenarse a 2...8 °C, protegida de la luz. La solución debe ser incolora o podría tener un color ligeramente azul claro. Si el sustrato se convierte en azul, es posible que haya sido contaminado y no puede ser utilizado en el ensayo.

7. TOMA Y PREPARACIÓN DE LAS MUESTRAS

Usar muestras de suero o plasma (citrato, heparina) humano. Si el ensayo se realiza dentro de 5 días después de la toma de sangre, las muestras pueden ser almacenadas a 2...8 °C, en caso contrario deben ser alicuotadas y almacenadas congeladas (-70...-20 °C). Agitar bien las muestras descongeladas antes de diluirlas. Evitar congelaciones y descongelaciones repetidas.
No se recomienda la inactivación por calor de las muestras.

7.1. Dilución de las muestras

Antes del ensayo, las muestras tienen que estar diluidas en relación 1 + 100 con el Tampón de Dilución de Muestras IgG, p. e. 10 µL de la muestra con 1 mL de Tampón de Dilución de Muestras IgG, mezclar bien con la mezcladora Vortex.

8. PROCEDIMIENTO

Por favor, leer cuidadosamente las instrucciones de uso del ensayo **antes** de realizarlo. Para el buen funcionamiento de la técnica es necesario seguir las instrucciones. El siguiente procedimiento es válido solamente para el método manual. Si se realiza el ensayo en los sistemas automáticos de ELISA es aconsejable elevar el número de lavados de tres hasta cinco veces y el volumen de Tampón de Lavado de 300 µL a 350 µL para excluir efectos de lavado. Preste atención al capítulo 12. Antes de comenzar, especificar exactamente la repartición y posición de las muestras y de los estándares/controles (se recomienda determinar en duplicado) en el esquema de la placa suministrada. Usar la cantidad necesaria de tiras o pocillos e insertarlos en el soporte.

Realizar el ensayo en el orden indicado y sin retraso.

Para cada paso de pipeteado en los estándares/controles y en las muestras, usar siempre puntas de pipeta de un solo uso.

Graduar la incubadora a 37 ± 1°C.

1. Pipetear 100 µL de estándares/controles y muestras en los pocillos respectivos. Dejar el pocillo A1 para el blanco.
2. Recubrir las tiras con los autoadhesivos suministrados.
3. **Incubar 1 h ± 5 min a 37 ± 1°C.**
4. Después de la incubación, retirar el autoadhesivo, aspirar el líquido de la tira y lavarla tres veces con 300 µL del Tampón de Lavado. Evitar el rebosamiento de los pocillos. El intervalo entre lavado y aspiración debe ser > 5 segundos. Para sacar el líquido restante de las tiras, es conveniente sacudirlas sobre papel absorbente.

   Nota: El lavado es muy importante! Un mal lavado insuficiente provoca una baja precisión y resultados falsamente elevados!
5. Pipetar 100 µL de conjugado en cada pocillo con excepción del blanco substrato A1.
6. **Incubar 30 min a la temperatura ambiente (20…25 °C).** Evitar la luz solar directa.
7. Repetir el lavado como en el paso numero 4.
8. Pipetar 100 µL de la Solución de Sustrato de TMB en todos los pocillos.
9. **Incubar exactamente 15 min en oscuridad a temperatura ambiente (20...25 °C).** Un color azul se produce en las muestras positivas debido a la reacción enzimática.
10. Pipetear en todos los pocillos 100 µL de la Solución de Parada en el mismo orden y mismo intervalo de tiempo como con el Solución de Sustrato de TMB, por lo tanto un cambio de color de azul a amarillo se produce.
11. Medir la extinción con 450/620 nm en un periodo de 30 min después de añadir la Solución de Parada.

8.1. Medición

Ajustar el fotómetro de Placa de Microtitulación ELISA al cero utilizando el Blanco.

Si por razones técnicas el fotómetro de Placa de Microtitulación de ELISA no se puede ajustar a cero utilizando el Blanco, el valor de la absorbancia de este debe ser sustraído de los demás valores de absorbancia medidos con el fin de obtener resultados fiables!

Medir la **extinción** de todos los pocillos con **450 nm** y anotar los resultados de los estándares/controles y de las muestras en el esquema de la placa.

Es aconsejable realizar la medición **bicromática** a una longitud de onda de referencia de 620 nm.

Si se efectuaron análisis en duplicado o múltiples, hay que calcular **el promedio de los valores de extinción** de los pocillos correspondientes.

9. CÁLCULO DE LOS RESULTADOS

9.1. Criterios de validez del ensayo

Para que un ensayo se considere válido, deben seguirse estrictamente las presentes instrucciones de uso y deben cumplirse los siguientes criterios:

- **Blanco:** valor de la extinción **< 0,100**
- **Control Negativo:** valor de la extinción **< 0,200 y < Cut-off**
- **Control Cut-off:** valor de la extinción **0,150 – 1,300**
- **Control Positivo:** valor de la extinción **> Cut-off**

Si estos criterios no se cumplen, la prueba no es váida y deberá repetirse.

9.2. Cálculo del valor de la medición

El Cut-off se obtiene de los valores de la extinción de lo Control Cut-off.

Ejemplo: 0,42 OD Control Cut-off + 0,44 OD Control Cut-off = 0,86:2 = 0,43

Cut-off = 0,43

9.2.1. Resultados en unidades [NTU]

$$\frac{\text{Promedio valor de la extinción de la muestra} \times 10}{\text{Cut-off}} = \text{[NovaTec-unidades = NTU]}$$

Ejemplo: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretación de los resultados

Cut-off	10 NTU	-
Positivo	> 11 NTU	Los anticuerpos contra el patógeno están presentes. Ha producido un contacto con el antígeno (patógeno resp. vacuna).
Zona intermedia	9 – 11 NTU	Los anticuerpos contra el patógeno no se pudieron detectar claramente. Se recomienda repetir la prueba con una muestra fresca en 2 a 4 semanas. Si el resultado es de nuevo en la zona intermedia, la muestra se considera como **negativa**.
Negativo	< 9 NTU	La muestra no contiene anticuerpos contra el patógeno. Un contacto previo con el antígeno (patógeno resp. vacuna) es poco probable.
El diagnóstico de una infección no solamente se debe basar en el resultado del ensayo. Es necesario considerar la anamnésis y la sintomatología del paciente junto al resultado serológico. Estos resultados sólo tienen valor restringido en pacientes inmunodeprimidos o en neonatos.		

9.3.1. Isotipos de anticuerpo y Estado de la Infección

Serología	Significado
IgM	Característica de la respuesta primaria del anticuerpo Alto título de IgM con bajo título de IgG → sugieren una infección muy reciente o aguda Raras: → persistente IgM
IgG	Característica de la respuesta secundaria del anticuerpo Pueden persistir por varios años El alto título de IgG con bajo título de IgM: → pueden indicar una infección pasada
IgA	Producida en el revestimiento mucoso en todo el cuerpo (⇒ Barrera Protectora) Usualmente producida tempranamente en el transcurso de la infección

10. CARACTERÍSTICAS DEL ENSAYO

Los resultados están basados en el grupo de pruebas investigado; no se trata de especificaciones garantizadas.

Para obtener más información sobre las características del ensayo, por favor, entre en contacto NovaTec Immundiagnostica GmbH.

10.1. Precisión

Intra ensayo	**n**	**Promedio (E)**	**CV (%)**
#1	24	0,434	3,80
#2	24	1,240	4,08
#3	24	1,635	6,03
Inter ensayo	**n**	**Promedio (NTU)**	**CV (%)**
#1	12	32,58	5,73
#2	12	31,56	13,32
#3	12	4,36	11,10

10.2. Especificad diagnóstica

La especificidad del ensayo se define como la probabilidad que tiene el ensayo de dar un resultado negativo en ausencia del analítico específico. Es 97,8% (95% Intervalo de confianza: 92,29% - 99,73%).

10.3. Sensibilidad de diagnóstico

La sensibilidad del ensayo se define como la probabilidad que tiene el ensayo de dar un resultado positivo en presencia del analítico específico. Es 100% (95% Intervalo de confianza: 96,87% - 100%).

10.4. Interferencias

Las muestras lipémicas, ictéricas e hemolíticas no mostraron interferencias con este equipo ELISA hasta una concentración de 5 mg/mL para triglicéridos, de 0,5 mg/mL para bilirrubina y de 10 mg/mL hemoglobina.

10.5. Reactividad cruzada

Pruebas realizadas con un panel de muestras con distinta actividad de anticuerpos para estudiar parámetros de reactividad no dieron falsos positivos debidos a reactividad cruzada.

11. LIMITACIONES DEL ENSAYO

Una contaminación de las muestras con bacterias, o una congelación y descongelación repetida pueden producir cambios en los valores de la extinción.

12. PRECAUCIONES Y ADVERTENCIAS

- El procedimiento, la información, las precauciones y los avisos de las instrucciones de uso han de ser seguidas estrictamente. La utilización de equipos con analizadores y equipamiento similar tiene que ser validada. No se autorizan cambios en el diseño, composición y procedimiento, así como cualquier utilización en combinación con otros productos no aprobados por el fabricante; el usuario debe hacerse responsable de estos cambios. El fabricante no responderá ante falsos resultados e incidentes debidos a estas razones. El fabricante no responderá ante cualquier resultado por análisis visual de las muestras de los pacientes.
- Solo para diagnostico in vitro.
- Todos los materiales de origen humano o animal deberán ser considerados y tratados como potencialmente infecciosos.
- Todos los componentes de origen humano han sido examinados y resultaron no reactivos a anticuerpos contra el VIH, VHC y HbsAG.
- No intercambiar reactivos y Placa de Microtitulación de cargas diferentes.
- No usar reactivos de otro fabricante para este ensayo.
- No usar después de la fecha de caducidad.
- Sólo usar recambios de pipetas, dispensadores y materiales de laboratorio limpios.
- No intercambiar las tapas de los diferentes reactivos, para evitar la contaminación cruzada.
- Para evitar la evaporación y una contaminación microbiana, cierre inmediatamente las botellas después de usarlas.
- Después de abrirlas y posterior almacenaje, asegurarse de que no existe contaminación microbiana antes de seguir usándolas.
- Para evitar contaminaciones cruzadas y resultados erróneamente aumentados, Pipetear cuidadosamente las muestras y los reactivos en los pocillos sin salpicar.
- El ELISA sólo está diseñado para personal cualificado siguiendo las normas de buenas prácticas de laboratorio (Good Laboratory Practice,GLP).
- Para un mayor control de calidad interno, cada laboratorio deberá utilizar además muestras conocidas.

12.1. Nota de seguridad para los reactivos que contienen sustancias peligrosas

Los reactivos pueden contener CMIT/MIT (3:1) o MIT (consulte el cap. 4.1)
Por lo tanto, se aplican las indicaciones de peligro y consejos de prudencia.

Atención

H317	Puede provocar una reacción alérgica en la piel.
P261	Evitar respirar el aerosol.
P280	Llevar guantes/ prendas de protección
P302+P352	EN CASO DE CONTACTO CON LA PIEL: Lavar con abundante jabón agua.
P333+P313	En caso de irritación o erupción cutánea: Consultar a un médico.
P362+P364	Quitar las prendas contaminadas y lavarlas antes de volver a usarlas.

Se puede encontrar más información en la ficha de datos de seguridad.

12.2. Indicaciones para la eliminación de residuos

Por regla general, los productos químicos y las preparaciones son residuos peligrosos. Su eliminación esta sometida a las leyes y los decretos nacionales sobre la eliminación de residuos. Las autoridades informan sobre la eliminación de residuos peligroso.

13. INFORMACIONES PARA PEDIDOS

N° del producto:	MYCG0350	Mycoplasma pneumoniae IgG ELISA (96 determinaciones)

PORTUGUÊS

1. INTRODUÇÃO

Os micoplasmas pertencem à classe Mollicutes composta por três famílias e quatro géneros distintos, um dos quais é o Mycoplasma com mais de 60 espécies. Os Micoplasmas são os menores organismos de vida livre conhecidos (300 a 500 nm de diâmetro) e, ao contrário das bactérias normais não possuem uma parede celular. Os Micoplasmas são parasitas extracelulares, especialmente nas membranas mucosas, que podem causar infecções em humanos, animais, plantas e culturas celulares. O Mycoplasma pneumoniae é essencialmente um agente patogénico respiratório (obrigatório) em humanos envolvendo a nasofaringe, garganta, traqueia, brônquios, bronquíolos e alvéolos. Outros Micoplasmas, M. buccale, M. faucium, M. orale e M. salivarium são comensais na cavidade oral. O Mycoplasma hominis e o Ureaplasma urealyticum habitam principalmente o trato genital e podem actuar como invasores oportunistas. O M. pneumoniae é de longe o agente patogénico mais importante deste grupo. A infecção por M. pneumoniae ocorre em todo o mundo, a sua epidemiologia tem sido estudada principalmente no E.U.A., Europa e Japão. As infecções são endémicas nas grandes áreas urbanas, e são observados aumentos da epidemia em intervalos variáveis. Foi estimado que o M. pneumoniae seja a causa de 15-20% de todas as pneumonias, a taxa é mais elevada em crianças e adultos jovens. 74% das infecções por M. pneumoniae são assintomáticas, a reinfecção pode ocorrer. A imunidade adquirida naturalmente à infecção por M. pneumoniae parece ser de duração limitada (2-3 anos).

Espécies	Doença	Sintomas (p.ex.)	Via de transmissão
M. pneumoniae	Doença respiratória Mycoplasma pneumonia	Febre, cefaléia e tosse persistente Doença respiratória: de infecção assintomática ao resfriados, faringite, bronquite, crup, traqueobronquite, pneumonite e pneumonia primária atípica	Por via aérea, a transmissão do vírus ocorre por infecção por gotículas;

Infecção ou presença de patógeno pode ser identificada por:

- Microscopia
- Serologia: p.ex.ELISA

2. UTILIZAÇÃO PRETENDIDA

O kit Mycoplasma pneumoniae IgG ELISA destina-se à determinação qualitativa de anticorpos da classe IgG contra Mycoplasma pneumoniae no soro ou plasma (citrato, heparina) humanos.

3. PRINCÍPIO DO ENSAIO

A determinação imunoenzimática qualitativa de anticorpos específicos é baseado na técnica de ELISA (do inglês Enzyme-linked Immunosorbent Assay).
As Placas de Microtitulação são revestidas com antigénios específicos que se ligam os anticorpos correspondentes da amostra. Após lavagem dos poços, para remover todo o material de amostra não ligado, um conjugado de peroxidase de rábano (HRP) é adicionado. Este conjugado se liga aos anticorpos capturados. Num segundo passo de lavagem o conjugado não ligado é removido. O complexo imune formado pelo conjugado ligado é visualizado por adição de substrato de tetrametilbenzidina (TMB), o que dá um produto de reacção azul.
A intensidade deste produto é proporcional à quantidade de anticorpos específicos da amostra. O ácido sulfúrico é adicionado para parar a reacção. Isso produz uma mudança de cor de azul para amarelo.
Absorvância a 450/620 nm é lida utilizando um fotômetro de Placa de Microtitulação ELISA.

4. MATERIAIS

4.1. Reagentes fornecidos

- **Placa de Microtitulação:** 12 tiras de 8 poços, destacáveis e quebráveis, revestidas com antigénio de Mycoplasma pneumoniae, em bolsas de folha de alumínio com fecho.
- **Tampão de Diluição de Amostra IgG:** 1 frasco contendo 100 mL de tampão fosfato (10 mM) para diluição da amostra, pH 7,2 ± 0,2; de cor amarela; pronto a usar; tampa branca; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Solução de Bloqueio:** 1 frasco contendo 15 mL ácido sulfúrico; 0,2 mol/L; pronto a usar; tampa vermelha.
- **Tampão de Lavagem (conc. 20x):** 1 frasco contendo 50 mL de um tampão fosfato (0,2 M); concentrado 20 vezes (pH 7,2 ± 0,2) para a lavagem dos poços; tampa branca.
- **Conjugado:** 1 frasco contendo 20 mL de anticorpo IgG anti-humana marcados com peroxidase no tampão fosfato (10 mM); de cor azul, pronto a usar; tampa preta.
- **Solução Substrato TMB:** 1 frasco contendo 15 mL de 3,3',5,5'-tetrametilbenzidina (TMB), < 0,1 %; pronto a usar; tampa amarela.
- **Controle Positivo:** 1 frasco contendo 2 mL controle; de cor amarela; pronto a usar; tampa vermelha; ≤ 0,02% (v/v) MIT.
- **Controle Cut-off:** 1 frasco contendo 3 mL controle; de cor amarela; pronto a usar; tampa verde; ≤ 0,02% (v/v) MIT.
- **Controle Negativo:** 1 frasco contendo 2 mL controle; de cor amarela; pronto a usar; tampa azul; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Para advertências de perigo e recomendaçaões de prudência ver capitulo 12.1.
Para substâncias potencialmente perigosas verifique a ficha de dados de segurança.

4.2. Materiais fornecidos

- 1 Película de cobertura
- 1 Instruções de uso
- 1 Layout da placa

4.3. Materiais e Equipamento necessários

- Fotômetro de Placa de Microtitulação ELISA, equipado para a medição da absorvância a 450/620 nm
- Incubadora 37 °C
- Equipamento manual ou automático para a lavagem das Placa de Microtitulação
- Pipetas para dispensar volumes entre 10 e 1000 µL
- Agitador de tubos tipo Vortex
- Água destilada
- Tubos descartáveis

5. ESTABILIDADE E ARMAZENAMENTO

Armazene o kit a 2...8 °C. Os reagentes abertos são estáveis até o prazo de validade impresso no rótulo quando armazenado a 2...8 °C.

6. PREPARAÇÃO DOS REAGENTES

É muito importante deixar todos os reagentes e amostras estabilizar à temperatura ambiente (20...25 °C) misturá-los antes de iniciar o teste!

6.1. Placa de Microtitulação

As tiras quebraveis são revestidas com antigénio Mycoplasma pneumoniae. Imediatamente após a remoção das tiras necessarias, as tiras restantes devem ser lacradas de novo na folha de alumínio juntamente com o saquinho de silicio fornecido e armazenadar a 2...8 °C.

6.2. Tampão de Lavagem (conc. 20x)

Diluir o Tampão de Lavagem 1+19; por exemplo. 10 mL do Tampão de Lavagem + 190 mL de água destilada. O Tampão de Lavagem diluído é estavel durante 5 dias à temperatura ambiente (20…25 °C). Caso apareça cristais no concentrado, aquecer a solução a 37 °C por exemplo, em banho Maria. Misture bem antes da diluição.

6.3. Solução Substrato TMB

A solução está pronta para uso e tem de ser armazenada à 2...8 °C, protegida da luz. A solução deve ser incolor ou poderia ter uma ligeira coloração azul claro. Se o substrato se transforma em azul, pode ter sido contaminado e não pode ser usado no teste.

7. COLHEITA E PREPARAÇÃO DAS AMOSTRAS

Usar com este ensaio amostras de soro ou plasma (citrato, heparina) humanos. Se o ensaio for realizado dentro de 5 dias após colheita da amostra, o espécime deve ser mantido a 2…8 °C; caso contrário devem ser alicotadas e armazenadas congeladas (-70...-20 °C). Se as amostras forem armazenadas congeladas, misturar bem as amostras descongeladas antes de testar. Evitar congelar e descongelar repetidamente.
Não é recomendada a inactivação por calor das amostras.

7.1. Diluição das amostras

Antes de testar todas as amostras devem ser diluídas 1 + 100 com Tampão de Diluição de Amostra IgG. Dispensar 10 µL de amostra e 1 mL de Tampão de Diluição de Amostra IgG em tubos para obter uma diluição 1 + 100 e misturar meticulosamente com um vortex.

8. PROCEDIMENTO DO ENSAIO

Por favor, ler atentamente as instruções de uso **antes** de realizar o teste. A fiabilidade dos resultados depende da adesão estrita ao as instruções de uso, conforme descritas. O procedimento de ensaio a seguir está validado apenas para o procedimento manual. Se o teste for realizado em sistemas automáticos para teste ELISA é recomendável aumentar os passos de lavagem de três até cinco e o volume do Tampão de Lavagem de 300 µL para 350 µL para evitar efeitos de lavagem. Preste atenção ao capítulo 12. Antes de iniciar o teste, o plano de distribuição e identificação de todas as amostras e calibradores/controles (é recomendado determinar em duplicidade) deve ser cuidadosamente estabelecido no Layout da placa fornecida no kit. Seleccionar o número necessário de tiras ou poços e inserir os mesmos no suporte.

Realizar todas as etapas do teste na ordem indicada e sem atrasos significativos.

Na pipetagem deve ser utilizada uma ponta limpa e descartável para dispensar cada controle e amostra.

Ajustar a incubadora para 37 ± 1 °C.

1. Dispensar 100 µL dos calibradores/controles e das amostras diluídas nos poços respectivos. Deixar o poço A1 vazio para o branco substrato.
2. Cobrir os poços com a película fornecida no kit.
3. **Incubar durante 1 hora ± 5 min a 37 ± 1 °C.**
4. Quando terminar a incubação, remover a película, aspirar o conteúdo dos poços e lavar cada poço três vezes com 300 µL de Tampão de Lavagem. Evitar que os poços de reacção transbordem. O intervalo entre a lavagem e a aspiração deve ser > 5 seg. No final, retirar cuidadosamente o fluido restante batendo delicadamente as tiras sobre papel absorvente, antes da próxima etapa!

   Nota: A lavagem é muito importante! Lavagem insuficiente resulta em baixa precisão e falsos resultados.
5. Dispensar 100 µL de Conjugado em todos os poços, excepto no poço do Branco substrato A1.
6. **Incubar durante 30 min à temperatura ambiente (20...25°C).** Não expor diretamente à luz solar.
7. Repetir a etapa 4.
8. Dispensar 100 µL de Solução Substrato TMB em todos os poços.
9. **Incubar durante exactamente 15 min à temperatura ambiente (20...25°C) e no escuro.** A cor azul devido a uma reacção enzimática.
10. Dispensar 100 µL de Solução de Bloqueio em todos os poços, pela mesma ordem e com a mesma velocidade a que foi dispensada a Solução Substrato TMB,desse modo uma mudança de cor de azul para amarelo ocorre.
11. Medir a absorvância a 450/620 nm dentro de 30 min após a adição da Solução de Bloqueio.

8.1. Medição

Ajustar o fotômetro para Placa de Microtitulação ELISA **a zero** usando o **Branco substrato .**

Se - devido à razões técnicas – o fotômetro para Placa de Microtitulação ELISA não puder ser ajustado a zero usando o Branco substrato, valor da absorvância deste deve ser subtraido de todos os outros valores de absorvância medidos de forma a obter resultados fiáveis!

Medir a absorvância de todos os poços a **450 nm** e registar os valores da absorvância para cada calibrador/controle e amostra no Layout da placa.

É recomendado fazer a medição **dicromática** usando como referência um comprimento de onda de 620 nm.

Se determinações duplas foram realizadas, calcular **os valores médios de absorvância**.

9. RESULTADOS

9.1. Critérios de validação do ensaio

Para que um ensaio seja considerado válido, estas Instruções de Uso devem ser rigorosamente seguidas, e os seguintes critérios devem ser cumpridos:

- **Branco substrato**: Valor de Absorvância **< 0,100**
- **Controle Negativo**: Valor de Absorvância **< 0,200 e < Cut-off**
- **Controle Cut-off**: Valor de Absorvância **0,150 – 1,300**
- **Controle Positivo**: Valor de Absorvância **> Cut-off**

Se estes critérios não forem cumpridos, o teste não é válido e deve ser repetido.

9.2. Cálculo dos Resultados

O Cut-off é o valor médio da absorvância das determinações do Controle Cut-off.

Exemplo: Valor da absorvância do Controle Cut-off 0,42 + valor da absorvância do Controle Cut-off 0,44 = 0,86: 2 = 0,43
Cut-off = 0,43

9.2.1. Resultados em Unidades [NTU]

$$\frac{\text{Valor da absorvância (média) da amostra} \times 10}{\text{Cut-off}} = \text{[Unidades NovaTec = NTU]}$$

Exemplo: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretação dos Resultados

Cut-off	10 NTU	-
Positivo	> 11 NTU	Os anticorpos contra o agente patogênico estão presente. Houve um contacto com o antigénio (patógeno resp vacina).
Zona cinzenta	9 – 11 NTU	Os anticorpos contra o agente patogênico não puderam ser claramente detectados. Recomenda-se a repetir o teste com uma amostra fresca em 2 a 4 semanas. Se o resultado estiver novamente dentro da zona cinzenta, a amostra é julgada como **negativa**.
Negativo	< 9 NTU	A amostra não contém os anticorpos contra o agente patogênico. Um contato prévio com o antígeno (patógeno resp. vacina) é improvável.
O diagnóstico de uma doença infecciosa não deve ser estabelecido com base num único resultado do teste. Um diagnóstico preciso deve ter em consideração a história clínica, a sintomatologia bem como dados serológicos. Em pacientes imunossuprimidos e recém-nascidos os dados serológicos têm apenas valor restrito.		

9.3.1. Isotipos de anticorpos e Estado da Infecção

Sorologia	Significado
IgM	Característica da resposta primária do anticorpo Alto título de IgM com baixo título de IgG: → sugere uma infecção muito recente ou aguda Raros: → persistente IgM
IgG	Característica da resposta secundária do anticorpo Podem persistir por vários anos Alto título de IgG com baixo título de IgM: → pode indicar uma infecção passada
IgA	Eles são produzidos a nível das mucosas em todo o corpo (⇒ barreira protectora) Geralmente são producidas no inicio infecção

10. CARACTERÍSTICAS DE DESEMPENHO ESPECÍFICAS

Os resultados referem-se aos grupos de amostras investigados; estas não são especificações garantidas.

Para mais informações sobre as características de desempenho específicas, por favor, entre em contato NovaTec Immundiagnostica GmbH.

10.1. Precisão

Intra ensaio	**n**	**Média (E)**	**CV (%)**
#1	24	0,434	3,80
#2	24	1,240	4,08
#3	24	1,635	6,03
Inter ensaio	**n**	**Média (NTU)**	**CV (%)**
#1	12	32,58	5,73
#2	12	31,56	13,32
#3	12	4,36	11,10

10.2. Especificidade Diagnóstica

A especificidade diagnóstica é definida como a probabilidade do ensaio ser negativo na ausência do analito específico.
É de 97,8% (95% Intervalo de confiança: 92,29% - 99,73%).

10.3. Sensibilidade Diagnóstica

A sensibilidade diagnóstica é definida como a probabilidade do ensaio ser positivo na presença do analito específico.
É de 100% (95% Intervalo de confiança: 96,87% - 100%).

10.4. Interferências

Não são observadas interferências com amostras hemolisadas, lipémicas ou ictéricas até uma concentração de hemoglobina de 10 mg/mL, de triglicerídeos de 5 mg/mL e de bilirrubina de 0,5 mg/mL.

10.5. Reacção cruzada

A investigação do painel de amostras com atividades de anticorpos em parâmetros com potencial de reação cruzada não revelou nenhuma evidencia de resultados falso-positivos devido a reações cruzadas.

11. LIMITAÇÕES DO PROCEDIMENTO

Contaminação bacteriana ou a repetição de ciclos de congelação-descongelação do espécime podem afectar os valores da absorvância.

12. PRECAUÇÕES E AVISOS

- O procedimento do teste, as informações, as precauções e avisos nas instruções para utilização têm de ser rigorosamente seguidas. O uso de kits de teste com analisadores e equipamento similar tem de ser validado. Qualquer alteração no desenho, composição e procedimento do teste bem como qualquer utilização em combinação com outros produtos não aprovados pelo fabricante não estão autorizados; o próprio utilizador é responsável por tais alterações. O fabricante não é legalmente responsável por resultados falsos e incidentes originados por estes motivos. O fabricante não é legalmente responsável por quaisquer resultados obtidos por análise visual das amostras dos pacientes.
- Apenas para uso no diagnóstico in-vitro.
- Todos os materiais de origem humana ou animal devem ser considerados e tratados como potencialmente infectantes.
- Todos os componentes de origem humana usados para a produção destes reagentes foram testados para anticorpos anti-HIV, anticorpos anti-HCV e HBsAg e foram considerados não-reactivos.
- Não trocar e/ou juntar reagentes ou Placa de Microtitulação de lotes de produção diferentes.
- Nenhuns reagentes de outros fabricantes devem ser usados juntamente com reagentes deste kit de teste.
- Não usar reagentes após a data de validade indicada no rótulo.
- Usar apenas pontas de pipeta, dispensadores e material de laboratório limpos.
- Não trocar as tampas dos frascos dos reagentes para evitar contaminação cruzada.
- Fechar firmemente os frascos dos reagentes imediatamente após a utilização para evitar evaporação e contaminação microbiana.
- Após a primeira abertura e armazenamento subsequente verificar se existe contaminação microbiana dos frascos do conjugado e dos calibradores/controles antes de utiliza-los novamente.
- Para evitar contaminação-cruzada e resultados falsamente elevados, pipetar as amostras dos pacientes e dispensar o reagentes precisamente nos poços sem salpicar.
- O ELISA é projetado apenas para pessoal qualificado seguindo os padrões de boas práticas de laboratório (Good Laboratory Practice, GLP).
- Para um controle de qualidade interno adicional cada laboratório deve utilizar amostras conhecidas.

12.1. Nota de segurança para reagentes que contenham substâncias perigosas

Os reagentes podem conter CMIT/MIT (3:1) ou MIT (ver capitulo 4.1)
Portanto, as seguintes advertências de perigo e recomendações de prudência aplicam-se.

Atenção

H317	Pode provocar uma reacção alérgica cutânea.
P261	Evitar respirar os aerossóis.
P280	Usar luvas de protecção/ vestuário de protecção.
P302+P352	SE ENTRAR EM CONTACTO COM A PELE: lavar abundantemente com sabão água.
P333+P313	Em caso de irritação ou erupção cutânea: consulte um médico.
P362+P364	Retirar a roupa contaminada e lavá-la antes de a voltar a usar.

Mais informações podem ser encontradas na ficha de dados de segurança.

12.2. Considerações de Eliminação

Resíduos de químicos e preparações são geralmente considerados como resíduos perigosos. A eliminação deste tipo de resíduos está regulada por leis e normativas nacionais e regionais. Contactar as autoridades locais ou empresas de gestão de resíduos as quais podem aconselhar sobre como eliminar resíduos perigosos.

13. INFORMAÇÃO DE PEDIDO

Prod. No.: MYCG0350 Mycoplasma pneumoniae IgG ELISA (96 Determinações)

BIBLIOGRAPHY / LITERATUR / BIBLIOGRAPHIE / BIBLIOGRAFIA / BIBLIOGRAFÍA / BIBLIOGRAFIA

Mycoplasmataceae (2009). In Herbert Hof, Rüdiger Dörries, Gernot Geginat: Medizinische Mikrobiologie. [Immunologie, Virologie, Bakteriologie, Mykologie, Parasitologie, klinische Infektiologie, Hygiene] ; 237 Tabellen. 4., vollst. überarb. und erw. Aufl. Stuttgart: Thieme (Duale Reihe), pp. 452–455.

Clyde, Wallace A., JR (1993): Clinical overview of typical Mycoplasma pneumoniae infections. In *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America* 17 Suppl 1, S32-6.

Foy, Hjordis M. (1993): Infections caused by Mycoplasma pneumoniae and possible carrier state in different populations of patients. In *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America* 17 Suppl 1, S37-46.

Jacobs, E. (1993): Serological diagnosis of Mycoplasma pneumoniae infections: a critical review of current procedures. In *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America* 17 Suppl 1, S79-82.

Kayser, Fritz H. (2005): Bacteria as Human Pathogens. In Fritz H. Kayser, Kurt A. Bienz, Johannes Eckert, Rolf M. Zinkernagel: Medical microbiology. Stuttgart, New York: Thieme (Thieme Flexibook), pp. 229–346.

O'Handley, John G.; Gray, Larry D. (1997): The incidence of Mycoplasma pneumoniae pneumonia. In *The Journal of the American Board of Family Practice* 10 (6), pp. 425–429.

Vikerfors, Tomas; Brodin, Glenn; Grandien, Monica; Hirschberg, Lotta; Krook, Aud; Pettersson, Carl-Axel (1988): Detection of specific IgM antibodies for the diagnosis of Mycoplasma pneumoniae infections: a clinical evaluation. In *Scandinavian journal of infectious diseases* 20 (6), pp. 601–610.

Wiegand, R. (1994): Mycoplasma pneumoniae. In Henning Brandis, Hans J. Eggers, W. Köhler, Gerhard Pulverer (Eds.): Lehrbuch der medizinischen Mikrobiologie. 7. Aufl. Stuttgart: Fischer; G. Fischer.

ABBREVIATIONS / ABKÜRZUNGEN / ABRÉVIATIONS / ABBREVIAZIONI / ABREVIACIÓNES / ABREVIATURAS

CMIT	5-chloro-2-methyl-4-isothiazolin-3-one
MIT	2-methyl-2H-isothiazol-3-one

SYMBOLS KEY / SYMBOLSCHLÜSSEL / EXPLICATION DES SYMBOLES / LEGENDA / SIMBOLOS / TABELA DE SIMBOLOS

	Manufactured by / Hergestellt von / Fabriqué par / Prodotto da / Fabricado por / Fabricado por
IVD	In Vitro Diagnostic Medical Device / In Vitro Diagnosticum / Dispositif médical de diagnostic in vitro / Diagnostico in vitro / Producto para diagnóstico In vitro / Dispositivo Médico para Diagnóstico In Vitro
LOT	Lot Number / Chargenbezeichnung / Numéro de lot / Lotto / Número de lote / Número de lote
	Expiration Date / Verfallsdatum / Date de péremption / Scadenza / Fecha de caducidad / Data de Validade
	Storage Temperature / Lagertemperatur / Température de conservation / Temperatura di conservazione / Temperatura de almacenamiento / Temperatura de Armazenamento
CE	CE Mark / CE-Zeichen / Marquage CE / Marchio CE / Marca CE / Marca CE
REF	Catalogue Number / Katalog Nummer / Référence du catalogue / Numero di codice / Número de Catálogo / Número de Catálogo
	Consult Instructions for Use / Arbeitsanleitung beachten / Consulter la notice d'utilisation / Consultare le istruzioni per l'uso / Consulte las Instrucciones de Uso / Consultar as Instruções de Utilização
MTP	Microtiterplate / Mikrotiterplatte / Plaque de Microtitrage / Piastre di Microtitolazione / Placa de Microtitulación / Placa de Microtitulación
CONJ	Conjugate / Konjugat / Conjugué / Coniugato / Conjugado / Conjugado
CONTROL | -	Negative Control / Negativkontrolle / Contrôle Négatif / Controllo Negativo / Control Negativo / Controle Negativo
CONTROL | +	Positive Control / Positivkontrolle / Contrôle Positif / Controllo Positivo / Control Positivo / Controle Positivo
CUT OFF	Cut-off Control / Cut-off Kontrolle / Contrôle Cut-off / Controllo Cut-off / Control Cut-off / Controle Cut-off
DIL | G	IgG Sample Dilution Buffer / IgG-Probenverdünnungspuffer / Tampon de Dilution d'Échantillon IgG / Tampone di Diluizione del Campione IgG / Tampón de Dilución de Muestras IgG/ Tampão de Diluição de Amostra IgG
SOLN | STOP	Stop Solution / Stopplösung / Solution d'Arrêt / Soluzione Bloccante / Solución de Parada/ Solução de Bloqueio
SUB | TMB	TMB Substrate Solution / TMB-Substratlösung / Solution de Substrat TMB / Soluzione Substrato TMB / Solución de Sustrato de TMB / Solução Substrato TMB
WASH | BUF | 20x	Washing Buffer 20x concentrated / Waschpuffer 20x konzentriert / Tampon de Lavage concentré 20 x / Tampone di Lavaggio concentrazione x20 / Tampón de Lavado concentrado x20 / Tampão de Lavagem concentrada 20x
	Contains sufficient for "n" tests / Ausreichend für "n" Tests / Contenu suffisant pour "n" tests / Contenuto sufficiente per "n" saggi / Contenido suficiente para "n" tests / Conteúdo suficiente para "n" testes

SUMMARY OF TEST PROCEDURE / KURZANLEITUNG TESTDURCHFÜHRUNG / RÉSUMÉ DE LA PROCEDURE DE TEST / SCHEMA DELLA PROCEDURA / RESUMEN DE LA TÉCNICA / RESUMO DO PROCEDIMENTO DE TESTE

SCHEME OF THE ASSAY

Mycoplasma pneumoniae IgG ELISA

Test Preparation

Prepare reagents and samples as described. Establish the distribution and identification plan for all samples and standards/controls on the plate layout supplied in the kit. Select the required number of microtiter strips or wells and insert them into the holder.

Assay Procedure

	Substrate Blank (A1)	Negative Control	Cut-off Control	Positive Control	Sample (diluted 1+100)
Negative Control	-	100 µL	-	-	-
Cut-off Control	-	-	100 µL	-	-
Positive Control	-	-	-	100 µL	-
Sample (diluted 1+100)	-	-	-	-	100 µL
Cover wells with foil supplied in the kit **Incubate for 1 h at 37 ± 1 °C** Wash each well three times with 300 µL of Washing Buffer					
Conjugate	-	100 µL	100 µL	100 µL	100 µL
Incubate for 30 min at room temperature (20...25 °C) Do not expose to direct sunlight Wash each well three times with 300 µL of Washing Buffer					
TMB Substrate Solution	100 µL	100 µL	100 µL	100 µL	100 µL
Incubate for exactly 15 min at room temperature (20...25 °C) in the dark					
Stop Solution	100 µL	100 µL	100 µL	100 µL	100 µL
Photometric measurement at 450 nm (reference wavelength: 620 nm)					

NovaTec Immundiagnostica GmbH

Waldstraße 23 A6
63128 Dietzenbach, Germany

Tel.: +49 (0) 6074-48760 Fax: +49 (0) 6074-487629
Email: info@NovaTec-ID.com
Internet: www.NovaTec-ID.com

NovaTec Immundiagnostica GmbH

NovaLisa®

Mycoplasma pneumoniae IgM

ELISA

CE

Only for in-vitro diagnostic use

Product Number: MYCM0350 (96 Determinations)

ENGLISH

1. INTRODUCTION

The mycoplasms belong to the class Mollicutes comprising three distinct families and four genera, one of which is Mycoplasma with over 60 species. Mycoplasmae are the smallest freeliving organisms known (300 to 500 nm in diameter) and unlike regular bacteria they lack a cell wall. Mycoplasms are extracellular parasites, especially on mucous membranes, which can cause infections in hu-mans, animals, plants, and cell cultures. Mycoplasma pneumoniae is primarily a respiratory pathogen (obligat) in humans involving the nasopharynx, throat, trachea, bronchi, bronchioles, and alveoli. Other Mycoplasmae, M. buccale, M. faucium, M. orale and M. salivarium are commensals in the oral cavity. Mycoplasma hominis and Ureaplasma urealyticum inhabit primarily the genital tract and may act as opportunistic invaders. M. pneumoniae is by far the most important pathogen of this group. Infection with M. pneumoniae occurs worldwide, its epidemiology has been studied primarily in the USA, Europe, and Japan. Infections are endemic in larger urban areas, and epidemic increases are observed at varying intervalls. Mycoplasma pneumoniae has been estimated to cause 15-20% of all pneumoniae; the rate is highest in children and young adults. 74% of infections with M. pneumoniae are asymptomatic, reinfection may occur. Naturally acquired immunity to infection with M. pneumoniae appears to be of limited duration (2-3 years).

Species	Disease	Symptoms (e.g.)	Transmission route
M. pneumoniae	Respiratory diseases by Mycoplasma pneumoniae	Fever, headache, and a persistent cough. Respiratory tract disease: from asymptomatic infection to colds, pharyngitis, bronchitis, croup, tracheobronchitis, pneumonitis and primary atypical pneumonia	Transmitted by aerosol droplets

Infection or presence of pathogen may be identified by:

- Microscopy
- Serology: e.g. ELISA

2. INTENDED USE

The Mycoplasma pneumoniae IgM ELISA is intended for the qualitative determination of IgM class antibodies against Mycoplasma pneumoniae in human serum or plasma (citrate, heparin).

3. PRINCIPLE OF THE ASSAY

The qualitative immunoenzymatic determination of specific antibodies is based on the ELISA (Enzyme-linked Immunosorbent Assay) technique.
Microtiterplates are coated with specific antigens to bind corresponding antibodies of the sample. After washing the wells to remove all unbound sample material a horseradish peroxidase (HRP) labelled conjugate is added. This conjugate binds to the captured antibodies. In a second washing step unbound conjugate is removed. The immune complex formed by the bound conjugate is visualized by adding Tetramethylbenzidine (TMB) substrate which gives a blue reaction product.
The intensity of this product is proportional to the amount of specific antibodies in the sample. Sulphuric acid is added to stop the reaction. This produces a yellow endpoint colour. Absorbance at 450/620 nm is read using an ELISA Microtiterplate reader.

4. MATERIALS

4.1. Reagents supplied

- **Microtiterplate:** 12 break-apart 8-well snap-off strips coated with Mycoplasma pneumoniae antigens; in resealable aluminium foil.
- **IgM Sample Dilution Buffer:** 1 bottle containing 100 mL of phosphate buffer (10 mM) for sample dilution; pH 7.2 ± 0.2; anti-human IgG (RF Absorbent); coloured green; ready to use; white cap; ≤ 0.0015% (v/v) CMIT/ MIT (3:1).
- **Stop Solution:** 1 bottle containing 15 mL sulphuric acid, 0.2 mol/L; ready to use; red cap.
- **Washing Buffer (20x conc.):** 1 bottle containing 50 mL of a 20-fold concentrated phosphate buffer (0.2 M), pH 7.2 ± 0.2, for washing the wells; white cap.
- **Conjugate:** 1 bottle containing 20 mL of peroxidase labelled antibody to human IgM in phosphate buffer (10 mM); coloured red; ready to use; black cap.
- **TMB Substrate Solution:** 1 bottle containing 15 mL 3,3',5,5'-tetramethylbenzidine (TMB), < 0.1 %; ready to use; yellow cap.
- **Positive Control:** 1 vial containing 2 mL control; coloured yellow; ready to use; red cap; ≤ 0.02% (v/v) MIT.
- **Cut-off Control:** 1 vial containing 3 mL control; coloured yellow; ready to use; green cap; ≤ 0.02% (v/v) MIT.
- **Negative Control:** 1 vial containing 2 mL control; coloured yellow; ready to use; blue cap; ≤ 0.0015% (v/v) CMIT/ MIT (3:1).

For hazard and precautionary statements see 12.1
For potential hazardous substances please check the safety data sheet.

4.2. Materials supplied

- 1 Cover foil
- 1 Instruction for use (IFU)
- 1 Plate layout

4.3. Materials and Equipment needed

- ELISA Microtiterplate reader, equipped for the measurement of absorbance at 450/620 nm
- Incubator 37 °C
- Manual or automatic equipment for rinsing Microtiterplates
- Pipettes to deliver volumes between 10 and 1000 µL
- Vortex tube mixer
- Distilled water
- Disposable tubes

5. STABILITY AND STORAGE

Store the kit at 2...8 °C. The opened reagents are stable up to the expiry date stated on the label when stored at 2...8 °C.

6. REAGENT PREPARATION

It is very important to bring all reagents and samples to room temperature (20…25 °C) and mix them before starting the test run!

6.1. Microtiterplate

The break-apart snap-off strips are coated with Mycoplasma pneumoniae antigens. Immediately after removal of the strips, the remaining strips should be resealed in the aluminium foil along with the desiccant supplied and stored at 2...8 °C.

6.2. Washing Buffer (20x conc.)

Dilute Washing Buffer 1 + 19; e. g. 10 mL Washing Buffer + 190 mL distilled water. The diluted buffer is stable for 5 days at room temperature (20…25 °C). In case crystals appear in the concentrate, warm up the solution to 37 °C e.g. in a water bath. Mix well before dilution.

6.3. TMB Substrate Solution

The reagent is ready to use and has to be stored at 2...8 °C, away from the light. The solution should be colourless or could have a slight blue tinge. If the substrate turns into blue, it may have become contaminated and should be thrown away.

7. SAMPLE COLLECTION AND PREPARATION

Use human serum or plasma (citrate, heparin) samples with this assay. If the assay is performed within 5 days after sample collection, the samples should be kept at 2...8 °C; otherwise they should be aliquoted and stored deep-frozen (-70…-20 °C). If samples are stored frozen, mix thawed samples well before testing. Avoid repeated freezing and thawing.
Heat inactivation of samples is not recommended.

7.1. Sample Dilution

Before assaying, all samples should be diluted 1+100 with IgM Sample Dilution Buffer. Dispense 10 µL sample and 1 mL IgM Sample Dilution Buffer into tubes to obtain a 1+100 dilution and thoroughly mix with a Vortex.

8. ASSAY PROCEDURE

Please read the instruction for use carefully **before** performing the assay. Result reliability depends on strict adherence to the instruction for use as described. The following test procedure is only validated for manual procedure. If performing the test on ELISA automatic systems we recommend increasing the washing steps from three up to five and the volume of Washing Buffer from 300 µL to 350 µL to avoid washing effects. Pay attention to chapter 12. Prior to commencing the assay, the distribution and identification plan for all samples and standards/controls (duplicates recommended) should be carefully established on the plate layout supplied in the kit. Select the required number of microtiter strips or wells and insert them into the holder.

Perform all assay steps in the order given and without any delays.

A clean, disposable tip should be used for dispensing each standard/control and sample.

Adjust the incubator to 37 ± 1 °C.

1. Dispense 100 µL standards/controls and diluted samples into their respective wells. Leave well A1 for the Substrate Blank.
2. Cover wells with the foil supplied in the kit.
3. **Incubate for 1 hour ± 5 min at 37 ± 1 °C.**
4. When incubation has been completed, remove the foil, aspirate the content of the wells and wash each well three times with 300 µL of Washing Buffer. Avoid overflows from the reaction wells. The interval between washing and aspiration should be > 5 sec. At the end carefully remove remaining fluid by tapping strips on tissue paper prior to the next step!

   Note: Washing is important! Insufficient washing results in poor precision and false results.
5. Dispense 100 µL Conjugate into all wells except for the Substrate Blank well A1.
6. **Incubate for 30 min at room temperature (20...25 °C).** Do not expose to direct sunlight.
7. Repeat step 4.
8. Dispense 100 µL TMB Substrate Solution into all wells.
9. **Incubate for exactly 15 min at room temperature (20...25 °C) in the dark.** A blue colour occurs due to an enzymatic reaction.
10. Dispense 100 µL Stop Solution into all wells in the same order and at the same rate as for the TMB Substrate Solution, thereby a colour change from blue to yellow occurs.
11. Measure the absorbance at 450/620 nm within 30 min after addition of the Stop Solution.

8.1. Measurement

Adjust the ELISA Microtiterplate reader **to zero** using the **Substrate Blank**.

If - due to technical reasons - the ELISA Microtiterplate reader cannot be adjusted to zero using the Substrate Blank, subtract its absorbance value from all other absorbance values measured in order to obtain reliable results!

Measure the absorbance of all wells at **450 nm** and record the absorbance values for each standard/control and sample in the plate layout.

Bichromatic measurement using a reference wavelength of 620 nm is recommended.

Where applicable calculate the mean absorbance values of all duplicates.

9. RESULTS

9.1. Run Validation Criteria

In order for an assay run to be considered valid, these Instructions for Use have to be strictly followed and the following criteria must be met:

- **Substrate Blank**: Absorbance value **< 0.100**
- **Negative Control**: Absorbance value **< 0.200 and < Cut-off**
- **Cut-off Control**: Absorbance value **0.150 – 1.300**
- **Positive Control**: Absorbance value **> Cut-off**

If these criteria are not met, the test is not valid and must be repeated.

9.2. Calculation of Results

The Cut-off is the mean absorbance value of the Cut-off Control determinations.

Example: Absorbance value Cut-off Control 0.44 + absorbance value Cut-off control 0.42 = 0.86 / 2 = 0.43
Cut-off = 0.43

9.2.1. Results in Units [NTU]

$$\frac{\text{Sample (mean) absorbance value} \times 10}{\text{Cut-off}} = \text{[NovaTec Units = NTU]}$$

Example: $\frac{1.591 \times 10}{0.43} = 37$ NTU (Units)

9.3. Interpretation of Results

Cut-off	10 NTU	-
Positive	> 11 NTU	Antibodies against the pathogen are present. There has been a contact with the antigen (pathogen resp. vaccine).
Equivocal	9 – 11 NTU	Antibodies against the pathogen could not be detected clearly. It is recommended to repeat the test with a fresh sample in 2 to 4 weeks. If the result is equivocal again the sample is judged as **negative**.
Negative	< 9 NTU	The sample contains no antibodies against the pathogen. A previous contact with the antigen (pathogen resp. vaccine) is unlikely.
Diagnosis of an infectious disease should not be established on the basis of a single test result. A precise diagnosis should take into consideration clinical history, symptomatology as well as serological data. In immunocompromised patients and newborns serological data only have restricted value.		

9.3.1. Antibody Isotypes and State of Infection

Serology	Significance
IgM	Characteristic of the primary antibody response High IgM titer with low IgG titer: → suggests a current or very recent infection Rare: → persisting IgM
IgG	Characteristic of the secondary antibody response May persist for several years High IgG titer with low IgM titer: → may indicate a past infection
IgA	Produced in mucosal linings throughout the body (⇒ protective barrier) Usually produced early in the course of the infection

10. SPECIFIC PERFORMANCE CHARACTERISTICS

The results refer to the groups of samples investigated; these are not guaranteed specifications.

For further information about the specific performance characteristics please contact NovaTec Immundiagnostica GmbH.

10.1. Precision

Intraassay	**n**	**Mean (E)**	**CV (%)**
#1	24	0.526	5.02
#2	24	0.905	6.20
#3	24	1.074	6.34
Interassay	**n**	**Mean (NTU)**	**CV (%)**
#1	12	19.56	7.08
#2	12	18.16	13.13
#3	12	5.28	7.31

10.2. Diagnostic Specificity

The diagnostic specificity is defined as the probability of the assay of scoring negative in the absence of the specific analyte.

It is 99.29% (95% confidence interval: 96.11% - 99.98%).

10.3. Diagnostic Sensitivity

The diagnostic sensitivity is defined as the probability of the assay of scoring positive in the presence of the specific analyte.

It is 100% (95% confidence interval: 95.01% - 100%).

10.4. Interferences

Interferences with hemolytic, lipemic or icteric samples are not observed up to a concentration of 10 mg/mL hemoglobin, 5 mg/mL triglycerides and 0.5 mg/mL bilirubin.

10.5. Cross Reactivity

Investigation of a sample panel with antibody activities to potentially cross-reacting parameters did not reveal evidence of false-positive results due to cross-reactions.

11. LIMITATIONS OF THE PROCEDURE

Bacterial contamination or repeated freeze-thaw cycles of the sample may affect the absorbance values.

12. PRECAUTIONS AND WARNINGS

- The test procedure, the information, the precautions and warnings in the instructions for use have to be strictly followed. The use of the testkits with analyzers and similar equipment has to be validated. Any change in design, composition and test procedure as well as for any use in combination with other products not approved by the manufacturer is not authorized; the user himself is responsible for such changes. The manufacturer is not liable for false results and incidents for these reasons. The manufacturer is not liable for any results by visual analysis of the patient samples.
- Only for in-vitro diagnostic use.
- All materials of human or animal origin should be regarded and handled as potentially infectious.
- All components of human origin used for the production of these reagents have been tested for anti-HIV antibodies, anti-HCV antibodies and HBsAg and have been found to be non-reactive.
- Do not interchange reagents or Microtiterplates of different production lots.
- No reagents of other manufacturers should be used along with reagents of this test kit.
- Do not use reagents after expiry date stated on the label.
- Use only clean pipette tips, dispensers, and lab ware.
- Do not interchange screw caps of reagent vials to avoid cross-contamination.
- Close reagent vials tightly immediately after use to avoid evaporation and microbial contamination.
- After first opening and subsequent storage check conjugate and standard/control vials for microbial contamination prior to further use.
- To avoid cross-contamination and falsely elevated results pipette patient samples and dispense reagents without splashing accurately into the wells.
- The ELISA is only designed for qualified personnel following the standards of good laboratory practice (GLP).
- For further internal quality control each laboratory should additionally use known samples.

12.1. Safety note for reagents containing hazardous substances

Reagents may contain CMIT/MIT (3:1) or MIT (refer to 4.1)
Therefore, the following hazard and precautionary statements apply.

Warning		
	H317	May cause an allergic skin reaction.
	P261	Avoid breathing spray
	P280	Wear protective gloves/ protective clothing.
	P302+P352	IF ON SKIN: Wash with plenty of soap and water.
	P333+P313	If skin irritation or rash occurs: Get medical advice/ attention.
	P362+P364	Take off contaminated and Wash it before reuse.

Further information can be found in the safety data sheet.

12.2. Disposal Considerations

Residues of chemicals and preparations are generally considered as hazardous waste. The disposal of this kind of waste is regulated through national and regional laws and regulations. Contact your local authorities or waste management companies which will give advice on how to dispose hazardous waste.

13. ORDERING INFORMATION

Prod. No.: MYCM0350 Mycoplasma pneumoniae IgM ELISA (96 Determinations)

DEUTSCH

1. EINLEITUNG

Die Mykoplasmen gehören zur Klasse der Mollicutes, welche drei unterschiedliche Familien und vier Genera einschließt. Eines davon ist Mycoplasma mit über 60 Arten. Mycoplasmen sind die kleinsten bekannten frei lebenden Organismen (300 bis 500 nm Durchmesser). Die besitzen im Gegensatz zu Bakterien keine Zellwand. Mycoplasmen sind extrazelluläre Parasiten speziell der Schleimhäute und können bei Menschen, Tieren, Pflanzen und in Zellkulturen Infektionen hervorrufen. Mycoplasma pneumoniae ist in erster Linie ein obligat pathogener Erreger respiratorischer Erkrankungen unter Einbeziehung von Nasopharynx, Rachen, Luftröhre, Bronchien, Bronchiolen und Aveolen. Andere Mycoplasmen (M. buccale, M. faucium, M. orale, M. salivarium) sind Kommensalen in der Mundhöhle. Mycoplasma hominis und Ureaplasma urealyticum besiedeln vorwiegend den Genitaltrakt und können als opportunistische Invasoren auftreten. Mycoplasma pneumoniae ist mit Abstand das wichtigste Pathogen dieser Gruppe. Infektionen mit M. pneumoniae treten weltweit auf, deren Epidemiologie ist hauptsächlich in den USA, Europa und Japan untersucht worden. In größeren urbanen Regionen sind die Infektionen endemisch und epidemieartige Zuwächse werden in unregelmäßigen Abständen beobachtet. Es wird geschätzt, dass M. pneumoniae 15 bis 20 % aller Pneumonien verursacht; die Rate ist bei Kindern und jungen Erwachsenen am größten. 74 % der Infektionen mit M. pneumoniae verlaufen symptomlos; Reinfektionen können auftreten. Eine natürlich erworbene Immunität gegen Infektionen mit M. pneumoniae hält nur für 2 bis 3 Jahre an.

Spezies	Erkrankung	Symptome (z.B.)	Infektionsweg
M. pneumoniae	Erkrankungen der Atemwege duch Mycoplasma pneumoniae	Fieber, Kopfschmerzen und hartnäckiger Husten. Atemwegserkrankung, von asymptomatischer Infektion über Erkältungskrankheit, Pharyngitis, Bronchitis, Krupp, Tracheobronchitis, Pneumonitis und primäre atypische Pneumonie	Aerogen durch Tröpfchen

Nachweis des Erregers bzw. der Infektion durch:

- Mikroskopie
- Serologie: z.B. ELISA

2. VERWENDUNGSZWECK

Der Mycoplasma pneumoniae IgM ELISA ist für den qualitativen Nachweis spezifischer IgM-Antikörper gegen Mycoplasma pneumoniae in humanem Serum oder Plasma (Citrat, Heparin) bestimmt.

3. TESTPRINZIP

Die qualitative immunenzymatische Bestimmung von spezifischen Antikörpern beruht auf der ELISA (Enzyme-linked Immunosorbent Assay) Technik.
Die Mikrotiterplatten sind mit spezifischen Antigenen beschichtet, an welche die korrespondierenden Antikörper aus der Probe binden. Ungebundenes Probenmaterial wird durch Waschen entfernt. Anschließend erfolgt die Zugabe eines Meerettich-Peroxidase (HRP) Konjugates. Dieses Konjugat bindet an die an der Mikrotiterplatte gebundenen spezifischen Antikörper. In einem zweiten Waschschritt wird ungebundenes Konjugat entfernt. Die Immunkomplexe, die durch die Bindung des Konjugates entstanden sind, werden durch die Zugabe von Tetramethylbenzidin (TMB)-Substratlösung und eine resultierende Blaufärbung nachgewiesen.
Die Intensität des Reaktionsproduktes ist proportional zur Menge der spezifischen Antikörper in der Probe. Die Reaktion wird mit Schwefelsäure gestoppt, wodurch ein Farbumschlag von blau nach gelb erfolgt. Die Absorption wird bei 450/620 nm mit einem Mikrotiterplatten-Photometer gemessen.

4. MATERIALIEN

4.1. Mitgelieferte Reagenzien

- **Mikrotiterplatte:** 12 teilbare 8er-Streifen, beschichtet mit Mycoplasma pneumoniae Antigenen; in wieder verschließbarem Aluminiumbeutel.
- **IgM-Probenverdünnungspuffer:** 1 Flasche mit 100 mL Phosphatpuffer (10 mM) zur Probenverdünnung; pH 7,2 ± 0,2; anti-human IgG (RF- Absorbens); grün gefärbt; gebrauchsfertig; weiße Verschlusskappe; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Stopplösung:** 1 Flasche mit 15 mL Schwefelsäure, 0,2 mol/L; gebrauchsfertig; rote Verschlusskappe.
- **Waschpuffer (20x konz.):** 1 Flasche mit 50 mL eines 20-fach konzentrierten Phosphatpuffers (0,2 M), zum Waschen der Kavitäten; pH 7,2 ± 0,2; weiße Verschlusskappe.
- **Konjugat:** 1 Flasche mit 20 mL Peroxidase-konjugierten Antikörpern gegen humanes IgM in Phosphatpuffer (10 mM); rot gefärbt; gebrauchsfertig; schwarze Verschlusskappe.
- **TMB-Substratlösung:** 1 Flasche mit 15 mL 3,3`,5,5`-Tetramethylbenzidin (TMB), < 0,1 %; gebrauchsfertig; gelbe Verschlusskappe.
- **Positivkontrolle:** 1 Fläschchen mit 2 mL Kontrolle; gelb gefärbt; rote Verschlusskappe; gebrauchsfertig; ≤ 0,02% (v/v) MIT.
- **Cut-off Kontrolle:** 1 Fläschchen mit 3 mL Kontrolle; gelb gefärbt; grüne Verschlusskappe; gebrauchsfertig; ≤ 0,02% (v/v) MIT.
- **Negativkontrolle:** 1 Fläschchen mit 2 mL Kontrolle; gelb gefärbt; blaue Verschlusskappe; gebrauchsfertig; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Für Gefahren- und Sicherheitshinweise siehe 12.1.
Für potenzielle Gefahrstoffe überprüfen Sie bitte das Sicherheitsdatenblatt.

4.2. Mitgeliefertes Zubehör

- 1 selbstklebende Abdeckfolie
- 1 Arbeitsanleitung
- 1 Plattenlayout

4.3. Erforderliche Materialien und Geräte

- Mikrotiterplatten-Photometer mit Filtern 450/620 nm
- Inkubator 37 °C
- Manuelle oder automatische Waschvorrichtung für Mikrotiterplatten
- Mikropipetten (10 - 1000 µL)
- Vortex-Mischer
- Destilliertes Wasser
- Plastikröhrchen für den einmaligen Gebrauch

5. STABILITÄT UND LAGERUNG

Testkit bei 2...8 °C lagern. Die geöffneten Reagenzien sind bis zu den auf den Etiketten angegebenen Verfallsdaten verwendbar, wenn sie bei 2...8 °C gelagert werden.

6. VORBEREITUNG DER REAGENZIEN

Es ist sehr wichtig, alle Reagenzien und Proben vor ihrer Verwendung auf Raumtemperatur (20...25 °C) zu bringen und zu mischen!

6.1. Mikrotiterplatte

Die abbrechbaren Streifen sind mit Mycoplasma pneumoniae Antigenen beschichtet. Nicht verbrauchte Vertiefungen im Aluminiumbeutel zusammen mit dem Trockenmittel sofort wieder verschließen und bei 2...8 °C lagern.

6.2. Waschpuffer (20x konz.)

Der Waschpuffer ist im Verhältnis 1 + 19 zu verdünnen; z.B. 10 mL Waschpuffer + 190 mL destilliertes Wasser.
Der verdünnte Puffer ist bei Raumtemperatur (20…25 °C) 5 Tage haltbar. Sollten Kristalle im Konzentrat auftreten, die Lösung z.B. in einem Wasserbad auf 37 °C erwärmen und vor dem Verdünnen gut mischen.

6.3. TMB-Substratlösung

Die gebrauchsfertige Lösung ist bei 2...8 °C vor Licht geschützt aufzubewahren. Die Lösung ist farblos, kann aber auch leicht hellblau sein. Sollte die TMB-Substratlösung blau sein, ist sie kontaminiert und kann nicht im Test verwendet werden.

7. ENTNAHME UND VORBEREITUNG DER PROBEN

Es sollten humane Serum- oder Plasmaproben (Citrat, Heparin) verwendet werden. Werden die Bestimmungen innerhalb von 5 Tagen nach Blutentnahme durchgeführt, können die Proben bei 2...8 °C aufbewahrt werden, sonst aliquotieren und tiefgefrieren (-70…-20 °C). Wieder aufgetaute Proben vor dem Verdünnen gut schütteln. Wiederholtes Tiefgefrieren und Auftauen vermeiden!
Hitzeinaktivierung der Proben wird nicht empfohlen.

7.1. Probenverdünnung

Proben vor Testbeginn im Verhältnis 1 + 100 mit IgM-Probenverdünnungspuffer verdünnen, z. B. 10 µL Probe und 1 mL IgM-Probenverdünnungspuffer in die entsprechenden Röhrchen pipettieren, um eine Verdünnung von 1 + 100 zu erhalten; gut mischen (Vortex).

8. TESTDURCHFÜHRUNG

Arbeitsanleitung **vor** Durchführung des Tests sorgfältig lesen. Für die Zuverlässigkeit der Ergebnisse ist es notwendig, die Arbeitsanleitung genau zu befolgen. Die folgende Testdurchführung ist für die manuelle Methode validiert. Beim Arbeiten mit ELISA Automaten empfehlen wir, um Wascheffekte auszuschließen, die Zahl der Waschschritte von drei auf bis zu fünf und das Volumen des Waschpuffers von 300 µL auf 350 µL zu erhöhen. Kapitel 12 beachten. Vor Testbeginn auf dem mitgelieferten Plattenlayout die Verteilung bzw. Position der Proben und der Standards/Kontrollen (Doppelbestimmung empfohlen) genau festlegen. Die benötigte Anzahl von Mikrotiterstreifen (Kavitäten) in den Streifenhalter einsetzen.

Den Test in der angegebenen Reihenfolge und ohne Verzögerung durchführen.

Für jeden Pipettierschritt der Standards/Kontrollen und Proben saubere Einmalspitzen verwenden.

Den Inkubator auf 37 ± 1 °C einstellen.

1. Je 100 µL Standards/Kontrollen und vorverdünnte Proben in die entsprechenden Vertiefungen pipettieren. Vertiefung A1 ist für den Substratleerwert vorgesehen.
2. Die Streifen mit der mitgelieferten Abdeckfolie bedecken.
3. **1 h ± 5 min bei 37 ± 1 °C inkubieren.**
4. Am Ende der Inkubationszeit Abdeckfolie entfernen und die Inkubationsflüssigkeit aus den Teststreifen absaugen. Anschließend dreimal mit 300 µL Waschpuffer waschen. Überfließen von Flüssigkeit aus den Vertiefungen vermeiden. Das Intervall zwischen Waschen und Absaugen sollte > 5 sec betragen. Nach dem Waschen die Teststreifen auf Fließpapier ausklopfen, um die restliche Flüssigkeit zu entfernen.

   Beachte: Der Waschvorgang ist wichtig, da unzureichendes Waschen zu schlechter Präzision und falschen Messergebnissen führt!
5. 100 µL Konjugat in alle Vertiefungen, mit Ausnahme der für die Berechnung des Leerwertes A1 vorgesehenen, pipettieren.
6. **30 min bei Raumtemperatur (20...25 °C) inkubieren.** Nicht dem direkten Sonnenlicht aussetzen.
7. Waschvorgang gemäß Punkt 4 wiederholen.
8. 100 µL TMB-Substratlösung in alle Vertiefungen pipettieren.
9. **Genau 15 min im Dunkeln bei Raumtemperatur (20...25 °C) inkubieren.** Bei enzymatischer Reaktion findet eine Blaufärbung statt.
10. In alle Vertiefungen 100 µL Stopplösung in der gleichen Reihenfolge und mit den gleichen Zeitintervallen wie bei Zugabe der TMB-Substratlösung pipettieren, dadurch erfolgt ein Farbwechsel von blau nach gelb.
11. Die Extinktion der Lösung in jeder Vertiefung bei 450/620 nm innerhalb von 30 min nach Zugabe der Stopplösung messen.

8.1. Messung

Mit Hilfe des Substratleerwertes den **Nullabgleich** des Mikrotiterplatten-Photometers vornehmen.

Falls diese Eichung aus technischen Gründen nicht möglich ist, muss nach der Messung der Extinktionswert des Substratleerwertes von allen anderen Extinktionswerten subtrahiert werden, um einwandfreie Ergebnisse zu erzielen!

Extinktion aller Kavitäten bei **450 nm** messen und die Messwerte der Standards/Kontrollen und Proben in das Plattenlayout eintragen.

Eine **bichromatische** Messung mit der Referenzwellenlänge 620 nm wird empfohlen.

Falls Doppel- oder Mehrfachbestimmungen durchgeführt wurden, den **Mittelwert der Extinktionswerte** berechnen.

9. BERECHNUNG DER ERGEBNISSE

9.1. Testgültigkeitskriterien

Damit ein Testlauf als valide betrachtet werden kann, muss diese Gebrauchsanweisung strikt befolgt werden, und die folgenden Kriterien müssen erfüllt sein:

- **Substrat-Leerwert**: Extinktionswert **< 0,100**
- **Negativkontrolle**: Extinktionswert **< 0,200 und < Cut-off**
- **Cut-off Kontrolle**: Extinktionswert **0,150 – 1,300**
- **Positivkontrolle**: Extinktionswert **> Cut-off**

Sind diese Kriterien nicht erfüllt, ist der Testlauf ungültig und muss wiederholt werden.

9.2. Messwertberechnung

Der Cut-off ergibt sich aus dem Mittelwert der gemessenen Extinktionen der Cut-off Kontrolle.

Beispiel: 0,44 OD Cut-off Kontrolle + 0,42 OD Cut-off Kontrolle = 0,86: 2 = 0,43

Cut-off = 0,43

9.2.1. Ergebnisse in Einheiten [NTU]

$$\frac{\text{Mittlere Extinktion der Probe} \times 10}{\text{Cut-off}} = \text{[NovaTec Einheiten = NTU]}$$

Beispiel: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretation der Ergebnisse

Cut-off	10 NTU	-
Positiv	> 11 NTU	Es liegen Antikörper gegen den Erreger vor. Ein Kontakt mit dem Antigen (Erreger bzw. Impfstoff) hat stattgefunden.
Grenzwertig	9 – 11 NTU	Antikörper gegen den Erreger können nicht eindeutig nachgewiesen werden. Es wird empfohlen den Test nach 2 bis 4 Wochen mit einer frischen Patientenprobe zu wiederholen. Finden sich die Ergebnisse erneut im grenzwertigen Bereich, gilt die Probe als **negativ**.
Negativ	< 9 NTU	Es liegen keine Antikörper gegen den Erreger vor. Ein vorausgegangener Kontakt mit dem Antigen (Erreger bzw. Impfstoff) ist unwahrscheinlich.
Die Diagnose einer Infektionskrankheit darf nicht allein auf der Basis des Ergebnisses einer Bestimmung gestellt werden. Die anamnestischen Daten sowie die Symptomatologie des Patienten müssen zusätzlich zu den serologischen Ergebnissen in Betracht gezogen werden. Bei Immunsupprimierten und Neugeborenen besitzen die Ergebnisse serologischer Tests nur einen begrenzten Wert.		

9.3.1. Antikörper-Isotypen und Infektionsstatus

Serologie	Bedeutung
IgM	Typisch für Primärantwort Hoher IgM-Titer bei gleichzeitig niedrigem IgG-Titer: → Hinweis auf relativ frische Infektion Selten: → persistierendes IgM
IgG	Typisch für Sekundärantwort Können auch noch nach Jahren nachweisbar sein Hoher IgG-Titer bei gleichzeitig niedrigem IgM-Titer: → wahrscheinlich länger zurückliegende Infektion
IgA	Sezerniert in allen Schleimhäuten (⇒ Schutzbarriere) Meist früh im Verlauf einer Infektion gebildet

10. TESTMERKMALE

Die Ergebnisse beziehen sich auf die untersuchten Probenkollektive; es handelt sich nicht um garantierte Spezifikationen.

Für weitere Informationen zu den Testmerkmalen kontaktieren Sie bitte NovaTec Immundiagnostica GmbH.

10.1. Präzision

Intraassay	**n**	**Mittelwert (E)**	**Vk (%)**
#1	24	0,526	5,02
#2	24	0,905	6,20
#3	24	1,074	6,34
Interassay	**n**	**Mittelwert (NTU)**	**Vk (%)**
#1	12	19,56	7,08
#2	12	18,16	13,13
#3	12	5,28	7,31

10.2. Diagnostische Spezifität

Die diagnostische Spezifität ist definiert als die Wahrscheinlichkeit des Tests, ein negatives Ergebnis bei Fehlen des spezifischen Analyten zu liefern. Sie beträgt 99,29% ((95% Konfidenzintervall: 96,11% - 99,98%).

10.3. Diagnostische Sensitivität

Die diagnostische Sensitivität ist definiert als die Wahrscheinlichkeit des Tests, ein positives Ergebnis bei Vorhandensein des spezifischen Analyten zu liefern. Sie ist 100% (95% Konfidenzintervall: 95,01% - 100%).

10.4. Interferenzen

Hämolytische, lipämische und ikterische Proben ergaben bis zu einer Konzentration von 10 mg/mL Hämoglobin, 5 mg/mL Triglyceride und 0,5 mg/mL Bilirubin keine Interferenzen im vorliegenden ELISA.

10.5. Kreuzreaktivität

Die Untersuchung eines Probenpanels mit Antikörperaktivitäten gegen potenziell kreuzreagierende Parameter ließ keine Anzeichen von falsch-positiven Ergebnissen aufgrund von Kreuzreaktivitäten erkennen.

11. GRENZEN DES VERFAHRENS

Kontamination der Proben durch Bakterien oder wiederholtes Einfrieren und Auftauen können zu einer Veränderung der Messwerte führen.

12. SICHERHEITSMASSNAHMEN UND WARNHINWEISE

- Die Testdurchführung, die Information, die Sicherheitsmaßnahmen und Warnhinweise in der Arbeitsanleitung sind strikt zu befolgen. Bei Anwendung des Testkits auf Diagnostika-Geräten ist die Testmethode zu validieren. Jede Änderung am Aussehen, der Zusammensetzung und der Testdurchführung sowie jede Verwendung in Kombination mit anderen Produkten, die der Hersteller nicht autorisiert hat, ist nicht zulässig; der Anwender ist für solche Änderungen selbst verantwortlich. Der Hersteller haftet für falsche Ergebnisse und Vorkommnisse aus solchen Gründen nicht. Auch für falsche Ergebnisse aufgrund von visueller Auswertung wird keine Haftung übernommen.
- Nur für in-vitro-Diagnostik.
- Alle Materialien menschlichen oder tierischen Ursprungs sind als potentiell infektiös anzusehen und entsprechend zu behandeln.
- Alle verwendeten Bestandteile menschlichen Ursprungs sind auf Anti-HIV-AK, Anti-HCV-AK und HBsAg nicht-reaktiv getestet.
- Reagenzien und Mikrotiterplatten unterschiedlicher Chargen nicht untereinander austauschen.
- Keine Reagenzien anderer Hersteller zusammen mit den Reagenzien dieses Testkits verwenden.
- Nicht nach Ablauf des Verfallsdatums verwenden.
- Nur saubere Pipettenspitzen, Dispenser und Labormaterialien verwenden.
- Verschlusskappen der einzelnen Reagenzien nicht untereinander vertauschen, um Kreuzkontaminationen zu vermeiden.
- Flaschen sofort nach Gebrauch fest verschließen, um Verdunstung und mikrobielle Kontamination zu vermeiden.
- Nach dem ersten Öffnen Konjugat und Standards/Kontrollen vor weiterem Gebrauch auf mikrobielle Kontamination prüfen.
- Zur Vermeidung von Kreuzkontamination und falsch erhöhten Resultaten, Reagenzien sorgfältig in die Kavitäten pipettieren.
- Der ELISA ist nur für qualifiziertes Personal bestimmt, das den Standards der Guten Laborpraxis (GLP) folgt.
- Zur weiteren internen Qualitätskontrolle sollte jedes Labor zusätzlich bekannte Proben verwenden.

12.1. Sicherheitshinweis für Reagenzien, die Gefahrstoffe enthalten

Die Reagenzien können CMIT/MIT (3:1) oder MIT enthalten (siehe 4.1)
Daher gelten die folgenden Gefahren- und Sicherheitshinweise.

Achtung

H317	Kann allergische Hautreaktionen verursachen.
P261	Einatmen von Aerosol vermeiden.
P280	Schutzhandschuhe/ Schutzkleidung tragen.
P302+P352	BEI BERÜHRUNG MIT DER HAUT: Mit viel Seife und Wasser waschen.
P333+P313	Bei Hautreizung oder -ausschlag: Ärztlichen Rat einholen/ ärztliche Hilfe hinzuziehen.
P362+P364	Kontaminierte Kleidung ausziehen und vor erneutem Tragen waschen

Weitere Informationen können dem Sicherheitsdatenblatt entnommen werden.

12.2. Entsorgungshinweise

Chemikalien und Zubereitungen sind in der Regel Sonderabfälle. Deren Beseitigung unterliegt den nationalen abfallrechtlichen Gesetzen und Verordnungen. Die zuständige Behörde informiert über die Entsorgung von Sonderabfällen.

13. BESTELLINFORMATIONEN

Produktnummer: MYCM0350 Mycoplasma pneumoniae IgM ELISA (96 Bestimmungen)

FRANÇAIS

1. INTRODUCTION

Les mycoplasmes appartiennent à la classe des Mollicutes qui comprend trois familles distinctes et quatre genres, dont l'un est le mycoplasme avec plus de 60 espèces. Les Mycoplasmes sont les plus petits organismes libres connus (300 à 500 nm de diamètre) et contrairement aux bactéries régulières ils n'ont pas de membrane cellulaire. Les mycoplasmes sont des parasites extracellulaires, particulièrement sur les membranes muqueuses, qui peuvent causer des infections dans l'homme, les animaux, les plantes, et les cultures cellulaires. Mycoplasma pneumoniae est d'abord un pathogène respiratoire (obligatoire) dans l'homme qui peut atteindre le nasopharynx, la gorge, la trachée, les bronches, les bronchioles, et les alvéoles. D'autres mycoplasmes, M. buccale, M. faucium, M. orale et M. salivarium sont des commensales dans la cavité buccale. Mycoplasma hominis et Ureaplasma urealyticum habitent surtout la région génitale et peuvent agir en tant qu'envahisseurs opportunistes. Mycoplasma pneumoniae est de loin le microbe pathogène le plus important de ce groupe. L'infection avec Mycoplasma pneumoniae se produit dans le monde entier, son épidémiologie a surtout été étudiée aux Etats-Unis, en Europe, et au Japon. Les infections sont endémiques dans les grands secteurs urbains, et des augmentations épidémiques sont observées à intervalles variables. On a estimé que Mycoplasma pneumoniae cause 15-20% de toutes les pneumonies ; le taux est le plus élevé chez les enfants et de jeunes adultes. 74% des infections avec Mycoplasma pneumoniae sont asymptomatiques, et des réinfections peuvent se produire. L'immunité naturellement acquise contre l'infection avec Mycoplasma pneumoniae semble être de durée limitée (2 ou 3 ans).

Espèce	La maladie	Symptômes (p.ex.)	Modes de transmission
Mycoplasma pneumoniae	les maladies de région respiratoire par Mycoplasma pneumoniae	Fièvre, maux de tête et toux persistante. Maladie de région respiratoire: de l'infection asymptomatique à la pharyngite, la bronchite, le croup, la trachéo-bronchite et à la pneumonie atypique primaire	La transmission du virus se produit principalement par le contact de gouttelettes.

L'infection ou la présence d'un agent pathogène peut être identifiée par:

- Microscopie:
- Sérologie: p.ex. ELISA

2. INDICATION D'UTILISATION

La trousse Mycoplasma pneumoniae IgM ELISA est prévue pour la détection qualitative des anticorps IgM anti-Mycoplasma pneumoniae dans le sérum humain ou plasma (citrate, héparine).

3. PRINCIPE DU TEST

La détermination immunoenzymatique qualitative des anticorps spécifiques est basée sur le la technique ELISA (du anglais, Enzyme-Linked Immunosorbent Assay).
Plaques de Microtitrage sont recouvertes d'antigènes spécifiques pour lier les anticorps correspondants de l'échantillon. Après le lavage des puits pour éliminer l'échantillon détaché, le conjugué peroxydase de raifort (HRP) est ajouté. Ce conjugué se lie aux anticorps capturés. Dans une deuxième étape de lavage, le conjugué non lié est éliminé. Le complexe immun formé par le conjugué lié est visualisé par l'addition tétraméthylbenzidine (TMB) qui donne un produit de réaction bleu.
L'intensité de ce produit est proportionnelle à la quantité d'anticorps spécifiques dans l'échantillon. L'acide sulfurique est ajouté pour arrêter la réaction. Cela produit un changement du bleu au jaune. L'absorbance à 450/620 nm est lue en utilisant un photomètre de Plaque de Microtitrage ELISA.

4. MATERIEL

4.1. Réactifs fournis

- **Plaque de Microtitrage:** 12 barrettes de 8 puits sécables revêtus d'antigène de Mycoplasma pneumoniae; en sachets d'aluminium refermables.
- **Tampon de Dilution d'Échantillon IgM:** 1 flacon contenant 100 mL de tampon phosphaté (10 mM) pour la dilution de l'échantillon; pH 7,2 ± 0,2; anti-humaine IgG (RF-Absorbant); prêt à l'emploi; couleur vert; bouchon blanc; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Solution d'Arrêt:** 1 flacon contenant 15 mL d'acide sulfurique, 0,2 mol/L; prêt à l'emploi; bouchon rouge.
- **Tampon de Lavage (concentré x 20):** 1 flacon contenant 50 mL d'un tampon phosphaté (0,2 M) concentré 20 fois (pH 7,2 ± 0,2) pour laver les puits; bouchon blanc.
- **Conjugué:** 1 flacon contenant 20 mL d'anticorps IgM anti-humaines conjuguées à de la peroxydase du raifort dans le tampon phosphaté (10 mM); prêt à l'emploi; couleur rouge, bouchon noir.
- **Solution de Substrat TMB:** 1 flacon contenant 15 mL de 3,3',5,5'-tétraméthylbenzidine (TMB), < 0,1 %; prêt à l'emploi; bouchon jaune.
- **Contrôle Positif:** 1 flacon contenant 2 mL contrôle; prêt à l'emploi; couleur jaune; bouchon rouge; ≤ 0,02% (v/v) MIT.
- **Contrôle Cut-off:** 1 flacon contenant 3 mL contrôle; prêt à l'emploi; couleur jaune; bouchon vert; ≤ 0,02% (v/v) MIT.
- **Contrôle Négatif:** 1 flacon contenant 2 mL contrôle; prêt à l'emploi; couleur jaune; bouchon bleu; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Pour les mentions de danger et les conseils de prudence voir chapitre 12.1.
Pour les substances potentiellement dangereuses s'il vous plaît vérifiez la fiche de données de sécurité.

4.2. Matériel fourni

- 1 couvercle autocollante
- 1 instructions d'utilisation
- 1 présentation de la plaque

4.3. Matériel et équipement requis

- Photomètre de Plaque de Microtitrage ELISA, pour mesurer l'absorbance à 450/620 nm
- Incubateur 37 °C
- Laveur manuel ou automatique pour le lavage des Plaques de Microtitrage
- Pipettes pour utilisation entre 10 et 1000 µL
- Mélangeur Vortex
- Eau distillée
- Tubes jetables

5. STABILITE ET CONSERVATION

Conserver le kit à 2...8 °C. Les réactifs ouverts sont stables jusqu'à la date de péremption indiquée sur l'étiquette lorsqu'il est conservé à 2...8°C.

6. PREPARATION DES REACTIFS

Il est très important porter tous les réactifs et échantillons à température ambiante (20 ... 25 °C) et les mélanger avant de commencer le test!

6.1. Plaque de Microtitrage

Les barrettes sécables sont revêtues d'antigène Mycoplasma pneumoniae. Immédiatement après avoir prélevé les barrettes nécessaires, les barrette restantes doivent être scellés le vide dans de feuille d'aluminium avec le sac de silicium (le déshydratant) fourni et emmagasiner à 2...8 °C.

6.2. Tampon de Lavage (conc. x 20)

Diluer le Tampon de Lavage 1+19; par exemple 10 mL du Tampon de Lavage + 190 mL d'eau distillée. Le Tampon de Lavage diluée est stable pendant 5 jours à la température ambiante (20…25 °C). Cas apparaissent des cristaux dans le concentré, chauffer la solution à 37 °C par exemple dans un bain-marie mélangez bien avant dilution.

6.3. Solution de Substrat TMB

La solution est prête à utiliser et doit être emmagasiné à 2...8 °C, à l'abri de la lumière. La solution doit être incolore ou pourrait avoir une légère couleur bleu clair. Si le substrat devient bleu, il peut avoir été contaminé et ne peut pas être utilisé dans le test.

7. PRELEVEMENT ET PREPARATION DES ECHANTILLONS

Utiliser des échantillons humains de sérum ou plasma (citrate, héparine) pour ce test. Si le test est réalisé dans les 5 jours après le prélèvement, les échantillons doivent être conservés à 2...8 °C; autrement ils doivent être aliquotés et conservés surgelés (-70…-20 °C). Si les échantillons sont conservés congelés, bien mélanger les échantillons décongelés avant le test. Éviter les cycles répétés de congélation et décongélation.
L'inactivation par la chaleur des échantillons n'est pas recommandée.

7.1. Dilution de l'échantillon

Avant du test, tous les échantillons doivent être dilués 1 + 100 avec Tampon de Dilution d'Échantillon IgM. Diluer 10 µL d'échantillon avec 1 mL I Tampon de Dilution d'Échantillon IgM dans des tubes pour obtenir une dilution 1 + 100 et mélanger soigneusement sur un Vortex.

8. PROCEDE DE TEST

Lire attentivement les instructions d'utilisation **avant de** réaliser le test. La fiabilité des résultats dépend du suivi strict d'utilisation comme décrit. La technique de test suivante a été validée uniquement pour une procédure manuelle. Si le test doit être effectué sur un systèmes automatiques pour ELISA, nous conseillons d'augmenter le nombre d'étapes de lavage de trois à cinq et le volume du Tampon de Lavage de 300 à 350 µL. Faites attention au chapitre 12. Avant de commencer le test, le plan de distribution et d'identification de tous les échantillons et les étalons/contrôles (il est recommandé déterminer en double) doivent être soigneusement établi sur la feuille présentation de la plaque prévue dans le conseil de kit. Sélectionner le nombre de barrettes ou de puits nécessaires et les placer sur le support.

Réaliser toutes les étapes du test dans l'ordre donné et sans délai.

Un embout de pipette propre et jetable doit être utilisé pour distribuer chaque étalon/contrôle et échantillon.

Régler l'incubateur à 37 ± 1 °C.

1. Pipeter 100 µL de étalons/contrôles et d'échantillons dilués dans leurs puits respectifs. Garder le puits A1 pour le blanc substrat.
2. Couvrir les puits avec le couvercle, fourni dans le kit.
3. **Incuber pendant 1 heure ± 5 minutes à 37 ± 1 °C.**
4. A la fin de l'incubation, enlever le couvercle, aspirer le contenu des puits et laver chaque puits trois fois avec 300 µL du Tampon de Lavage. Éviter les débordements des puits de réaction. L'intervalle entre le cycle de lavage et l'aspiration doit être > 5 sec. À la fin, enlever soigneusement le liquide restant en tapotant les barrettes sur du papier absorbant avant la prochaine étape.

   Note: L'étape de lavage est très importante! Un lavage insuffisant peut conduire à une précision faible et de faux résultats!
5. Pipeter 100 µL du conjugué dans tous les puits sauf le puits Blanc A1.
6. **Incuber pendant 30 minutes à température ambiante (20…25°C).** N'exposer pas à la lumière directe du soleil.
7. Répéter l'étape numéro 4.
8. Pipeter 100 µL de la Solution de Substrat TMB dans tous les puits.
9. **Incuber pendant exactement 15 minutes à température ambiante (20…25°C) dans l'obscurité.** Une couleur bleue se produit en raison d'une réaction enzymatique.
10. Pipeter 100 µL de la Solution d'Arrêt dans tous les puits dans le même ordre et à la même vitesse que pour la Solution de Substrat TMB, ainsi, il y a un changement du bleu au jaune.
11. Mesurer l'absorbance à 450/620 nm dans les 30 minutes après l'addition de la Solution d'Arrêt.

8.1. Mesure

Réglez le Photomètre de Plaque de Microtitrage ELISA **à zéro** en utilisant **le Blanc substrat.**
Si - pour des raisons techniques - le Photomètre de Plaque de Microtitrage ELISA ne peut pas être ajusté à zéro en utilisant le Blanc substrat, la valeur d'absorbance de cette doit être soustraire la valeur d'absorbance de toutes les autres valeurs d'absorbance mesurées afin d'obtenir des résultats fiables!

Mesurer l'absorbance de tous les puits **à 450 nm** et enregistrer les valeurs d'absorbance pour chaque étalon/contrôle et échantillon dans la présentation de la plaque.

Il est recommandé d'effectuer la mesure **dichromatique** utilisant 620 nm comme longueur d'onde de référence.
Si doubles déterminations ont été effectuées, calculer **les valeurs moyennes d'absorbance**.

9. RESULTATS

9.1. Critères de validation

Pour qu'une série d'analyses soit considérée comme valide, ces instructions d'utilisation doivent être strictement suivies, et les critères suivants doivent être respectés:

- **Blanc Substrat:** Valeur d'absorbance **< 0,100**
- **Contrôle Négatif**: Valeur d'absorbance **< 0,200 et < Cut-off**
- **Contrôle Cut-off**: Valeur d'absorbance **0,150 – 1,300**
- **Contrôle Positif**: Valeur d'absorbance **> Contrôle Cut-off**

Lorsque ces critères ne sont pas remplis, le test n'est pas valide et doit être recommencé.

9.2. Calcul des résultats

La valeur seuil correspond à la moyenne des valeurs d'absorbance du Contrôle Cut-off.

Exemple: 0,44 DO Contrôle Cut-off + 0,42 DO Contrôle Cut-off = 0,86: 2 = 0,43

Cut-off = 0,43

9.2.1. Résultats en unités [NTU]

$$\frac{\text{Valeur (moyenne) d'absorbance de l' échantillon} \times 10}{\text{Cut-off}} = \text{[unités NovaTec = NTU]}$$

Exemple: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interprétation des résultats

Cut-off	10 NTU	-
Positif	> 11 NTU	Les anticorps dirigés contre l'agent pathogène sont présents. Il ya eu un contact avec l'antigène (pathogène resp. vaccin).
Zone grise	9 – 11 NTU	Les anticorps dirigés contre l'agent pathogène ne pouvaient pas être détectés clairement. Il est recommandé de répéter le test avec un échantillon frais dans 2 à 4 semaines. Si le résultat est encore dans la zone grise l'échantillon est jugé **négatif**.
Negatif	< 9 NTU	L'échantillon ne contient pas d'anticorps contre l'agent pathogène. Un contact préalable avec l'antigène (pathogène resp. vaccin) est peu probable.
Le diagnostic d'une maladie infectieuse ne devrait pas être établi sur la base du résultat d'une seule analyse. Un diagnostic précis devrait prendre en considération l'histoire clinique, la symptomatologie ainsi que les données sérologiques. Les données sérologiques sont de valeur limité dans le cas des patients immunodéprimés et des nouveaux-nés.		

9.3.1. Isotypes d'anticorps et l'Etat de l'infection

Sérologie	Signification
IgM	Caractéristique de la réponse primaire du anticorps Titre élevé d'IgM avec une faible titre d'IgG: → suggère une infection très récente ou aigüe Rare: → persistante IgM
IgG	Caractéristique de la réponse secondaire du anticorps Peut persister pendant plusieurs années Des titres élevés d'IgG à faible titre d'IgM: → peuvent indiquer une infection ancienne
IgA	Ils sont produits au niveau des muqueuses dans tout le corps (⇒ barrière de protection) Habituellement ils sont produits en début d'infection

10. PERFORMANCES DU TEST

Ces résultats s'appuient sur les groupes d'échantillons étudiés; il n'agit pas de caractéristiques techniques garanties.

Pour plus d'informations sur les performances du test s'il vous plaît contactez NovaTec Immundiagnostica GmbH.

10.1. Précision

Intra-essai	**n**	**moyenne (E)**	**CV (%)**
#1	24	0,526	5,02
#2	24	0,905	6,20
#3	24	1,074	6,34
Inter-essai	**n**	**moyenne (NTU)**	**CV (%)**
#1	12	19,56	7,08
#2	12	18,16	13,13
#3	12	5,28	7,31

10.2. Spécificité diagnostique

La spécificité diagnostique est définie comme la probabilité d'obtenir un résultat négatif en l'absence d'un analyte spécifique. Elle est 99,29% (95% Intervalle de confiance: 96,11% - 99,98%).

10.3. Sensibilité diagnostique

La sensibilité diagnostique est définie comme la probabilité d'obtenir un résultat positif en présence d'un analyte spécifique. Elle est 100% (95% Intervalle de confiance: 95,01% - 100%).

10.4. Interférences

Des échantillons hémolytiques ou lipémiques ou ictériques n'ont pas montré d'interférences, avec des concentrations jusqu'à 10 mg/mL de hémoglobine, 5 mg/mL de triglycérides et 0,5 mg/mL de bilirubine.

10.5. Réaction croisée

L'étude d'un panel d'échantillons avec des anticorps dirigés contre différents paramètres interférents n'a pas révélé de preuves de résultats faussement positifs dus à des réactions croisées.

11. LIMITES DE LA TECHNIQUE

Une contamination bactérienne ou des cycles de congélation/décongélation répétés de l´échantillon peuvent affecter les valeurs d'absorption.

12. PRECAUTIONS ET AVERTISSEMENTS

- La procédure de test, l'information, les précautions et mises en garde de la notice d'emploi, doivent être suivies de façon stricte. L'utilisation de ces trousses avec des automates ou dispositifs similaires doit être validée. Aucun changement de la conception, composition et procédure de test, ainsi que l'utilisation avec d'autres produits non approuvés par le fabricant, ne sont pas autorisés; seul l'utilisateur est responsable de tels changements. Le fabricant n'est pas responsable des faux résultats et des incidents dus à ces motifs. Le fabricant n'est pas responsable des résultats fournis par analyse visuelle des échantillons des patients.
- Uniquement pour diagnostic in vitro.
- Tous les matériaux d'origine humaine ou animale doivent être considérés et traités comme étant potentiellement infectieux.
- Tous les composants d'origine humaine utilisés pour la fabrication de ces réactifs ont été analysés et ont été trouvés non réactifs en Ag HBs, en anticorps anti-VHI 1 et 2 et en anticorps anti-VHC.
- Ne pas échanger les réactifs ou les Plaque de Microtitrage provenant de différents lots de production.
- Ne pas utiliser de réactifs provenant d'autres fabricants avec les réactifs de cette trousse.
- Ne pas utiliser les réactifs après la date de péremption indiquée sur l'étiquette.
- Utiliser seulement des embouts de pipette, des distributeurs et du matériel de laboratoire propres.
- Ne pas échanger les bouchons des flacons, pour éviter la contamination croisée.
- Fermer soigneusement les flacons après utilisation pour éviter l'évaporation et la contamination microbienne.
- Avant une nouvelle utilisation, vérifier les flacons de conjugué et de étalon/contrôle, déjà utilisés, pour exclure une contamination microbienne.
- Pour éviter la contamination croisée et des résultats faussement élevés, introduire les échantillons de patients et les réactifs exactement au fond des puits sans éclabousser.
- L'ELISA est uniquement conçu pour le personnel qualifié suivant les normes de bonnes pratiques de laboratoire (Good Laboratory Practice, GLP).
- Pour un contrôle de qualité interne plus poussé, chaque laboratoire doit en outre utiliser des échantillons connus.

12.1. Note de sécurité pour les réactifs contenant des substances dangereuses

Les réactifs peuvent contenir du CMIT/MIT (3 :1) ou du MIT (voir chapitre 4.1)
Par conséquent, les mentions de danger et les conseils de prudence suivants s'appliquent.

Attenttion

H317	Peut provoquer une allergie cutanée.
P261	Éviter de respirer les aérosols.
P280	Porter des gants de protection/ des vêtements de protection.
P302+P352	EN CAS DE CONTACT AVEC LA PEAU: Laver abondamment savon à l'eau.
P333+P313	En cas d'irritation ou d'éruption cutanée: consulter un médecin.
P362+P364	Enlever les vêtements contaminés et les laver avant réutilisation.

De plus amples informations peuvent être trouvées dans la fiche de données de sécurité.

12.2. Elimination des déchets

Les résidus des produits chimiques et des préparations sont considérés en général comme des déchets dangereux. L'élimination de ce type de déchet est réglementée par des lois et réglementations nationales et régionales. Contacter les autorités compétentes ou les sociétés de gestion des déchets pour obtenir des renseignements sur l'élimination des déchets dangereux.

13. INFORMATION POUR LES COMMANDES

Référence:	MYCM0350	Mycoplasma pneumoniae IgM ELISA (96 déterminations)

ITALIANO

1. INTRODUZIONE

Il Mycoplasma pneumoniae è un membro della classe dei Mollicuti, in quanto privo di parete cellulare e rivestito soltanto da membrana plasmatica. Pertanto rappresenta la più piccola cellula vivente al momento conosciuta. La famiglia dei Mycoplasmataceae si divide nei generi Mycoplasma ed Ureaplasma. Al momento sono conosciute più di 80 specie. Le specie piú importanti e patogene per l'uomo sono: M. pneumonite, M. hominis e M. genitalis. Oltre a queste esistono altre specie eventualmente patogene: M. orale, M. salivarum, M. faucium e M. buccale. M. hominis e M. genitalis sono gli agenti eziologici di infezioni non specifiche del tratto urogenitale. Il Mycoplasma pneumoniae è l'agente eziologico della polmonite atipica primaria e può anche essere causa di bronchite, laringite e tracheite. Colpisce soprattutto i bambini sopra i 5-6 anni di vita e predilige, in particolare, gli adolescenti e gli adulti. Dopo un periodo di incubazione di 2-3 settimane esordisce con febbre, cefalea, scarso appetito e malessere generale. Il quadro clinico della polmonite atipica si manifesta nel 5-25% delle persone infette. L'agente è ubiquitario, molto contagioso e è trasmesso per via aerea.

Specie	Malattia	Sintomi (p.es.)	Via di trasmissione
Mycoplasma pneumoniae	Infezioni del tratto respiratorio per Mycoplasma pneumoniae	Febbre, mal di testa, e una tosse persistente. Infezioni del tratto respiratorio: Da infezione asintomatica da faringiti, bronchiti, groppa, tracheobronchite, polmonite e polmonite atipica primaria.	Trasmissione: aerea; Trasmesso da gocce infette nell'aria

L'infezione o la presenza di un agente patogeno può essere identificata da:

- Microscopia
- Sierologia: p.es. ELISA

2. USO PREVISTO

Il Mycoplasma pneumoniae IgM ELISA è un kit per la determinazione qualitativa degli anticorpi specifici della classe IgM per Mycoplasma pneumoniae nel siero o plasma (citrato, eparina) umano.

3. PRINCIPIO DEL TEST

La determinazione immunoenzimatico qualitativa degli anticorpi specifici si basa sulla tecnica ELISA (d'inglese Enzyme-linked immunosorbent assay).
Piastre di Microtitolazione sono rivestite con antigeni specifici che si legano agli anticorpi presenti nel campione. Dopo aver lavato i pozzetti per rimuovere tutto il materiale campione non legato, il coniugato di perossidasi di rafano (HRP) è aggiunto. Questo coniugato si lega agli anticorpi catturati. In una seconda fase di lavaggio coniugato, non legato è rimosso. Il complesso immunitario formato dal coniugato legato sarà evidenziato aggiungendo tetrametilbenzidina (TMB) substrato che dà una colorazione blu.
L'intensità di questa colorazione è direttamente proporzionale alla quantità di anticorpi specifici presenti nel campione. Acido solforico è aggiunto per bloccare la reazione. Questo produce un cambiamento di colore dal blu al giallo. Assorbanza a 450/620 nm viene letto utilizzando un fotometro di Piastre di Microtitolazione ELISA.

4. MATERIALI

4.1. Reagenti forniti

- **Piastre di Microtitolazione:** 12 strisce divisibili in 8 pozzetti, con adesi antigeni della Mycoplasma pneumoniae; dentro una busta d'alluminio richiudibile.
- **Tampone di Diluizione del Campione IgM:** 1 flacone contenente 100 mL di tampone fosfato (10 mM) per diluire i campioni; pH 7,2 ± 0,2; anti-umane IgG (mezzo di assorbimento RF); colore verde; pronto all'uso; tappo bianco; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Soluzione Bloccante:** 1 flacone contenente 15 mL di acido solforico, 0,2 mol/L, pronto all'uso; tappo rosso.
- **Tampone di Lavaggio (20x conc.):** 1 flacone contenente 50 mL di un tampone fosfato concentrato 20 volte (0,2 M) per il lavaggio dei pozzetti; pH 7,2 ± 0,2; tappo bianco.
- **Coniugato:** 1 flacone contenente 20 mL di anticorpi anti-IgM umani, coniugati a perossidasi in tampone fosfato (10 mM); colore rosso; pronto all'uso; tappo nero.
- **Soluzione Substrato TMB:** 1 flacone contenente 15 mL di 3,3`,5,5`-Tetrametilbenzidina (TMB), < 0,1 %; pronto all'uso; tappo giallo.
- **Controllo Positivo:** 1 flacone da 2 mL controllo; colore giallo; tappo rosso; pronto all'uso; ≤ 0,02% (v/v) MIT.
- **Controllo Cut-off:** 1 flacone da 3 mL controllo; colore giallo; tappo verde; pronto all'uso; ≤ 0,02% (v/v) MIT.
- **Controllo Negativo:** 1 flacone da 2 mL controllo; colore giallo; tappo blu; pronto all'uso; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Le indicazioni di pericolo e consigli di prudenza vedi capitolo 12.1.

Per le sostanze potenziali pericolose si prega di leggere la scheda di dati di sicurezza.

4.2. Accessori forniti

- 1 pellicola adesiva
- 1 istruzione per l'uso
- 1 schema della piastra

4.3. Materiali e attrezzature necessari

- Fotometro per Piastre di Microtitolazione con filtri da 450/620 nm
- Incubatrice 37 °C
- Lavatore, manuale o automatico, di Piastre di Microtitolazione
- Micropipette per l'uso tra 10-1000 µL
- Vortex-Mixer
- Acqua distillata
- Provette monouso

5. MODALITÀ DI CONSERVAZIONE

Conservare il kit a 2...8 °C. I reagenti aperti sono stabili fino alla data di scadenza indicata sull'etichetta quando sono conservati a 2...8 °C.

6. PREPARAZIONE DEI REAGENTI

È molto importante, portare tutti i reagenti e campioni a temperatura ambiente (20…25 °C) e mescolare prima di iniziare il test.

6.1. Piastre di Microtitolazione

Le strisce divisibili sono rivestite con l'antigeni della Mycoplasma pneumoniae. Immediatamente dopo la rimozione degli strisce necessarie, le strisce rimanenti devono essere sigillare nuovamente in un foglio di alluminio insieme con il sacchetto di gel di silice conservati a 2...8 °C.

6.2. Tampone di Lavaggio (20x conc.)

Diluire il Tampone di Lavaggio 1+19; per esempio: 10 mL del Tampone di Lavaggio + 190 mL di acqua distillata. Il Tampone di Lavaggio diluito è stabile per 5 giorni a temperatura ambiente (20…25 °C). Se cristalli appaiono nel concentrato, riscaldare la soluzione a 37 °C per esempio in un bagnomaria. Mescolare bene prima della diluizione.

6.3. Soluzione Substrato TMB

La soluzione sta pronta all'uso e deve essere conservata a 2...8 °C, al riparo dalla luce. La soluzione deve essere incolore o potrebbe avere un leggero colore blu chiaro. Se il substrato diventa blu, potrebbe essere stato contaminato e non può essere utilizzato nel test.

7. PRELIEVO E PREPARAZIONE DEI CAMPIONI

Per questo test si prega di usare campioni di siero o plasma (citrato, eparina) umano. Se il test è fatto entro 5 giorni dal prelievo i campioni possono essere conservati tra 2...8 °C. Altrimenti devono essere aliquotati e congelati tra (-70…-20 °C). Se i campioni sono conservati congelati, mescolare bene i campioni scongelati prima del test. Evitare cicli ripetuti di congelamento/scongelamento.
L'inattivazione dei campioni per mezzo del calore non è raccomandata.

7.1. Diluizione dei campioni

Prima del test, diluire i campioni 1+100 con Tampone di Diluizione del Campione IgM. Per esempio, pipettare nelle provette 10 µL di campione + 1 mL di Tampone di Diluizione del Campione IgM e mescolare bene (Vortex).

8. PROCEDIMENTO

Leggere bene le istruzioni per l'uso **prima** di iniziare il teste. L'affidabilità dei risultati dipende dalla stretta aderenza le istruzioni per l'uso di prova come descritto. La seguente procedura è stata validata per l'esecuzione manuale. Per un'esecuzione su strumentazione automatica si consiglia di incrementare il numero di lavaggi de 3 a 5 volte e il volume della Tampone di Lavaggio da 300 a 350 µL per evitare effetti di lavaggio. Prestare attenzione al capitolo 12. Stabilire innanzitutto il piano di distribuzione e identificazione dei campioni e standards/controlli (è raccomandato determinare in duplicato) sullo schema della piastra fornito con il kit. Inserire i pozzetti necessari nel supporto.

Eseguire il test nell'ordine stabilito dalle istruzioni, senza ritardi.

Sul pipettaggio utilizzare puntali nuovi e puliti per ogni campione e standard/controllo.

Regolare l'incubatore a 37 ± 1 °C.

1. Pipettare 100 µL di standard/controllo e di campione diluito nei relativi pozzetti. Usare il pozzetto A1 per il Bianco-substrato.
2. Coprire i pozzetti con la pellicola adesiva, fornita nel kit.
3. **Incubare 1 ora ± 5 min a 37 ± 1°C.**
4. Al termine dell'incubazione, togliere la pellicola e aspirare il liquido dai pozzetti. Successivamente lavare i pozzetti tre volte con 300 µL di Tampone di Lavaggio. Evitare che la soluzione trabocchi dai pozzetti. L'intervallo tra il lavaggio e l'aspirazione deve essere > 5 sec. Dopo il lavaggio picchiettare delicatamente i pozzetti su una carta assorbente per togliere completamente il liquido, prima del passo successivo.

   Attenzione: Il lavaggio è una fase molto importante. Da lavaggio insufficiente risulta una bassa precisione e risultati falsi!
5. Pipettare 100 µL di Coniugato in tutti i pozzetti, escludendo quello con il Bianco-substrato (Blank) A1.
6. **Incubare per 30 min a temperatura ambiente (20...25 °C).** Non esporre a fonti di luce diretta.
7. Ripetere il lavaggio secondo punto 4.
8. Pipettare 100 µL di Soluzione Substrato TMB in tutti i pozzetti.
9. **Incubare precisamente per 15 min a temperatura ambiente (20...25 °C) al buio.** Un colore blu verifica a causa della reazione enzimatica.
10. Pipettare 100 µL di Soluzione Bloccante in tutti i pozzetti, nello stesso ordine della Soluzione Substrato TMB, in tal modo un cambiamento di colore dal blu al giallo avviene.
11. Misurare l'assorbanza a 450/620 nm entro 30 min dopo l'aggiunta della Soluzione Bloccante.

8.1. Misurazione

Regolare il fotometro per le Piastre di Microtitolazione ELISA **a zero** usando il substrato-Bianco (Blank).

Se, per motivi tecnici, non è possibile regolare il fotometro per le Piastre di Microtitolazione a zero usando il Bianco-substrato, il valore de assorbanza de questo deve essere sottratto dai valori dell'assorbanza da tutti i valori delle altre assorbanze per ottenere risultati affidabili!

Misurare l'assorbanza di tutti i pozzetti a **450 nm** e inserire tutti i valori misurati nello schema della piastra.

È raccomandato fare le misurazioni delle onde **bichrome** (due colori). Utilizzando la lunghezza d'onda de 620 nm come misura di riferimento.

Dove sono state misurate in doppio, calcolare **la media delle assorbanze**.

9. RISULTATI

9.1. Validazione del test

Affinché un test possa essere considerato valido, le presenti Istruzioni per l'uso devono essere rigorosamente seguite e devono essere soddisfatti i seguenti criteri:

- **Substrato Bianco (Blank)**: Valore di assorbanza **< 0,100**
- **Controllo Negativo**: Valore di assorbanza **< 0,200 e < Cut-off**
- **Controllo Cut-off**: Valore di assorbanza **0,150 – 1,300**
- **Controllo Positivo**: Valore di assorbanza **> Cut-off**

Se non sono soddisfatti questi criteri, il test non è valido e deve essere ripetuto.

9.2. Calcolo dei risultati

Il Cut-off è la media dei valori di assorbanza dei Controlli Cut-off.

Esempio: Valore di assorbanza del Controllo Cut-off 0,44 + valore di assorbanza del Controllo Cut-off 0,42 = 0,86/2 = 0,43
Cut-off = 0,43

9.2.1. Risultati in unità [NTU]

$$\frac{\text{Assorbanza media del campione x 10}}{\text{Cut-off}} = \text{[unità NovaTec = NTU]}$$

Esempio: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretazione dei risultati

Cut-off	10 NTU	-
Positivo	> 11 NTU	Anticorpi contro il patogeno sono presenti. C'è stato un contatto con l'antigene (patogeno resp. vaccino).
Zona grigia	9 – 11 NTU	Anticorpi contro il patogeno non è stato possibile rilevare chiaramente. Si consiglia di ripetere il test con un nuovo campione in 2-4 settimane. Se il risultato è nuovamente nella zona grigia, il campione viene giudicato come **negativo**.
Negativo	< 9 NTU	Il campione non contiene anticorpi contro il patogeno. Un precedente contatto con l'antigene (patogeno resp. vaccino) è improbabile.
La diagnosi di una malattia infettiva non deve essere fatta soltanto sulla risultanza di un unico test. È importante considerare anche l'anamnesi ed i sintomi del paziente. I risultati del test da pazienti immunosoppressi e neonati hanno un valore limitato.		

9.3.1. Isotipi degli anticorpi e Stato dell'infezione

Sierologia	Significato
IgM	Caratteristica della risposta primaria dell'anticorpo Alto titolo IgM con basso titolo IgG: →suggerisce una infezione molto recente o acuta Raro: → IgM persistente
IgG	Caratteristica della risposta secondaria dell'anticorpo Può persistere per diversi anni Alto titolo IgG con basso titolo IgM: → può indicare un'infezione passata
IgA	Sono prodotte a livello delle mucose in tutto il corpo (⇒ barriera protettiva) Solitamente sono prodotte all'inizio dell'infezione

10. CARATTERISTICHE DEL TEST

I risultati si riferiscono al gruppo di campioni investigato; questi non sono specifiche garantite.

Per ulteriori informazioni su caratteristiche del test, si prega, di contattare NovaTec Immundiagnostica GmbH.

10.1. Precisione

Intradosaggio	**n**	**Media (E)**	**CV (%)**
#1	24	0,526	5,02
#2	24	0,905	6,20
#3	24	1,074	6,34
Interdosaggio	**n**	**Media (NTU)**	**CV (%)**
#1	12	19,56	7,08
#2	12	18,16	13,13
#3	12	5,28	7,31

10.2. Specificità diagnostica

La specificità diagnostica è la probabilità del test di fornire un risultato negativo in assenza di analita specifici.
La specificità diagnostica è 99,29% (95% intervallo di confidenza: 96,11% - 99,98%).

10.3. Sensibilità diagnostica

La sensibilità diagnostica è la probabilità del test di fornire un risultato positivo alla presenza di analita specifici.
La sensibilità diagnostica è 100% (95% intervallo di confidenza: 95,01% - 100%).

10.4. Possibili interferenze

Campioni emolitici, lipidici et itterici contenenti fino a 10 mg/mL di emoglobina, 5 mg/mL di trigliceridi e 0,5 mg/mL di bilirubina non hanno presentato fenomeni d'interferenza nel presente test.

10.5. Reattività crociata

L'investigazione di un gruppo di campioni con attività di anticorpi contro parametri potenzialmente interferenti non ha rivelato alcuna evidenza di risultati falsamente positivi dovuto a reattività crociata.

11. LIMITAZIONI

Una contaminazione da microorganismi o ripetuti cicli di congelamento-scongelamento possono alterare i valori delle assorbanze.

12. PRECAUZIONI E AVVERTENZE

- La procedura analitica, le informazioni, le precauzioni e le avvertenze contenute nelle istruzioni per l'uso devono essere seguite scrupolosamente. L'uso dei kit con analizzatori e attrezzature similari deve essere previamente convalidato. Qualunque cambiamento nello scopo, nel progetto, nella composizione o struttura e nella procedura analitica, così come qualunque uso dei kit in associazione ad altri prodotti non approvati dal produttore non è autorizzato; l'utilizzatore stesso è responsabile di questi eventuali cambiamenti. Il produttore non è responsabile per falsi risultati e incidenti che possano essere causati da queste ragioni. Il produttore non è responsabile per qualunque risultato ottenuto attraverso esame visivo dei campioni dei pazienti.
- Solo per uso diagnostico in-vitro.
- Tutti i materiali di origine umana o animale devono essere considerati potenzialmente contagiosi e infettivi.
- Tutti gli elementi di origine umana sono stati trovati non reattivi con Anti-HIV-Ab, Anti-HCV-Ab e HBsAg.
- Non scambiare reagenti e Piastre di Microtitolazione di lotti diversi.
- Non utilizzare reagenti d'altri produttori insieme con i reagenti di questo kit.
- Non usare dopo la data di scadenza.
- Utilizzare soltanto punte per pipette, distributori, e articoli da laboratorio puliti.
- Non scambiare i tappi dei flaconi, per evitare contaminazione crociata.
- Richiudere i flaconi immediatamente dopo l'uso per evitare la vaporizzazione e contaminazione.
- Una volta aperti e dopo relativo stoccaggio verificare i reagenti per una loro eventuale contaminazione prima dell'uso.
- Per evitare contaminazioni crociate e risultati erroneamente alti pipettare i campioni e reagenti con molta precisione nei pozzetti senza spruzzi.
- L'ELISA è progettato solo per il personale qualificato che segue le norme di buona pratica di laboratorio (Good Laboratory Practice, GLP).
- Per un ulteriore controllo di qualità interno ogni laboratorio dovrebbe inoltre utilizzare campioni noti.

12.1. Nota di sicurezza per i reagenti contenenti sostanze pericolose

I reagenti possono contenere CMIT/MIT (3:1) o MIT (vedi capitolo 4.1)
Pertanto, si applicano le seguenti indicazioni di pericolo e le consigli di prudenza.

Attenzione

H317	Può provocare una reazione allergica cutanea.
P261	Evitare di respirare gli aerosol.
P280	Indossare guanti/ indumenti protettivi.
P302+P352	IN CASO DI CONTATTO CON LA PELLE: lavare abbondantemente con sapone acqua.
P333+P313	In caso di irritazione o eruzione della pelle: consultare un medico.
P362+P364	Togliere tutti gli indumenti contaminati e lavarli prima di indossarli nuovamente.

Ulteriori informazioni sono disponibili nella scheda di dati di sicurezza.

12.2. Smaltimento

In genere tutte le sostanze chimiche sono considerati rifiuti pericolosi. Lo smaltimento è regolato da leggi nazionali. Per ulteriori informazioni contattare l'autorità locale.

13. INFORMAZIONI PER GLI ORDINI

Numero del prodotto:	MYCM0350	Mycoplasma pneumoniae IgM ELISA (96 determinazioni)

ESPAÑOL

1. INTRODUCCIÓN

Las Mycoplasma son procariotas con la caracteristica principal de no tener pared celular. Por esta facultad se forma la nueva clase de los “Mollicutes” (mollis: suave, cutis: piel). La familia de los Mycoplasmataceae se divide en los géneros Mycoplasma y Ureaplasma. En los Mycoplasma se conocen más de 80 especies dentro de las más importantes como patógenos para el hombre son M. pneumoniae, M. hominis y M. genitalis. Aparte de estos patógenos obligatorios existen varias especies que son facultativo patógeno (M. orale, M. salivarium, M. faucium, M. buccale).

M. pneumoniae produce infecciones del tracto respiratoiro (neumonías atípicas), M. hominis y M. genitalis infectan al tracto urogenital. M. pneumoniae coloniza la traquea y los bronquios destruyendo el epitelio sin entrar en el tejido peribronquial. Las infiltraciones en el tejido peribronquial son probablemente reacciones fuertes del sistema inmunitario con presencia de linfocitos, células plasma y macrófagos. Muchas veces se muestran fenómenos autoinmunitarios en forma de la formación de anticuerpos con reacciones cruzadas con tejidos corporales. Después de un período de incubación medio de 3 semanas se producen en el 75% de los casos infecciones gripales fuertes con faringitis o traqueobronquitis. Del 5 al 25 % de los casos solamente de desarolla una neumonía atípica que comienza con cansancio, dolores de cabeza, fiebre y tos pertinante.

El M. pneumoniae no pertenece a la flora normal del hombre. Las Mycoplasma son de manifestación mundial y se transmiten con alta contagiosidad por el aire y por gotats de fluido contaminado. El grupo más afectado son los jovenes de 5 a 20 años. Las infecciones dentro de una familia o en comunidades se explican por la alta contagiosidad y el modo de infección. Son comunes las reinfecciones.

Especies	**Enfermedad**	**Síntomas (p.ej.)**	**Vía de transmisión**
M. pneumoniae	Enfermedad respiratoria por Mycoplasma pneumoniae	Fiebre, dolor de cabeza y tos persistente Enfermedad respiratoria, de infección asintomática a resfriados, faringitis, bronquitis, krupp, traqueobronquitis, pneumonitis y neumonía atípica primaria	aerógena, por gotitas de fluido contaminado

La infección o la presencia de un patógeno puede identificarse mediante:

- Microscopia
- Serología: p.ej. ELISA

2. USO PREVISTO

El enzimoinmunoensayo Mycoplasma pneumoniae IgM ELISA se utiliza para la determinación cualitativa de anticuerpos IgM específicos contra Mycoplasma pneumoniae en suero o plasma (citrato, heparina) humano.

3. PRINCIPIO DEL ENSAYO

La determinación inmunoenzimática cualitativa de anticuerpos específicos se basa en la técnica ELISA (Enzyme-linked Immunosorbent Assay).
Las Placas de Microtitulación están recubiertas con antígenos específicos unen a los anticuerpos de la muestra. Después de lavar los pocillos para eliminar todo el material de muestra no unida, el conjugado de peroxidasa de rábano (HRP) se añade. Este conjugado se une a los anticuerpos capturados. En una segunda etapa de lavado se retira el conjugado no unido. El complejo inmune formado por el conjugado unido se visualiza añadiendo substrato tetrametilbencidina (TMB), que da un producto de reacción azul.
La intensidad de este producto es proporcional a la cantidad de anticuerpos específicos en la muestra. se añade ácido sulfúrico para detener la reacción. Esto produce un cambio de color de azul a amarillo. La extinción a 450/620 nm se mide con un fotómetro de Placa de Microtitulación ELISA.

4. MATERIALES

4.1. Reactivos suministrados

- **Placa de Microtitulación:** 12 tiras de 8 pocillos rompibles, recubiertos con antígenos de Mycoplasma pneumoniae, en bolsa de aluminio.
- **Tampón de Dilución de Muestras IgM:** 1 botella de 100 mL de solución de tampón de fosfato (10 mM) para diluir la muestra; pH 7,2 ± 0,2; anti-humana IgG (RF Absorbente); color verde; listo para ser utilizado; tapa blanca; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Solución de Parada:** 1 botella de 15 mL de ácido sulfúrico, 0,2 mol/L, listo para ser utilizado; tapa roja.
- **Tampón de Lavado (20x conc.):** 1 botella de 50 mL de una solución de tampón de fosfato 20x concentrado (0,2 M) para lavar los pocillos; pH 7,2 ± 0,2; tapa blanca.
- **Conjugado:** 1 botella de 20 mL de conjugado de anticuerpos IgM anti-humano con peroxidasa en tampón de fosfato (10 mM); color rojo; tapa negra; listo para ser utilizado.
- **Solución de Sustrato de TMB:** 1 botella de 15 mL 3,3',5,5'-tetrametilbenzindina (TMB), < 0,1 %; listo para ser utilizado; tapa amarilla.
- **Control Positivo:** 1 botella de 2 mL control; color amarillo; tapa roja; listo para ser utilizado; ≤ 0,02% (v/v) MIT.
- **Control Cut-off:** 1 botella de 3 mL control; color amarillo; tapa verde; listo para ser utilizado; ≤ 0,02% (v/v) MIT.
- **Control Negativo:** 1 botella de 2 mL control; color amarillo; tapa azul; listo para ser utilizado; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Para indicaciones de peligro y consejos de prudencia consulte el cap. 12.1.
Para sustancias potencialmente peligrosas por favor revise la ficha de datos de seguridad.

4.2. Accesorios suministrados

- 1 lámina autoadhesiva
- 1 instrucciones de uso
- 1 esquema de la placa

4.3. Materiales e instrumentos necesarios

- Fotómetro de Placa de Microtitulación con filtros de 450/620 nm
- Incubadora 37 °C
- Dispositivo de lavado manual o automático de Placa de Microtitulación
- Micropipetas para uso de (10-1000 µL)
- Mezcladora Vortex
- Agua destilada
- Tubos de plástico desechables

5. ESTABILIDAD Y ALMACENAJE

Almacene el kit a 2...8 °C. Los reactivos abiertos son estables hasta la fecha de caducidad indicada en la etiqueta cuando se almacena a 2...8 °C.

6. PREPARACIÓN DE LOS REACTIVOS

Es muy importante llevar todos los reactivos y las muestras a temperatura ambiente (20...25 °C) y mezclarlos antes de ser utilizados!

6.1. Placa de Microtitulación

Las tiras rompibles están recubiertas con antígeno de Mycoplasma pneumoniae. Inmediatamente después de la eliminación de las tiras, las tiras restantes deben sellarse de nuevo en el papel de aluminio junto con la bolsita di dióxio de silicio y almacenar a 2...8 °C.

6.2. Tampón de Lavado (20x conc.)

Diluir el Tampón de Lavado 1+19; por ejemplo 10 mL del Tampón de Lavado + 190 mL de agua destilada. El Tampón de Lavado diluido es estable durante 5 días a temperatura ambiente (20…25 °C). En caso de aparecer cristales en el concentrado, calentar la solución a 37 °C, por ejemplo, en un baño María. Mezclar bien antes de la dilución.

6.3. Solución de Sustrato de TMB

La solución está lista para su uso y debe almacenarse a 2...8 °C, protegida de la luz. La solución debe ser incolora o podría tener un color ligeramente azul claro. Si el sustrato se convierte en azul, es posible que haya sido contaminado y no puede ser utilizado en el ensayo.

7. TOMA Y PREPARACIÓN DE LAS MUESTRAS

Usar muestras de suero o plasma (citrato, heparina) humano. Si el ensayo se realiza dentro de 5 días después de la toma de sangre, las muestras pueden ser almacenadas a 2...8 °C, en caso contrario deben ser alicuotadas y almacenadas congeladas (-70...-20 °C). Agitar bien las muestras descongeladas antes de diluirlas. Evitar congelaciones y descongelaciones repetidas. No se recomienda la inactivación por calor de las muestras.

7.1. Dilución de las muestras

Antes del ensayo, las muestras tienen que estar diluidas en relación 1 + 100 con el Tampón de Dilución de Muestras IgM, p. e. 10 µL de la muestra con 1 mL de Tampón de Dilución de Muestras IgM, mezclar bien con la mezcladora Vortex.

8. PROCEDIMIENTO

Por favor, leer cuidadosamente las instrucciones de uso del ensayo **antes** de realizarlo. Para el buen funcionamiento de la técnica es necesario seguir las instrucciones. El siguiente procedimiento es válido solamente para el método manual. Si se realiza el ensayo en los sistemas automáticos de ELISA es aconsejable elevar el número de lavados de tres hasta cinco veces y el volumen de Tampón de Lavado de 300 µL a 350 µL para excluir efectos de lavado. Preste atención al capítulo 12. Antes de comenzar, especificar exactamente la repartición y posición de las muestras y de los estándares/controles (se recomienda determinar en duplicado) en el esquema de la placa suministrada. Usar la cantidad necesaria de tiras o pocillos e insertarlos en el soporte.

Realizar el ensayo en el orden indicado y sin retraso.

Para cada paso de pipeteado en los estándares/controles y en las muestras, usar siempre puntas de pipeta de un solo uso.

Graduar la incubadora a 37 ± 1°C.

1. Pipetear 100 µL de estándares/controles y muestras en los pocillos respectivos. Dejar el pocillo A1 para el blanco.
2. Recubrir las tiras con los autoadhesivos suministrados.
3. **Incubar 1 h ± 5 min a 37 ± 1°C.**
4. Después de la incubación, retirar el autoadhesivo, aspirar el líquido de la tira y lavarla tres veces con 300 µL del Tampón de Lavado. Evitar el rebosamiento de los pocillos. El intervalo entre lavado y aspiración debe ser > 5 segundos. Para sacar el líquido restante de las tiras, es conveniente sacudirlas sobre papel absorbente.

   Nota: El lavado es muy importante! Un mal lavado insuficiente provoca una baja precisión y resultados falsamente elevados!
5. Pipetar 100 µL de conjugado en cada pocillo con excepción del blanco substrato A1.
6. **Incubar 30 min a la temperatura ambiente (20…25 °C).** Evitar la luz solar directa.
7. Repetir el lavado como en el paso numero 4.
8. Pipetar 100 µL de la Solución de Sustrato de TMB en todos los pocillos.
9. **Incubar exactamente 15 min en oscuridad a temperatura ambiente (20...25 °C).** Un color azul se produce en las muestras positivas debido a la reacción enzimática.
10. Pipetear en todos los pocillos 100 µL de la Solución de Parada en el mismo orden y mismo intervalo de tiempo como con el Solución de Sustrato de TMB, por lo tanto un cambio de color de azul a amarillo se produce.
11. Medir la extinción con 450/620 nm en un periodo de 30 min después de añadir la Solución de Parada.

8.1. Medición

Ajustar el fotómetro de Placa de Microtitulación ELISA al cero utilizando el Blanco.

Si por razones técnicas el fotómetro de Placa de Microtitulación de ELISA no se puede ajustar a cero utilizando el Blanco, el valor de la absorbancia de este debe ser sustraído de los demás valores de absorbancia medidos con el fin de obtener resultados fiables!

Medir la **extinción** de todos los pocillos con **450 nm** y anotar los resultados de los estándares/controles y de las muestras en el esquema de la placa.

Es aconsejable realizar la medición **bicromática** a una longitud de onda de referencia de 620 nm.

Si se efectuaron análisis en duplicado o múltiples, hay que calcular **el promedio de los valores de extinción** de los pocillos correspondientes.

9. CÁLCULO DE LOS RESULTADOS

9.1. Criterios de validez del ensayo

Para que un ensayo se considere válido, deben seguirse estrictamente las presentes instrucciones de uso y deben cumplirse los siguientes criterios:

- **Blanco:** valor de la extinción **< 0,100**
- **Control Negativo:** valor de la extinción **< 0,200 y < Cut-off**
- **Control Cut-off:** valor de la extinción **0,150 – 1,300**
- **Control Positivo:** valor de la extinción **> Cut-off**

Si estos criterios no se cumplen, la prueba no es váida y deberá repetirse.

9.2. Cálculo del valor de la medición

El Cut-off se obtiene de los valores de la extinción de lo Control Cut-off.

Ejemplo: 0,42 OD Control Cut-off + 0,44 OD Control Cut-off = 0,86:2 = 0,43

Cut-off = 0,43

9.2.1. Resultados en unidades [NTU]

$$\frac{\text{Promedio valor de la extinción de la muestra x 10}}{\text{Cut-off}} = \text{[NovaTec-unidades = NTU]}$$

Ejemplo: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretación de los resultados

Cut-off	10 NTU	-
Positivo	> 11 NTU	Los anticuerpos contra el patógeno están presentes. Ha producido un contacto con el antígeno (patógeno resp. vacuna).
Zona intermedia	9 – 11 NTU	Los anticuerpos contra el patógeno no se pudieron detectar claramente. Se recomienda repetir la prueba con una muestra fresca en 2 a 4 semanas. Si el resultado es de nuevo en la zona intermedia, la muestra se considera como **negativa**.
Negativo	< 9 NTU	La muestra no contiene anticuerpos contra el patógeno. Un contacto previo con el antígeno (patógeno resp. vacuna) es poco probable.
El diagnóstico de una infección no solamente se debe basar en el resultado del ensayo. Es necesario considerar la anamnésis y la sintomatología del paciente junto al resultado serológico. Estos resultados sólo tienen valor restringido en pacientes inmunodeprimidos o en neonatos.		

9.3.1. Isotipos de anticuerpo y Estado de la Infección

Serología	Significado
IgM	Característica de la respuesta primaria del anticuerpo Alto título de IgM con bajo título de IgG → sugieren una infección muy reciente o aguda Raras: → persistente IgM
IgG	Característica de la respuesta secundaria del anticuerpo Pueden persistir por varios años El alto título de IgG con bajo título de IgM: → pueden indicar una infección pasada
IgA	Producida en el revestimiento mucoso en todo el cuerpo (⇒ Barrera Protectora) Usualmente producida tempranamente en el transcurso de la infección

10. CARACTERÍSTICAS DEL ENSAYO

Los resultados están basados en el grupo de pruebas investigado; no se trata de especificaciones garantizadas.

Para obtener más información sobre las características del ensayo, por favor, entre en contacto NovaTec Immundiagnostica GmbH.

10.1. Precisión

Intra ensayo	**n**	**Promedia (E)**	**CV (%)**
#1	24	0,526	5,02
#2	24	0,905	6,20
#3	24	1,074	6,34
Inter ensayo	**n**	**Promedia (NTU)**	**CV (%)**
#1	12	19,56	7,08
#2	12	18,16	13,13
#3	12	5,28	7,31

10.2. Especificad diagnóstica

La especificidad del ensayo se define como la probabilidad que tiene el ensayo de dar un resultado negativo en ausencia del analítico específico. Es 99,29% (95% Intervalo de confianza: 96,11% - 99,98%).

10.3. Sensibilidad de diagnóstico

La sensibilidad del ensayo se define como la probabilidad que tiene el ensayo de dar un resultado positivo en presencia del analítico específico. Es 100% (95% Intervalo de confianza: 95,01% - 100%).

10.4. Interferencias

Las muestras lipémicas, ictéricas e hemolíticas no mostraron interferencias con este equipo ELISA hasta una concentración de 5 mg/mL para triglicéridos, de 0,5 mg/mL para bilirrubina y de 10 mg/mL hemoglobina.

10.5. Reactividad cruzada

Pruebas realizadas con un panel de muestras con distinta actividad de anticuerpos para estudiar parámetros de reactividad no dieron falsos positivos debidos a reactividad cruzada.

11. LIMITACIONES DEL ENSAYO

Una contaminación de las muestras con bacterias, o una congelación y descongelación repetida pueden producir cambios en los valores de la extinción.

12. PRECAUCIONES Y ADVERTENCIAS

- El procedimiento, la información, las precauciones y los avisos de las instrucciones de uso han de ser seguidas estrictamente. La utilización de equipos con analizadores y equipamiento similar tiene que ser validada. No se autorizan cambios en el diseño, composición y procedimiento, así como cualquier utilización en combinación con otros productos no aprobados por el fabricante; el usuario debe hacerse responsable de estos cambios. El fabricante no responderá ante falsos resultados e incidentes debidos a estas razones. El fabricante no responderá ante cualquier resultado por análisis visual de las muestras de los pacientes.
- Solo para diagnostico in vitro.
- Todos los materiales de origen humano o animal deberán ser considerados y tratados como potencialmente infecciosos.
- Todos los componentes de origen humano han sido examinados y resultaron no reactivos a anticuerpos contra el VIH, VHC y HbsAG.
- No intercambiar reactivos y Placa de Microtitulación de cargas diferentes.
- No usar reactivos de otro fabricante para este ensayo.
- No usar después de la fecha de caducidad.
- Sólo usar recambios de pipetas, dispensadores y materiales de laboratorio limpios.
- No intercambiar las tapas de los diferentes reactivos, para evitar la contaminación cruzada.
- Para evitar la evaporación y una contaminación microbiana, cierre inmediatamente las botellas después de usarlas.
- Después de abrirlas y posterior almacenaje, asegurarse de que no existe contaminación microbiana antes de seguir usándolas.
- Para evitar contaminaciones cruzadas y resultados erróneamente aumentados, Pipetear cuidadosamente las muestras y los reactivos en los pocillos sin salpicar.
- El ELISA sólo está diseñado para personal cualificado siguiendo las normas de buenas prácticas de laboratorio (Good Laboratory Practice,GLP).
- Para un mayor control de calidad interno, cada laboratorio deberá utilizar además muestras conocidas.

12.1. Nota de seguridad para los reactivos que contienen sustancias peligrosas

Los reactivos pueden contener CMIT/MIT (3:1) o MIT (consulte el cap. 4.1)
Por lo tanto, se aplican las indicaciones de peligro y consejos de prudencia.

Atención

H317	Puede provocar una reacción alérgica en la piel.
P261	Evitar respirar el aerosol.
P280	Llevar guantes/ prendas de protección.
P302+P352	EN CASO DE CONTACTO CON LA PIEL: Lavar con abundante jabón agua.
P333+P313	En caso de irritación o erupción cutánea: Consultar a un médico.
P362+P364	Quitar las prendas contaminadas y lavarlas antes de volver a usarlas.

Se puede encontrar más información en la ficha de datos de seguridad.

12.2. Indicaciones para la eliminación de residuos

Por regla general, los productos químicos y las preparaciones son residuos peligrosos. Su eliminación esta sometida a las leyes y los decretos nacionales sobre la eliminación de residuos. Las autoridades informan sobre la eliminación de residuos peligroso.

13. INFORMACIONES PARA PEDIDOS

N° del producto:	MYCM0350	Mycoplasma pneumoniae IgM ELISA (96 determinaciones)

PORTUGUÊS

1. INTRODUÇÃO

Os micoplasmas pertencem à classe Mollicutes composta por três famílias e quatro géneros distintos, um dos quais é o Mycoplasma com mais de 60 espécies. Os Micoplasmas são os menores organismos de vida livre conhecidos (300 a 500 nm de diâmetro) e, ao contrário das bactérias normais não possuem uma parede celular. Os Micoplasmas são parasitas extracelulares, especialmente nas membranas mucosas, que podem causar infecções em humanos, animais, plantas e culturas celulares. O Mycoplasma pneumoniae é essencialmente um agente patogénico respiratório (obrigatório) em humanos envolvendo a nasofaringe, garganta, traqueia, brônquios, bronquíolos e alvéolos. Outros Micoplasmas, M. buccale, M. faucium, M. orale e M. salivarium são comensais na cavidade oral. O Mycoplasma hominis e o Ureaplasma urealyticum habitam principalmente o trato genital e podem actuar como invasores oportunistas. O M. pneumoniae é de longe o agente patogénico mais importante deste grupo. A infecção por M. pneumoniae ocorre em todo o mundo, a sua epidemiologia tem sido estudada principalmente no E.U.A., Europa e Japão. As infecções são endémicas nas grandes áreas urbanas, e são observados aumentos da epidemia em intervalos variáveis. Foi estimado que o M. pneumoniae seja a causa de 15-20% de todas as pneumonias, a taxa é mais elevada em crianças e adultos jovens. 74% das infecções por M. pneumoniae são assintomáticas, a reinfecção pode ocorrer. A imunidade adquirida naturalmente à infecção por M. pneumoniae parece ser de duração limitada (2-3 anos).

Espécies	Doença	Sintomas (p.ex.)	Via de transmissão
M. pneumoniae	Doença respiratória Mycoplasma pneumonia	Febre, cefaléia e tosse persistente Doença respiratória: de infecção assintomática ao resfriados, faringite, bronquite, crup, traqueobronquite, pneumonite e pneumonia primária atípica	Por via aérea, a transmissão do vírus ocorre por infecção por gotículas;

Infecção ou presença de patógeno pode ser identificada por:

- Microscopia
- Serologia: p. ex. ELISA

2. UTILIZAÇÃO PRETENDIDA

O kit Mycoplasma pneumoniae IgM ELISA destina-se à determinação qualitativa de anticorpos da classe IgM contra Mycoplasma pneumoniae no soro ou plasma (citrato, heparina) humanos.

3. PRINCÍPIO DO ENSAIO

A determinação imunoenzimática qualitativa de anticorpos específicos é baseado na técnica de ELISA (do inglês Enzyme-linked Immunosorbent Assay).
As Placas de Microtitulação são revestidas com antigénios específicos que se ligam os anticorpos correspondentes da amostra. Após lavagem dos poços, para remover todo o material de amostra não ligado, um conjugado de peroxidase de rábano (HRP) é adicionado. Este conjugado se liga aos anticorpos capturados. Num segundo passo de lavagem o conjugado não ligado é removido. O complexo imune formado pelo conjugado ligado é visualizado por adição de substrato de tetrametilbenzidina (TMB), o que dá um produto de reacção azul.
A intensidade deste produto é proporcional à quantidade de anticorpos específicos da amostra. O ácido sulfúrico é adicionado para parar a reacção. Isso produz uma mudança de cor de azul para amarelo.
Absorvância a 450/620 nm é lida utilizando um fotômetro de Placa de Microtitulação ELISA.

4. MATERIAIS

4.1. Reagentes fornecidos

- **Placa de Microtitulação:** 12 tiras de 8 poços, destacáveis e quebráveis, revestidas com antigénio de Mycoplasma pneumoniae, em bolsas de folha de alumínio com fecho.
- **Tampão de Diluição de Amostra IgM:** 1 frasco contendo 100 mL de tampão fosfato (10 mM) para diluição da amostra, pH 7,2 ± 0,2; anti-humana IgG (RF Absorbent); de cor verde; pronto a usar; tampa branca; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Solução de Bloqueio:** 1 frasco contendo 15 mL ácido sulfúrico; 0,2 mol/L; pronto a usar; tampa vermelha.
- **Tampão de Lavagem (conc. 20x):** 1 frasco contendo 50 mL de um tampão fosfato (0,2 M); concentrado 20 vezes (pH 7,2 ± 0,2) para a lavagem dos poços; tampa branca.
- **Conjugado:** 1 frasco contendo 20 mL de anticorpo para IgM humana marcados com peroxidase no tampão fosfato (10 mM); de cor vermelho, pronto a usar; tampa preta.
- **Solução Substrato TMB:** 1 frasco contendo 15 mL de 3,3',5,5'-tetrametilbenzidina (TMB), < 0,1 %; pronto a usar; tampa amarela.
- **Controle Positivo:** 1 frasco contendo 2 mL controle; de cor amarela; pronto a usar; tampa vermelha; ≤ 0,02% (v/v) MIT.
- **Controle Cut-off:** 1 frasco contendo 3 mL controle; de cor amarela; pronto a usar; tampa verde; ≤ 0,02% (v/v) MIT.
- **Controle Negativo:** 1 frasco contendo 2 mL controle; de cor amarela; pronto a usar; tampa azul; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Para advertências de perigo e recomendaçaões de prudência ver capitulo 12.1.
Para substâncias potencialmente perigosas verifique a ficha de dados de segurança.

4.2. Materiais fornecidos

- 1 Película de cobertura
- 1 Instruções de uso
- 1 Layout da placa

4.3. Materiais e Equipamento necessários

- Fotômetro de Placa de Microtitulação ELISA, equipado para a medição da absorvância a 450/620 nm
- Incubadora 37 °C
- Equipamento manual ou automático para a lavagem de Placas de Microtitulação
- Pipetas para dispensar volumes entre 10 e 1000 µL
- Agitador de tubos tipo Vortex
- Água destilada
- Tubos descartáveis

5. ESTABILIDADE E ARMAZENAMENTO

Armazene o kit a 2...8 °C. Os reagentes abertos são estáveis até o prazo de validade impresso no rótulo quando armazenado a 2...8 °C.

6. PREPARAÇÃO DOS REAGENTES

É muito importante deixar todos os reagentes e amostras estabilizar à temperatura ambiente (20...25 °C) misturá-los antes de iniciar o teste!

6.1. Placa de Microtitulação

As tiras quebraveis são revestidas com antigénio Mycoplasma pneumoniae. Imediatamente após a remoção das tiras necessarias, as tiras restantes devem ser lacradas de novo na folha de alumínio juntamente com o saquinho de silicio fornecido e armazenadar a 2...8 °C.

6.2. Tampão de Lavagem (conc. 20x)

Diluir o Tampão de Lavagem 1+19; por exemplo. 10 mL do Tampão de Lavagem + 190 mL de água destilada. O Tampão de Lavagem diluído é estavel durante 5 dias à temperatura ambiente (20…25 °C). Caso apareça cristais no concentrado, aquecer a solução a 37 °C por exemplo, em banho Maria. Misture bem antes da diluição.

6.3. Solução Substrato TMB

A solução está pronta para uso e tem de ser armazenada à 2...8 °C, protegida da luz. A solução deve ser incolor ou poderia ter uma ligeira coloração azul claro. Se o substrato se transforma em azul, pode ter sido contaminado e não pode ser usado no teste.

7. COLHEITA E PREPARAÇÃO DAS AMOSTRAS

Usar com este ensaio amostras de soro ou plasma (citrato, heparina) humanos. Se o ensaio for realizado dentro de 5 dias após colheita da amostra, o espécime deve ser mantido a 2…8 °C; caso contrário devem ser alicotadas e armazenadas congeladas (-70...-20 °C). Se as amostras forem armazenadas congeladas, misturar bem as amostras descongeladas antes de testar. Evitar congelar e descongelar repetidamente.
Não é recomendada a inactivação por calor das amostras.

7.1. Diluição das amostras

Antes de testar todas as amostras devem ser diluídas 1 + 100 com Tampão de Diluição de Amostra IgM. Dispensar 10 µL de amostra e 1 mL de Tampão de Diluição de Amostra IgM em tubos para obter uma diluição 1 + 100 e misturar meticulosamente com um vortex.

8. PROCEDIMENTO DO ENSAIO

Por favor, ler atentamente as instruções de uso **antes** de realizar o teste. A fiabilidade dos resultados depende da adesão estrita ao as instruções de uso, conforme descritas. O procedimento de ensaio a seguir está validado apenas para o procedimento manual. Se o teste for realizado em sistemas automáticos para teste ELISA é recomendável aumentar os passos de lavagem de três até cinco e o volume do Tampão de Lavagem de 300 µL para 350 µL para evitar efeitos de lavagem. Preste atenção ao capítulo 12. Antes de iniciar o teste, o plano de distribuição e identificação de todas as amostras e calibradores/controles (é recomendado determinar em duplicidade) deve ser cuidadosamente estabelecido no Layout da placa fornecida no kit. Seleccionar o número necessário de tiras ou poços e inserir os mesmos no suporte.

Realizar todas as etapas do teste na ordem indicada e sem atrasos significativos.

Na pipetagem deve ser utilizada uma ponta limpa e descartável para dispensar cada controle e amostra.

Ajustar a incubadora para 37 ± 1 °C.

1. Dispensar 100 µL dos calibradores/controles e das amostras diluídas nos poços respectivos. Deixar o poço A1 vazio para o branco substrato.
2. Cobrir os poços com a película fornecida no kit.
3. **Incubar durante 1 hora ± 5 min a 37 ± 1 °C.**
4. Quando terminar a incubação, remover a película, aspirar o conteúdo dos poços e lavar cada poço três vezes com 300 µL de Tampão de Lavagem. Evitar que os poços de reacção transbordem. O intervalo entre a lavagem e a aspiração deve ser > 5 seg. No final, retirar cuidadosamente o fluido restante batendo delicadamente as tiras sobre papel absorvente, antes da próxima etapa!

   Nota: A lavagem é muito importante! Lavagem insuficiente resulta em baixa precisão e falsos resultados.
5. Dispensar 100 µL de Conjugado em todos os poços, excepto no poço do Branco substrato A1.
6. **Incubar durante 30 min à temperatura ambiente (20...25°C).** Não expor diretamente à luz solar.
7. Repetir a etapa 4.
8. Dispensar 100 µL de Solução Substrato TMB em todos os poços.
9. **Incubar durante exactamente 15 min à temperatura ambiente (20...25°C) e no escuro.** A cor azul devido a uma reacção enzimática.
10. Dispensar 100 µL de Solução de Bloqueio em todos os poços, pela mesma ordem e com a mesma velocidade a que foi dispensada a Solução Substrato TMB,desse modo uma mudança de cor de azul para amarelo ocorre.
11. Medir a absorvância a 450/620 nm dentro de 30 min após a adição da Solução de Bloqueio.

8.1. Medição

Ajustar o fotômetro para Placa de Microtitulação ELISA **a zero** usando o **Branco substrato .**

Se - devido à razões técnicas – o fotômetro para Placa de Microtitulação ELISA não puder ser ajustado a zero usando o Branco substrato, valor da absorvância deste deve ser subtraido de todos os outros valores de absorvância medidos de forma a obter resultados fiáveis!

Medir a absorvância de todos os poços a **450 nm** e registar os valores da absorvância para cada calibrador/controle e amostra no Layout da placa.

É recomendado fazer a medição **dicromática** usando como referência um comprimento de onda de 620 nm.

Se determinações duplas foram realizadas, calcular **os valores médios de absorvância**.

9. RESULTADOS

9.1. Critérios de validação do ensaio

Para que um ensaio seja considerado válido, estas Instruções de Uso devem ser rigorosamente seguidas, e os seguintes critérios devem ser cumpridos:

- **Branco substrato**: Valor de Absorvância **< 0,100**
- **Controle Negativo**: Valor de Absorvância **< 0,200 e < Cut-off**
- **Controle Cut-off**: Valor de Absorvância **0,150 – 1,300**
- **Controle Positivo**: Valor de Absorvância **> Cut-off**

Se estes critérios não forem cumpridos, o teste não é válido e deve ser repetido.

9.2. Cálculo dos Resultados

O Cut-off é o valor médio da absorvância das determinações do Controle Cut-off.

Exemplo: Valor da absorvância do Controle Cut-off 0,42 + valor da absorvância do Controle Cut-off 0,44 = 0,86: 2 = 0,43
Cut-off = 0,43

9.2.1. Resultados em Unidades [NTU]

$$\frac{\text{Valor da absorvância (média) da amostra} \times 10}{\text{Cut-off}} = \text{[Unidades NovaTec = NTU]}$$

Exemplo: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretação dos Resultados

Cut-off	10 NTU	-
Positivo	> 11 NTU	Os anticorpos contra o agente patogênico estão presente. Houve um contacto com o antigénio (patógeno resp vacina).
Zona cinzenta	9 – 11 NTU	Os anticorpos contra o agente patogênico não puderam ser claramente detectados. Recomenda-se a repetir o teste com uma amostra fresca em 2 a 4 semanas. Se o resultado estiver novamente dentro da zona cinzenta, a amostra é julgada como **negativa**.
Negativo	< 9 NTU	A amostra não contém os anticorpos contra o agente patogênico. Um contato prévio com o antígeno (patógeno resp. vacina) é improvável.
O diagnóstico de uma doença infecciosa não deve ser estabelecido com base num único resultado do teste. Um diagnóstico preciso deve ter em consideração a história clínica, a sintomatologia bem como dados serológicos. Em paciente imunossuprimidos e recém-nascidos os dados serológicos têm apenas valor restrito.		

9.3.1. Isotipos de anticorpos e Estado da Infecção

Sorologia	Significado
IgM	Característica da resposta primária do anticorpo Alto título de IgM com baixo título de IgG: → sugere uma infecção muito recente ou aguda Raros: → persistente IgM
IgG	Característica da resposta secundária do anticorpo Podem persistir por vários anos Alto título de IgG com baixo título de IgM: → pode indicar uma infecção passada
IgA	Eles são produzidos a nível das mucosas em todo o corpo (⇒ barreira protectora) Geralmente são producidas no inicio infecção

10. CARACTERÍSTICAS DE DESEMPENHO ESPECÍFICAS

Os resultados referem-se aos grupos de amostras investigados; estas não são especificações garantidas.

Para mais informações sobre as características de desempenho específicas, por favor, entre em contato NovaTec Immundiagnostica GmbH.

10.1. Precisão

Intra ensaio	**n**	**Média (E)**	**CV (%)**
#1	24	0,526	5,02
#2	24	0,905	6,20
#3	24	1,074	6,34
Inter ensaio	**n**	**Média (NTU)**	**CV (%)**
#1	12	19,56	7,08
#2	12	18,16	13,13
#3	12	5,28	7,31

10.2. Especificidade Diagnóstica

A especificidade diagnóstica é definida como a probabilidade do ensaio ser negativo na ausência do analito específico.
É de 99,29% (95% Intervalo de confiança: 96,11% - 99,98%).

10.3. Sensibilidade Diagnóstica

A sensibilidade diagnóstica é definida como a probabilidade do ensaio ser positivo na presença do analito específico.
É de 100% (95% Intervalo de confiança: 95,01% - 100%).

10.4. Interferências

Não são observadas interferências com amostras hemolisadas, lipémicas ou ictéricas até uma concentração de hemoglobina de 10 mg/mL, de triglicerídeos de 5 mg/mL e de bilirrubina de 0,5 mg/mL.

10.5. Reacção cruzada

A investigação do painel de amostras com atividades de anticorpos em parâmetros com potencial de reação cruzada não revelou nenhuma evidencia de resultados falso-positivos devido a reações cruzadas.

11. LIMITAÇÕES DO PROCEDIMENTO

Contaminação bacteriana ou a repetição de ciclos de congelação-descongelação do espécime podem afectar os valores da absorvância.

12. PRECAUÇÕES E AVISOS

- O procedimento do teste, as informações, as precauções e avisos nas instruções para utilização têm de ser rigorosamente seguidas. O uso de kits de teste com analisadores e equipamento similar tem de ser validado. Qualquer alteração no desenho, composição e procedimento do teste bem como qualquer utilização em combinação com outros produtos não aprovados pelo fabricante não estão autorizados; o próprio utilizador é responsável por tais alterações. O fabricante não é legalmente responsável por resultados falsos e incidentes originados por estes motivos. O fabricante não é legalmente responsável por quaisquer resultados obtidos por análise visual das amostras dos pacientes.
- Apenas para uso no diagnóstico in-vitro.
- Todos os materiais de origem humana ou animal devem ser considerados e tratados como potencialmente infectantes.
- Todos os componentes de origem humana usados para a produção destes reagentes foram testados para anticorpos anti-HIV, anticorpos anti-HCV e HBsAg e foram considerados não-reactivos.
- Não trocar e/ou juntar reagentes ou Placa de Microtitulação de lotes de produção diferentes.
- Nenhuns reagentes de outros fabricantes devem ser usados juntamente com reagentes deste kit de teste.
- Não usar reagentes após a data de validade indicada no rótulo.
- Usar apenas pontas de pipeta, dispensadores e material de laboratório limpos.
- Não trocar as tampas dos frascos dos reagentes para evitar contaminação cruzada.
- Fechar firmemente os frascos dos reagentes imediatamente após a utilização para evitar evaporação e contaminação microbiana.
- Após a primeira abertura e armazenamento subsequente verificar se existe contaminação microbiana dos frascos do conjugado e dos calibradores/controles antes de utiliza-los novamente.
- Para evitar contaminação-cruzada e resultados falsamente elevados, pipetar as amostras dos pacientes e dispensar o reagentes precisamente nos poços sem salpicar.
- O ELISA é projetado apenas para pessoal qualificado seguindo os padrões de boas práticas de laboratório (Good Laboratory Practice, GLP).
- Para um controle de qualidade interno adicional cada laboratório deve utilizar amostras conhecidas.

12.1. Nota de segurança para reagentes que contenham substâncias perigosas

Os reagentes podem conter CMIT/MIT (3:1) or MIT (ver capitulo 4.1)
Portanto, as seguintes advertências de perigo e recomendações de prudência aplicam-se.

Atenção

H317	Pode provocar uma reacção alérgica cutânea.
P261	Evitar respirar os aerossóis.
P280	Usar luvas de protecção/ vestuário de protecção.
P302+P352	SE ENTRAR EM CONTACTO COM A PELE: lavar abundantemente com sabão água.
P333+P313	Em caso de irritação ou erupção cutânea: consulte um médico.
P362+P364	Retirar a roupa contaminada e lavá-la antes de a voltar a usar.

Mais informações podem ser encontradas na ficha de dados de segurança.

12.2. Considerações de Eliminação

Resíduos de químicos e preparações são geralmente considerados como resíduos perigosos. A eliminação deste tipo de resíduos está regulada por leis e normativas nacionais e regionais. Contactar as autoridades locais ou empresas de gestão de resíduos as quais podem aconselhar sobre como eliminar resíduos perigosos.

13. INFORMAÇÃO DE PEDIDO

Prod. No.:	MYCM0350	Mycoplasma pneumoniae IgM ELISA (96 Determinações)

BIBLIOGRAPHY / LITERATUR / BIBLIOGRAPHIE / BIBLIOGRAFIA / BIBLIOGRAFÍA / BIBLIOGRAFIA

Mycoplasmataceae (2009). In Herbert Hof, Rüdiger Dörries, Gernot Geginat: Medizinische Mikrobiologie. [Immunologie, Virologie, Bakteriologie, Mykologie, Parasitologie, klinische Infektiologie, Hygiene] ; 237 Tabellen. 4., vollst. überarb. und erw. Aufl. Stuttgart: Thieme (Duale Reihe), pp. 452–455.

Clyde, Wallace A., JR (1993): Clinical overview of typical Mycoplasma pneumoniae infections. In *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America* 17 Suppl 1, S32-6.

Foy, Hjordis M. (1993): Infections caused by Mycoplasma pneumoniae and possible carrier state in different populations of patients. In *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America* 17 Suppl 1, S37-46.

Jacobs, E. (1993): Serological diagnosis of Mycoplasma pneumoniae infections: a critical review of current procedures. In *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America* 17 Suppl 1, S79-82.

Kayser, Fritz H. (2005): Bacteria as Human Pathogens. In Fritz H. Kayser, Kurt A. Bienz, Johannes Eckert, Rolf M. Zinkernagel: Medical microbiology. Stuttgart, New York: Thieme (Thieme Flexibook), pp. 229–346.

O'Handley, John G.; Gray, Larry D. (1997): The incidence of Mycoplasma pneumoniae pneumonia. In *The Journal of the American Board of Family Practice* 10 (6), pp. 425–429.

Vikerfors, Tomas; Brodin, Glenn; Grandien, Monica; Hirschberg, Lotta; Krook, Aud; Pettersson, Carl-Axel (1988): Detection of specific IgM antibodies for the diagnosis of Mycoplasma pneumoniae infections: a clinical evaluation. In *Scandinavian journal of infectious diseases* 20 (6), pp. 601–610.

Wiegand, R. (1994): Mycoplasma pneumoniae. In Henning Brandis, Hans J. Eggers, W. Köhler, Gerhard Pulverer (Eds.): Lehrbuch der medizinischen Mikrobiologie. 7. Aufl. Stuttgart: Fischer; G. Fischer.

ABBREVIATIONS / ABKÜRZUNGEN / ABRÉVIATIONS / ABBREVIAZIONI / ABREVIACIÓNES / ABREVIATURAS

CMIT	5-chloro-2-methyl-4-isothiazolin-3-one
MIT	2-methyl-2H-isothiazol-3-one

SYMBOLS KEY / SYMBOLSCHLÜSSEL / EXPLICATION DES SYMBOLES / LEGENDA / SIMBOLOS / TABELA DE SIMBOLOS

	Manufactured by / Hergestellt von / Fabriqué par / Prodotto da / Fabricado por / Fabricado por
IVD	In Vitro Diagnostic Medical Device / In Vitro Diagnosticum / Dispositif médical de diagnostic in vitro / Diagnostico in vitro / Producto para diagnóstico In vitro / Dispositivo Médico para Diagnóstico In Vitro
LOT	Lot Number / Chargenbezeichnung / Numéro de lot / Lotto / Número de lote / Número de lote
	Expiration Date / Verfallsdatum / Date de péremption / Scadenza / Fecha de caducidad / Data de Validade
	Storage Temperature / Lagertemperatur / Température de conservation / Temperatura di conservazione / Temperatura de almacenamiento / Temperatura de Armazenamento
CE	CE Mark / CE-Zeichen / Marquage CE / Marchio CE / Marca CE / Marca CE
REF	Catalogue Number / Katalog Nummer / Référence du catalogue / Numero di codice / Número de Catálogo / Número de Catálogo
	Consult Instructions for Use / Arbeitsanleitung beachten / Consulter la notice d'utilisation / Consultare le istruzioni per l'uso/ Consulte las Instrucciones de Uso / Consultar as Instruções de Utilização
MTP	Microtiterplate / Mikrotiterplatte / Plaque de Microtitrage / Piastre di Microtitolazione / Placa de Microtitulação / Placa de Microtitulação
CONJ	Conjugate / Konjugat / Conjugué / Coniugato / Conjugado / Conjugado
CONTROL | -	Negative Control / Negativkontrolle / Contrôle Négatif / Controllo Negativo / Control Negativo / Controle Negativo
CONTROL | +	Positive Control / Positivkontrolle / Contrôle Positif / Controllo Positivo / Control Positivo / Controle Positivo
CUT OFF	Cut-off Control / Cut-off Kontrolle / Contrôle Cut-off / Controllo Cut-off / Control Cut-off / Controle Cut-off
DIL | M	IgM Sample Dilution Buffer / IgM-Probenverdünnungspuffer / Tampon de Dilution d'Échantillon IgM / Tampone di Diluizione del Campione IgM / Tampón de Dilución de Muestras IgM/ Tampão de Diluição de Amostra IgM
SOLN | STOP	Stop Solution / Stopplösung / Solution d'Arrêt / Soluzione Bloccante / Solución de Parada/ Solução de Bloqueio
SUB | TMB	TMB Substrate solution / TMB-Substratlösung / Solution de Substrat TMB / Soluzione Substrato TMB / Solución de Sustrato de TMB / Solução Substrato TMB
WASH | BUF | 20x	Washing Buffer 20x concentrated / Waschpuffer 20x konzentriert / Tampon de Lavage concentré 20 x / Tampone di Lavaggio concentrazione x20 / Tampón de Lavado concentrado x20 / Tampão de Lavagem concentrada 20x
	Contains sufficient for "n" tests / Ausreichend für "n" Tests / Contenu suffisant pour "n" tests / Contenuto sufficiente per "n" saggi / Contenido suficiente para "n" tests / Conteúdo suficiente para "n" testes

SUMMARY OF TEST PROCEDURE / KURZANLEITUNG TESTDURCHFÜHRUNG / RÉSUMÉ DE LA PROCEDURE DE TEST / SCHEMA DELLA PROCEDURA / RESUMEN DE LA TÉCNICA / RESUMO DO PROCEDIMENTO DE TESTE

SCHEME OF THE ASSAY

Mycoplasma pneumoniae IgM ELISA

Test Preparation

Prepare reagents and samples as described. Establish the distribution and identification plan for all samples and standards/controls on the plate layout supplied in the kit. Select the required number of microtiter strips or wells and insert them into the holder.

Assay Procedure

	Substrate Blank (A1)	Negative Control	Cut-off Control	Positive Control	Sample (diluted 1+100)
Negative Control	-	100 µL	-	-	-
Cut-off Control	-	-	100 µL	-	-
Positive Control	-	-	-	100 µL	-
Sample (diluted 1+100)	-	-	-	-	100 µL
Cover wells with foil supplied in the kit **Incubate for 1 h at 37 ± 1 °C** Wash each well three times with 300 µL of Washing Buffer					
Conjugate	-	100 µL	100 µL	100 µL	100 µL
Incubate for 30 min at room temperature (20...25 °C) Do not expose to direct sunlight Wash each well three times with 300 µL of Washing Buffer					
TMB Substrate solution	100 µL	100 µL	100 µL	100 µL	100 µL
Incubate for exactly 15 min at room temperature (20...25 °C) in the dark					
Stop Solution	100 µL	100 µL	100 µL	100 µL	100 µL
Photometric measurement at 450 nm (reference wavelength: 620 nm)					

NovaTec Immundiagnostica GmbH

Waldstraße 23 A6
63128 Dietzenbach, Germany

Tel.: +49 (0) 6074-48760 Fax: +49 (0) 6074-487629
Email: info@NovaTec-ID.com
Internet: www.NovaTec-ID.com

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Parathyroid Hormone, Intact (PTH) 2nd Generation Test System

Product Code: 9025-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Intact PTH Concentration in Human Serum or Plasma by a Microplate Enzyme Immunoassay, Colorimetric

2.0 SUMMARY AND EXPLANATION OF THE TEST

Parathyroid hormone (PTH) is a polypeptide composed of 84-amino acids and vital to calcium homeostasis[1] regulating blood serum calcium (Ca^{2+}) in concert with Vitamin D and Calcitonin. Secreted by the parathyroid gland in response to low Ca^{2+}, PTH stimulates calcium release in the bone marrow, production in the intestines and kidney[2] and minimizes urinary excretion. Meanwhile calcitonin has the opposing effect to increase urinary excretion and reduce blood calcium when Ca^{2+} is at elevated levels[3].

Intact PTH clears quickly from the bloodstream with half-life of less than four minutes. Detecting elevated PTH levels is imperative in monitoring bone metabolism especially in the presence of hypercalcemia[4], which virtually makes the primary diagnosis of hyperparathyroidism, as the vast majority (>90%) of such patients have elevated PTH. Differentiation from other forms of (non-parathyroid-mediated) hypercalcemia such as malignancy (the second most common cause), sarcoidosis, and thyroid toxicosis are associated with suppressed levels of parathyroid hormone or PTH in normal range. In cases of hypocalcemia, PTH levels may not be detectable due to total hypoparathyroidism but are found in normal range in hypocalcemia due to partial loss or inhibition of parathyroid function. Clinical significance of parathyroid hormone has increased in conjunction with the etiology of hypocalcemia and hypercalcemia. Initial studies revealed parathyroid hormone is synthesized as a prohormone followed by significant cleavage and modification, with these fragments comprising the majority of circulating parathyroid hormone. However, PTH fragments lack biological activity, and intact PTH (IPTH) spanning residues 1-84 is responsible for calcium regulation. The N-terminus of PTH is necessary in receptor docking, while the C-terminal residues are responsible for PTH receptor activation[5,6]. Thus, separation of whole parathyroid hormone from fragmented peptides is integral in osteometabolic analysis[7].

3.0 PRINCIPLE

Sandwich Equilibrium Method (TYPE 2):
The essential reagents required for an immunoenzymometric assay include high affinity and specificity antibodies (enzyme and immobilized), with different and distinct epitope recognition, **in excess,** and native antigen. In this procedure, the immobilization takes place during the assay at the surface of a microplate well through the interaction of x-PTH antibody (C terminal epitope) coated on the well.

Upon mixing the enzyme-labeled antibody (N-terminal epitope) and a serum containing the native antigen, a reaction results between the native antigen and the antibodies, without competition or steric hindrance, to form a sandwich complex. The interaction is illustrated by the following equation:

$$^{Enz}Ab + Ag_{PTH} + Ab_{(well)} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} {}^{Enz}Ab - Ag_{PTH} - Ab_{(well)}$$

$Ab_{(well)}$ = Antibody coated on well (Excess Quantity)
Ag_{PTH} = Native Antigen (Variable Quantity)
^{Enz}Ab = Enzyme labeled Antibody (Excess Quantity)
$^{Enz}Ab - Ag_{PTH} - Ab_{(well)}$ = Antigen-Antibodies Sandwich Complex
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Dissociation

After sufficient time results, the antibody-bound fraction is separated from unbound antigen by decantation or aspiration. The enzyme activity in the antibody-bound fraction is directly proportional to the native antigen concentration. By utilizing several different serum references of known antigen values, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

Materials Provided:

A. PTH Calibrators – 1.0 ml/vial (Lyophilized) Icons [A – F]
Six (6) vials of references for PTH at levels of 0(**A**), 15(**B**), 75(**C**), 150(**D**), 500(**E**) and 1000(**F**) pg/ml. Store at 2-8 °C. ***Reconstitute each vial with 1.0ml of distilled or deionized water.*** The reconstituted calibrators are stable for 24 hours at 2-8 °C. To store for a longer period, aliquot the reconstituted calibrators into cryo vials and store at -20 °C. ***DO NOT FREEZE/ THAW MORE THAN TWICE.*** A preservative has been added.
Note: The calibrators, human serum based, are traceable to the WHO 1st IS standard 95/646.

B. PTH Controls – 1.0 ml/vial (Lyophilized) Icons [M&N]
Two (2) vials of reference controls for PTH. Store at 2-8 °C. ***Reconstitute each vial with 1.0ml of distilled or deionized water.*** The reconstituted controls are stable for 24 hours at 2-8°C. To store for a longer period, aliquot the reconstituted controls into cryo vials and store at -20°C. ***DO NOT FREEZE/ THAW MORE THAN TWICE.*** A preservative has been added.

C. PTH Enzyme Reagent 2nd Gen – 6ml/vial – Icon (E)
One (1) vial contains anti-PTH conjugate reagent. Store at 2-8 °C.

D. PTH Antibody Coated Plate – 96 wells – Icon
One 96-well microplate coated with x-PTH antibody. Store at 2-8 °C.

E. Wash Solution Concentrate (20x) – 20 ml/vial – Icon
One (1) vial contains a surfactant in buffered saline. A preservative has been added. Store at 2-8 °C. *See Reagent Preparation section.*

F. Substrate Reagent – 12 ml/vial – Icon S^N
One (1) vial contains tetramethylbenzidine (TMB) and hydrogen peroxide (H_2O_2) in buffer. Store at 2-8 °C.

G. Stop Solution – 8 ml/vial – Icon (STOP)
One (1) vial contains a strong acid (H_2SO_4). Store at 2-8 °C.

H. Product Instructions.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Do not expose reagents to heat, sun, or strong light.
Note 3: The above components are for one 96-well microplate. For other kit configurations, please refer to the table at end of the insert.

4.1 Required But Not Provided:
1. Pipette capable of delivering 0.050ml (50µl) and 0.100ml (100µl) volumes with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100ml (100µl) and 0.350ml (350µl) volumes with a precision of better than 1.5%.
3. Microplate washers or a squeeze bottle (optional).
4. Microplate reader with 450nm and 620nm wavelength absorbance capability.
5. Absorbent paper for blotting the microplate wells.
6. Plastic wrap or microplate cover for incubation steps.
7. Vacuum aspirator (optional) for wash steps.
8. Timer.
9. Quality control materials.

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA licensed reagents. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.

Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood serum or EDTA plasma in type and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube without additives or anti-coagulants for serum or EDTA containing tubes for plasma. Allow the blood to clot for serum samples. Centrifuge the specimen to separate the serum or plasma from the cells.

If the specimen(s) cannot be assayed immediately after blood withdrawal, the sample(s) may be stored at temperatures of -20 °C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing (a maximum of two freeze/thaw cycles prior to use). When assayed in duplicate, 0.100 ml (100 µl) of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the low, medium and high ranges of the dose response curve for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION

1. **Wash Buffer**
Dilute contents of wash solution to 1000ml with distilled or deionized water in a suitable storage container. Diluted buffer can be stored at 2-30°C for up to 60 days.

Note: Do not use reagents that are contaminated or have bacterial growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum reference calibrators and controls to room temperature (20-27 °C).
*****Test Procedure should be performed by a skilled individual or trained professional*****
1. Format the microplates' wells for each serum reference, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8 °C.**
2. Pipette 0.050 ml (50 µl) of the appropriate serum reference calibrator, control or specimen into the assigned well.
3. Add 0.050 ml (50 µl) of the PTH Enzyme Reagent 2nd gen to each well. **It is very important to dispense all reagents close to the bottom of the coated well.**
4. Swirl the microplate gently for 20-30 seconds, cover and incubate for 60 minutes at room temperature.
5. Discard the contents of the microplate by decantation or aspiration. If decanting, tap and blot the plate dry with absorbent paper.
6. Add 0.350 ml (350 µl) of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
7. Add 0.100 ml (100 µl) of TMB Substrate to all wells (see Reagent Preparation Section). **Always add reagents in the same order to minimize reaction time differences between wells.**
DO NOT SHAKE PLATE AFTER SUBSTRATE ADDITION
8. Incubate at room temperature for twenty (20) minutes.
9. Add 0.050 ml (50 µl) of stop solution to each well and mix gently for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
10. Read the absorbance in each well at 450nm (using a reference wavelength of 630nm to minimize well imperfections) in a microplate reader. **The results should be read within fifteen (15) minutes of adding the stop solution.**

Note: For re-assaying specimens with concentrations greater than 1000 pg/ml, dilution should be performed in human serum or plasma with low PTH values and multiplied accordingly.

10.0 CALCULATION OF RESULTS

A dose response curve is used to ascertain the concentration of PTH in unknown specimens.
1. Plot the absorbance for each duplicate serum reference versus the corresponding PTH concentration in pg/ml on linear graph paper (do not average the duplicates of the serum references before plotting).
2. Draw the best-fit curve through the plotted points.
3. To determine the concentration of PTH for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in pg/ml) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (1.800) intersects the dose response curve at 419 pg/ml PTH concentration (See Figure 1).

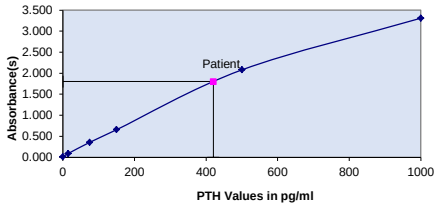
Note: Computer data reduction software designed for ELISA assays may also be used for the data reduction. If such software is utilized, the validation of the software should be ascertained.

EXAMPLE 1

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value (pg/ml)
Cal A	A1	0.013	0.015	0
	B1	0.017		
Cal B	C1	0.082	0.091	15
	D1	0.106		
Cal C	E1	0.370	0.357	75
	F1	0.355		
Cal D	G1	0.677	0.657	150
	H1	0.647		
Cal E	A2	2.103	2.079	500
	B2	2.065		
Cal F	C2	3.265	3.308	1000
	D2	3.360		
Patient	E2	1.801	1.800	**419**
	F2	1.800		

*The data presented in Example 1 and Figure 1 is for illustration only and **should not** be used in lieu of a dose response curve prepared with each assay.

FIGURE 1



*If the absorbance readout is off-scale or higher than the average absorbance of the highest calibrator, sample should be repeated with dilution.

11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. Maximum Absorbance (Calibrator 'F') ≥1.3
2. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product are available on request from Monobind Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind's IFU may yield inaccurate results.
10. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
11. It is important to calibrate all the equipment e.g. pipettes, readers, washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
12. Risk Analysis- as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurements and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
4. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
5. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.
6. The reagents for AccuBind® ELISA procedure have been formulated to eliminate maximal interference; however, potential interaction between rare serum specimens and test reagents can cause erroneous results. Heterophilic antibodies often cause these interactions and have been known to be problems for all kinds of immunoassays. *(Boscato LM Stuart MC.'Heterophilic antibodies: a problem for all immunoassays' Clin. Chem 1988:3427-33).* For diagnostic purposes the results from this assay should be used in combination with clinical examination, patient's history, and, all other clinical findings.

13.0 EXPECTED RANGES OF VALUES

Intact PTH levels were measured in fifty-eight (58) apparently normal individuals. The values obtained ranged from **9.0 to 94 pg/ml**. Based on the statistical tests for skewness and kurtosis, the data population when transformed logarithmically, follows the normal or Gaussian distribution as shown in histograms. The range of the geometric mean ± 2 standard deviations of the mean was calculated at **10.4 to 66.5 pg/ml**.

It is important to keep in mind that establishment of a range of values, which can be expected to be found by a given method for a population of "normal" persons, is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons, each laboratory should depend upon the range of expected values established by the manufacturer only until an in-house range can be determined by the analysts using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The within assay precision of the PTH AccuBind® Microplate EIA Test System were determined by analyses on six different levels of pool control and patient sera. The mean values, standard deviation and coefficient of variation for each of these control sera are presented in Table 1.

TABLE 1
Precision data for the PTH Test System

Sample	Mean Value (pg/ml)	Within-Run Precision		Total Precision (n=80)	
		SD	CV%	SD	CV%
Control 1	20.7	1.29	6.23	5.93	8.96
Control 2	66.1	2.88	4.35	8.47	4.65
Control 3	182.2	4	2.2	21.47	4.89
Patient 1	438.7	12.44	2.84	26.42	4.39
Patient 2	601.9	15.1	2.51	38.54	5.81
Patient 3	663.7	19.72	2.97	5.93	8.96

*As measured in forty experiments in duplicate over a 20 day period.

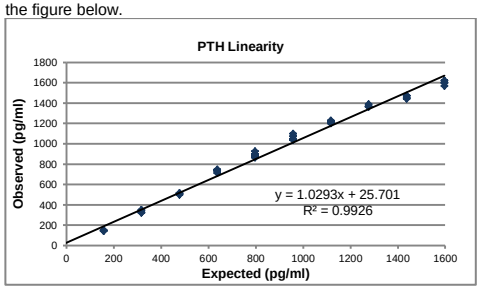
14.2 Sensitivity

The Intact PTH Accubind® ELISA test system has a LoB=1.393 pg/ml and a LoD=LoQ=1.501 pg/ml.

14.3 Accuracy

14.3.1 Linearity

The linearity of the Intact PTH Accubind® ELISA test system was tested by diluting human serum samples containing high levels of PTH (494-1597 pg/ml) with the "0 pg/ml" serum reference. The system produced excellent linearity up to 1597 pg/ml as shown in the figure below.



14.3.2 Recovery

The recovery of the Intact PTH AccuBind® Microplate ELISA Test System was calculated for five patient samples spiked with 50, 150, 250, 550, and 750 pg/ml PTH. Recoveries were determined to be within 15% of the expected values for all samples.

14.4 Specificity

The following fragments of PTH were tested and found to be non-reactive.

Peptide	Conc (pg/ml)	% Reactivity
1-34 fragment	100,000	0.001
1-44 fragment	100,000	0.005
7-34 fragment	100,000	0.002

14.5 High Dose Hook Effect:

The "high dose hook effect" of the PTH AccuBind® ELISA was assessed using several samples containing massive concentrations of PTH (10,000 -75,000 pg/ml).
The test showed no hook effect up to concentrations of 75,000 pg/ml. Samples with PTH concentrations greater than 75,000 pg/ml were not tested and may demonstrate hook effect. All samples that are greater than the highest calibrator should be diluted and measured again, however.

15.0 REFERENCES

1. Mundy, G.R.; Guise, T.A. Hormonal Control of Calcium Homeostasis. *Clinical Chemistry* 1999, *45*, *8*, 1347-1352.
2. Mannstadt, M.; Bilezikian, J.P.; Thakker, R.V.; Hannan, F.M.; Clarke, B.L.; Reijnmark, L.; Mitchell, D.M.; Vokes, T.J.; Winer, K.K.; Shoback, D.M. Hypoparathyroidism. *Nature Reviews Disease Primers*, 2017, *3*, 17055, 1-20.
3. Potts, J.T. Parathyroid hormone: past and present. *Journal of Endocrinology* 2005, *187*, 311-325.
4. Lepage, R.; Roy, L.; Brossard, J.-H.; Rousseau, L.; Dorais, C.; Lazure, C.; D'Amour, P. A non-(1-84) circulating parathyroid hormone (PTH) fragment interferes significantly with intact PTH commercial assay measurements in uremic samples. *Clinical Chemistry* 1998, *44*, *4*, 805-809.
5. Jin, R.; Briggs, S.L.; Chandrasekhar, S.; Chirgadze, N.Y.; Clawson, D.K.; Schevitz, R.W.; Smiley, D.L.; Tashjian, A.H.; Zhang, F. Crystal Structure of Human Parathyroid Hormone 1-34 at 0.9-Å Resolution. *The Journal of Biological Chemistry* 2000, *275*, *35*, 27238-27244.
6. Shimizu, M.; Shimizu, N.; Tsang, J.C.; Petroni, B.D.; Khatri, A.; Potts Jr., J.T.; Gardella, T.J. Residue 19 of the Parathyroid Hormone (PTH) Modulates Ligand Interaction with the Juxtamembrane Region of the PTH-1 Receptor. *Biochemistry* 2002, *41*, 13224-13233.
7. Brossard, J.H.; Cloutier, M.; Roy, L.; Lepage, R.; Gascon-Barre, M.; D'Amour, P. Accumulation of a Non-(1-84) Molecular Form of Parathyroid Hormone (PTH) Detected by Intact PTH Assay in Renal Failure: Importance in the Interpretation of PTH Values. *Journal of Clinical Endocrinology and Metabolism* 1996, *81*, *11*, 3923-3929.

Effective Date: 2022-Mar-30 Rev. 4 **DCO: 1543**
MP9025 **Product Code: 9025-300**

Size		96(A)	192(B)
Reagent (fill)	A)	1.0ml set	1.0ml set
	B)	1.0ml set	1.0ml set
	C)	1 (6ml)	2 (6ml)
	D)	1 plate	2 plates
	E)	1 (20ml)	1 (20ml)
	F)	1 (12ml)	2 (12ml)
	G)	1 (8ml)	2 (8ml)

For Orders and Inquires, please contact
Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA
Tel: +1 949.951.2665 Mail: info@monobind.com
Fax: +1 949.951.3539 Fax: www.monobind.com

IVD 2°-8° CE
EC REP CEpartner4U, Esdoornlaan 13 3951 DBMaarn, The Neatherlands www.cepartner4u.eu

Please visit our website to learn more about our products and services.

Glossary of Symbols
(EN 980/ISO 15223)

- IVD — In Vitro - Diagnostic Medical Device
- 2°-8° — Temperature Limitation Storage Condition (2-8° C)
- Consult Instructions for Use
- REF — Catalogue Number
- Σ — Contains Sufficient Test for Σ
- LOT — Batch Code
- Used By (Expiration Day)
- Date of Manufacturer
- Manufacturer
- EC REP — Authorized Rep in European Country
- CE — European Conformity

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Progesterone Test System
Product Code: 4825-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Progesterone Concentration in Human Serum or Plasma by a Microplate Enzyme Immunoassay, Colorimetric

2.0 SUMMARY AND EXPLANATION OF THE TEST

Measurement of progesterone in serum or plasma is considered to be the most reliable way to assess its rate of production.

Progesterone is a steroid hormone, which plays an important role in the preparation for and maintenance of pregnancy. It is synthesized from cholesterol via pregnenolone — then rapidly metabolized to pregnanediol primarily in the liver.[2, 9,13] The ovary and placenta are the major production sites, but a small amount is also produced by the adrenal cortex in both men and women. Circulating progesterone levels, which are characteristically low during the follicular phase, increase sharply during the luteal phase of menstrual cycles, reaching a maximum approximately 5 to 10 days after the midcycle LH peak.[12] Unless pregnancy occurs, a steep decline to follicular levels sets in about 4 days before the next menstrual period. This pattern constitutes the rationale behind the well established use of serum progesterone measurements as a simple and reliable method for ovulation detection.[3,4,16]

For routine measurements, immunoassays using steroid specific antibodies are preferred. Initial immunoassays for serum progesterone used organic solvents to remove the steroid from endogenous binding proteins such as corticosteroid binding globulin (CBG) and albumin. Direct measurement of progesterone in serum or plasma is considered to be the method of choice for routine applications. Both RIA and EIA (and some FIA) are available in the market. Since RIA involves handling radioactivity and causes radioactive waste disposal issues, various non-isotopic methods have replaced the RIA. These methods use very specific antibodies to determine levels of progesterone in circulation.

The Monobind Progesterone ELISA kit uses a specific anti-progesterone antibody, and does not require sample extraction of serum or plasma. Cross-reactivity to other naturally occurring and structurally related steroids is low.

The employment of several serum references of known progesterone concentration permits construction of a graph of activity and concentration. From comparison to the dose response curve, an unknown specimen's activity can be correlated with progesterone concentration.

3.0 PRINCIPLE

Competitive Enzyme Immunoassay (TYPE 7):
The essential reagents required for an enzyme immunoassay include antibody, enzyme-antigen conjugate and native antigen. Upon mixing biotinylated antibody, enzyme-antigen conjugate and a serum containing the native antigen, a competition reaction results between the native antigen and the enzyme-antigen conjugate for a limited number of antibody binding sites. The interaction is illustrated by the followed equation:

$$^{Enz}Ag + Ag + Ab_{Btn} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} AgAb_{Btn} + {}^{Enz}AgAb_{Btn}$$

Ab_{Btn} = Biotinylated Antibody (Constant Quantity)
Ag = Native Antigen (Variable Quantity)
^{Enz}Ag = Enzyme-antigen Conjugate (Constant Quantity)
$AgAb_{Btn}$ = Antigen-Antibody Complex
$^{Enz}AgAb_{Btn}$ = Enzyme-antigen Conjugate -Antibody Complex
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Disassociation
$K = k_a / k_{-a}$ = Equilibrium Constant

A simultaneous reaction between the biotin attached to the antibody and the streptavidin immobilized on the microwell occurs. This effects the separation of the antibody bound fraction after decantation or aspiration.
$AgAb_{Btn} + {}^{Enz}AgAb_{Btn} + \underline{Streptavidin}_{CW} \Rightarrow$ immobilized complex
$\underline{Streptavidin}_{CW}$ = Streptavidin immobilized on well
Immobilized complex = sandwich complex bound to the solid surface

The enzyme activity in the antibody bound fraction is inversely proportional to the native antigen concentration. By utilizing several different serum references of known antigen concentration, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

Materials Provided:

A. Progesterone Calibrators – 1ml/vial - Icons A-G
Seven (7) vials of serum reference for progesterone at concentrations of 0 (**A**), 0.3 (**B**), 2.0 (**C**), 5.0 (**D**), 15 (**E**), 30 (**F**) and 60.0 (**G**) ng/ml. Store at 2-8°C. A preservative has been added. The calibrators can be expressed in molar concentrations (nM/L) by multiplying by 3.18.
For example: 1ng/ml x 3.18 = 3.18 nM/L

B. Progesterone Enzyme Reagent – 6ml/vial – Icon
One (1) vial of Progesterone (Analog)-horseradish peroxides (HRP) conjugate in a protein stabilizing matrix with red dye. Store at 2-8°C.

C. Progesterone Biotin Reagent – 6ml/vial - Icon ∇
One (1) vial of reagent contains anti-Progesterone biotinylated purified rabbit IgG conjugate in buffer, yellow dye and preservative. Store at 2-8°C.

D. Streptavidin Coated Plate – 96 wells –Icon ⇓
One 96-well microplate coated with 1.0 µg/ml streptavidin and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

E. Wash Solution Concentrate – 20ml/vial – Icon
One (1) vial contains a surfactant in buffered saline. A preservative has been added. Store at 2-8°C.

F. Substrate Reagent – 12ml/vial - Icon S^N
One (1) vial contains tetramethylbenzidine (TMB) and hydrogen peroxide (H_2O_2) in buffer. Store at 2-8°C.

G. Stop Solution – 8ml/vial - Icon
One (1) vial contains a strong acid (H_2SO_4). Store at 2-8°C.

H. Product Instructions

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Avoid extended exposure to heat and light. **Opened reagents are stable for sixty (60) days when stored at 2-8°C. Kit and component stability are identified on label.**
Note 3: Above reagents are for a single 96-well Microplate.

4.1 Required But Not Provided:
1. Pipette capable of delivering 0.025 & 0.050ml (25 & 50µl) with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100 & 0.350ml (100 & 350µl) volumes with a precision of better than 1.5%.
3. Adjustable volume (200-1000µl) dispenser(s) for conjugate.
4. Microplate washer or a squeeze bottle (optional).
5. Microplate Reader with 450nm and 620nm wavelength absorbance capability.
6. Absorbent Paper for blotting the microplate wells.
7. Plastic wrap or microplate cover for incubation steps.
8. Vacuum aspirator (optional) for wash steps.
9. Timer.
10. Quality control materials.

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA required tests. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.

Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood, serum or heparanised plasma in type, and taken with the usual precautions in the collection of venipuncture samples. For accurate comparison to establish normal values, a fasting morning serum sample should be obtained. The blood should be collected in a redtop (with or without gel additives) venipuncture tube or for plasma use evacuated tube(s) containing heparin. Allow the blood to clot for serum samples. Centrifuge the specimen to separate the serum or plasma from the cells.

In patients receiving therapy with high biotin doses (i.e. >5mg/day), no sample should be taken until at least 8 hours after the last biotin administration, preferably overnight to ensure fasting sample.

Samples may be refrigerated at 2-8oC for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20oC for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, 0.050ml (50µl) of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the low, normal and high range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. The individual laboratory should set acceptable assay performance limits. In addition, maximum absorbance should be consistent with past experience. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION

1. **Wash Buffer**
Dilute contents of wash solution to 1000ml with distilled or deionized water in a suitable storage container. Diluted buffer can be stored at 2-30°C for up to 60 days.

Note: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum reference calibrators and controls to room temperature (20 -27°C).
*****Test Procedure should be performed by a skilled individual or trained professional*****

1. Format the microplates' wells for each serum reference calibrator, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8°C.**
2. Pipette 0.025ml (25µl) of the appropriate serum reference calibrator, control or specimen into the assigned well.
3. Add 0.050ml (50µl) of Progesterone Enzyme Reagent to all wells.
4. Swirl the microplate gently for 10-20 seconds to mix.
5. Add 0.050ml (50µl) Progesterone Biotin Reagent to all wells.
6. Swirl the microplate gently for 10-20 seconds to mix.
7. Cover and incubate for 60 minutes at room temperature.
8. Discard the contents of the microplate by decantation or aspiration. If decanting, blot the plate dry with absorbent paper.
9. Add 0.350ml (350µl) of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
10. Add 0.100ml (100µl) of Substrate reagent to all wells. **Always add reagents in the same order to minimize reaction time differences between wells.**

DO NOT SHAKE THE PLATE AFTER SUBSTRATE ADDITION

11. Incubate at room temperature for twenty (20) minutes.
12. Add 0.050ml (50µl) of stop solution to each well and gently mix for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
13. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm. **The results should be read within fifteen (15) minutes of adding the stop solution.**

Note: Dilute the samples suspected of concentrations higher than 60ng/ml 1:5 and 1:10 with progesterone '0' ng/ml calibrator or male patient serum pools with a known low value for progesterone.

10.0 CALCULATION OF RESULTS

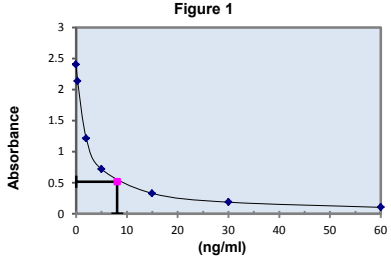
A dose response curve is used to ascertain the concentration of progesterone in unknown specimens.
1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1.
2. Plot the absorbance for each duplicate serum reference versus the corresponding progesterone concentration in ng/ml on linear graph paper.
3. Connect the points with a best-fit curve.
4. To determine the concentration of progesterone for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in ng/ml) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (0.517) intersects the dose response curve at 8.1ng/ml progesterone concentration.

Note: Computer data reduction software designed for ELISA assays may also be used for the data reduction. If such software is utilized, the validation of the software should be ascertained.

EXAMPLE 1

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value (ng/ml)
Cal A	A1	2.420	2.406	0
	B1	2.391		
Cal B	C1	2.155	2.137	0.3
	D1	2.119		
Cal C	E1	1.248	1.215	2.0
	F1	1.183		
Cal D	G1	0.721	0.719	5.0
	H1	0.717		
Cal E	A2	0.338	0.330	15.0
	B2	0.322		
Cal F	C2	0.187	0.188	30.0
	D2	0.190		
Cal G	G2	0.107	0.105	60.0
	H2	0.104		
Pat# 1	A3	0.525	0.517	8.1
	B3	0.510		

Figure 1



*The data presented in Example 1 and Figure 1 are for illustration only and **should not** be used in lieu of a dose response curve prepared with each assay.

11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. The absorbance (OD) of calibrator 0 ng/ml should be ≥ 1.3
2. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product are available upon request from Monobind, Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind's IFU may yield inaccurate results.
10. Patient specimens with Progesterone levels higher than 60ng/ml may be diluted (1:5 or 1:10) with progesterone '0 ng/ml' calibrator or male patient serum pools with a known low value for progesterone.
11. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
12. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
13. Risk Analysis- as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurements and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. The reagents for the test system procedures have been formulated to eliminate maximal interference; however, potential interaction between rare serum specimens and test reagents can cause erroneous results. Heterophilic antibodies often cause these interactions and have been known to be problems for all kinds of immunoassays (Boscato LM, Stuart MC. "Heterophilic antibodies: a problem for all immunoassays" *Clin.Chem.* 1988:3427-33). For diagnostic purposes, results from this assay should be used in combination with clinical examination, patient history and all other clinical findings.
4. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
5. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
6. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.

13.0 EXPECTED RANGES OF VALUES

In agreement with established reference intervals for a "normal" adult population and females during gestation the expected ranges for the Progesterone AccuBind® ELISA Test System are detailed in Table 1. During pregnancy the progesterone serum levels rise rapidly till the end of third trimester.[17]

TABLE I
Expected Values for the Progesterone Test System

	(ng/ml)	(nmol/L)
Prepubertal Child (1-10 yr)	0.07 – 0.52	0.2-1.7
Adult man	0.13 – 1.22	0.4 – 3.88
Adult woman		
Follicular phase	0.15 – 1.40	0.5 – 4.4
Luteal phase	2.0 – 25.0	6.4 – 79.5
Pregnant woman		
First trimester	7.25 – 90.0	23 – 286
Second trimester	19.5 – 91.0	62 – 289
Third trimester	49.0 – 422.0	153 – 1342
Postmenopausal woman	0.0 – 0.80	0.0 – 2.55

It is important to keep in mind that establishment of a range of values, which can be expected to be found by a given method for a population of "normal" persons, is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons, each laboratory should depend upon the range of expected values established by the manufacturer until an in-house range can be determined by analysts using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The within and between assay precision of the Progesterone AccuBind® ELISA Test System were determined by analyses on three different levels of pool control sera. The number, mean values, standard deviation and coefficient of variation for each of these control sera are presented in Table 2 and Table 3.

TABLE 2
Within Assay Precision (Values in ng/ml)

Sample	N	X	σ	C.V.%
Low	20	0.65	0.100	15.3
Normal	20	10.77	0.405	3.8
High	20	24.94	1.528	6.1

TABLE 3
Between Assay Precision (Values in ng/ml)

Sample	N	X	σ	C.V.%
Low	20	0.72	0.065	8.9
Normal	20	10.88	0.846	7.5
High	20	24.05	1.534	6.4

*As measured in ten experiments in duplicate over a ten day period.

14.2 Sensitivity

The Progesterone AccuBind® ELISA Test System has a sensitivity of 0.105 ng/ml. The sensitivity was ascertained by determining the variability of the 0 ng/ml serum calibrator and using the 2σ (95% certainty) statistic to calculate the minimum dose.

14.3 Accuracy

The Progesterone AccuBind® ELISA Test System was compared with a chemiluminescence immunoassay method. Biological specimens from low, normal and high progesterone level populations were used (values ranged from < 0.15 ng/ml – 128 ng/ml). The total number of such specimens was 60. The least square regression equation and the correlation coefficient were computed for this method in comparison with the reference method. The data obtained is displayed in Table 4.

TABLE 4

Method	Mean (x)	Least Square Regression Analysis	Correlation Coefficient
This Method (y)	14.59	y= -1.223+1.018(x)	0.989
Reference (X)	15.53		

Only slight amounts of bias between this method and the reference method are indicated by the closeness of the mean values. The least square regression equation and correlation coefficient indicates excellent method agreement.

14.4 Specificity

The % cross reactivity of the progesterone antibody to selected substances was evaluated by adding the interfering substance to a serum matrix at various concentrations. The cross-reactivity was calculated by deriving a ratio between dose of interfering substance to dose of progesterone needed to displace the same amount of labeled analog.

Substance	Cross Reactivity
Progesterone	100.000
17OH-Progesterone	0.375
Androstenedione	0.158
Cortisone	0.014
Corticosterone	0.347
Cortisol	0.005
Danazol	0.003
Dihydotestosterone	0.006
DHEA sulfate	0.002
Estradiol	0.004
Estrone	0.003
Estriol	0.002
Prednisone	0.023
Testosterone	0.015

15.0 REFERENCES

1. Abraham GE. The application of natural steroid radioimmunoassay to gynecologic endocrinology. In: Abraham GE, editor. *Radioassay Systems in Clinical Endocrinology*, Basel: Marcel Dekker,: 475-529 (1981).
2. Aufrere MB, Benson H. Progesterone: an overview and recent advances. , 65:783-800 (1976).
3. Bauman J, "Basal body temperature: unreliable method of ovulation detection", *Fertility Sterility,* 36:729-33, (1981).
4. Brown JB," Timing of ovulation", *Med J Austral*, 2:780-3 (1977).
5. Gautray JP, et al, "Clinical investigation of the menstrual cycle: clinical, endometrial and endocrine aspects of luteal defects",. *Fertility Sterility*, 35:296-303 (1981).
6. Hensleigh PA, Fainstat T, "Corpus luteum dysfunction: serum progesterone levels in diagnosis and assessment of therapy for recurrent and threatened abortion", *Fertility Sterility,* 32:396-9. (1979).
7. Hernandez JL, et al," Direct evidence of luteal insufficiency in women with habitual abortion", *Obstetric Gynecology*, 49:705-8 (1977).
8. Jones G. Luteal phase defects. In: Behrman SJ, Kistner RW, editors. Progress in Infertility. Boston: Little, Brown and Company, 2nd ed., 1975: 299-324.
9. Klopper A, Fuchs F. Progestagens. In: Fuchs F, Klopper A, editors. *Endocrinology of Pregnancy*. Hagerstown: Harper & Row,: 99-122 (1977).
10. Lehmann F, Bettendorf G," The endocrine shift from a normal cycle to anovulation",: Insler V, Bettendorf G, editors. Advances in Diagnosis and Treatment of Infertility. Amsterdam: Elseveir/North Holland, 105 -13 (1981).
11. March CM. Luteal phase defects. In: Mishell DR, Davajan V, editors. *Reproductive Endocrinology*, Infertility and Contraception. Philadelphia: F. A. Davis Company, 469-76, (1979).
12. March CM, Goebelsmann U, Nakamura RM, Mishell Dr. Roles of estradiol and progesterone in eliciting the midcycle luteinizing hormone and follicle stimulating hormone surges. *J Clin Endocrinol Metab,* 49:507-13 (1979).
13. BIO-ED slide/seminar educational program, Rochester: Bioeducational Publications (1981).
14. Radwanska E, et al, "Plasma progesterone and estradiol estimations in the diagnosis and treatment of luteal insufficiency in menstruating infertile women", *Acta Eur Fertility*, 7:39-47(1976).
15. Radwanska E, et al,"Plasma progesterone levels in normal and abnormal early human pregnancy", *Fertility Sterility* 30:398-402 (1978).
16. Radwanska E, et al, "Single midluteal progesterone assay in the management of ovulatory infertility". *J Reprod Med*, 26:85-9 (1981).
17. Tietz, Reference Information for the Clinical Laboratory. In *Textbook of Clinical Chemistry,* 3rd Ed Burtis, C.A., Ashwood, R.A. W.B. Saunders: Philadelphia, 1999; 1831.

Revision: 7 Date: 2019-Jul-16 DCO: 1353
MP4825 Product Code: 4825-300

Size		96(A)	192(B)
Reagent (fill)	A)	1ml set	1ml set
	B)	1 (6ml)	2 (6ml)
	C)	1 (6ml)	2 (6ml)
	D)	1 plate	2 plates
	E)	1 (20ml)	1 (20ml)
	F)	1 (12ml)	2 (12ml)
	G)	1 (8ml)	2 (8ml)

For Orders and Inquires, please contact

Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA

Tel: +1 949.951.2665 Mail: info@monobind.com
Fax: +1 949.951.3539 Fax: www.monobind.com

IVD 2°-8° CE

EC REP **CEpartner4U,** Esdoornlaan 13
3951 DBMaarn, The Neatherlands
www.cepartner4u.eu

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Glossary of Symbols
(EN 980/ISO 15223)

IVD — In Vitro - Diagnostic Medical Device

2°-8° — Temperature Limitation Storage Condition (2-8°C)

Consult Instructions for Use

REF — Catalogue Number

Σ — Contains Sufficient Test for Σ

LOT — Batch Code

Used By (Expiration Day)

Date of Manufacturer

Manufacturer

EC REP — Authorized Rep in European Country

CE — European Conformity

CE

DiaMetra
care for quality

DCM011-12
Ed. 01/2015

PROLACTIN ELISA

per analisi di routine

Determinazione immunoenzimatica diretta della Prolattina nel siero umano.

IVD | **LOT** Vedere etichetta esterna | 2°C 8°C | Σ = 96 test | **REF DKO011**

DESTINAZIONE D'USO
Metodo immunoenzimatico colorimetrico per la determinazione quantitativa della concentrazione della Prolattina nel siero umano.
Il kit Prolactin ELISA è destinato al solo uso di laboratorio.

1. SIGNIFICATO CLINICO

La prolattina è un ormone polipeptidico sintetizzato e secreto dall'adeno-ipofisi (ghiandola pituitaria anteriore) e dalla placenta. Inoltre è prodotta in altri tessuti compresi il seno e la decidua. La secrezione pituitaria della prolattina è regolata dai neuroni neurosecretori della dopamina del nucleo arcuato, che inibiscono la secrezione della prolattina.
La prolattina è presente in parecchi fluidi fisiologici, compreso il plasma sanguigno, liquido amniotico, latte, secrezioni mucose e liquido cerebrospinale. La prolattina ha molti effetti, il principale è la stimolazione delle ghiandole mammarie per la produzione di latte (lattazione). Altre funzioni della prolattina includono la sintesi dell'agente tensioattivo dei polmoni fetali alla conclusione della gravidanza e dell'immuno-tolleranza del feto dall'organismo materno durante la gravidanza.
La prolattina può anche avere effetti inibitori sulla funzione gonadica una volta presente in alte concentrazioni.
La secrezione della prolattina presenta una regolarità ciclica giornaliera.
Durante la gravidanza, le alte concentrazioni di estrogeno circolante promuovono la sintesi della prolattina. Livelli elevati risultanti dalla secrezione della prolattina causano la maturazione delle ghiandole mammarie per la lattazione. Dopo il parto, i livelli della prolattina decadono poiché lo stimolo interno è rimosso.
Livelli elevati di prolattina tendono a sopprimere il ciclo ovulatorio inibendo la secrezione sia di FSH che di GnRH.
I livelli della prolattina possono essere controllati come componente di un workup degli ormoni sessuali, poiché la secrezione elevata di prolattina può sopprimere la secrezione di FSH e di GnRH, che conduce all'ipogonadismo ed, a volte, a disfunzioni erettili negli uomini.
Elevate concentrazioni di prolattina nel plasma si presentano durante ovulazione, la gravidanza e lo sforzo. Livelli normali di prolattina nel plasma (iperprolattinemia) possono accadere come conseguenza degli adenomi pituitari, di altre anomalie anatomiche e traumatiche, in risposta a determinati agenti farmacologici e nell'ipotiroidismo.
L'ipoprolattinemia (bassi livelli della prolattina) è stata osservata in casi di ipopituitarismo.

2. PRINCIPIO DEL METODO

I reagenti essenziali richiesti per il test immunoenzimatico includono anticorpi ad alta affinità e specificità (coniugati con enzima e immobilizzati) con riconoscimento di epitopi diversi e distinti, in eccesso, e antigene nativo.
In questo procedimento l'immobilizzazione si verifica durante il test sulla superficie dei pozzetti della micropiastra attraverso l'interazione della streptavidina fissata sui pozzetti e dell'anticorpo anti-PRL biotinilato aggiunto.
Mescolando l'anticorpo biotinilato, l'anticorpo coniugato con enzima e un siero contenente l'antigene nativo, si verifica la reazione tra l'antigene nativo e gli anticorpi, senza competizione e ingombro sterico, per formare un complesso sandwich solubile.
L'interazione è illustrata dall'equazione seguente:

$$^{Enz}Ab_{(p)} + Ag_{PRL} + {}^{Btn}Ab_{(m)} \underset{K_{-a}}{\overset{K_a}{\leftrightarrows}} {}^{Enz}Ab_{(p)}\text{-}\ Ag_{PRL}\text{-}\ {}^{Btn}Ab_{(m)}$$

$^{Btn}Ab_{(m)}$ = Anticorpo monoclonale biotinilato (quantità in eccesso)

Ag_{PRL} = Antigene PRL nativo (quantità variabile)

$^{Enz}Ab_{(p)}$ = Anticorpo policlonale marcato con enzima (quantità in eccesso)

$^{Enz}Ab_{(p)}\text{-}\ Ag_{PRL}\text{-}\ {}^{Btn}Ab_{(m)}$ = Complesso sandwich Antigene-Anticorpi

K_a = Costante di associazione

K_{-a} = Costante di dissociazione

Contemporaneamente il complesso si fissa sul pozzetto tramite la reazione ad alta affinità tra la streptavidina e l'anticorpo biotinilato.
Questa interazione è descritta di seguito:

$^{Enz}Ab_{(p)}$-Ag_{PRL}-$^{Btn}Ab_{(m)}$ + $Streptavidin_{cw}$ ⇨Immobilized complex

$Streptavidin_{cw}$ = Streptavidina immobilizzata sul pozzetto

Immobilized complex = Complesso sandwich Antigene-Anticorpi

Una volta raggiunto l'equilibrio, la frazione di Antigene legata all'anticorpo viene separata dall'antigene libero per decantazione o aspirazione. L'attività enzimatica della frazione legata è direttamente proporzionale alla concentrazione dell'antigene nativo. Utilizzando diversi sieri di riferimento con valori noti di antigene è possibile costruire una curva dose-risposta sulla quale determinare la concentrazione dell'antigene di campioni ignoti.

3. REAGENTS, MATERIALS AND INSTRUMENTATION

3.1. Reagents and materials provided in the kit

1. Calibrators (6 vials, 1 mL each)

CAL0	**REF DCE002/1106-0**
CAL1	**REF DCE002/1107-0**
CAL2	**REF DCE002/1108-0**
CAL3	**REF DCE002/1109-0**
CAL4	**REF DCE002/1110-0**
CAL5	**REF DCE002/1111-0**

2. Control (1 vial, 1 mL)
The concentration of the control is reported on the Analysis Certificate **REF DCE045/1103-0**

3. Conjugate (1 vial, 12 mL)
Anti Prolactin antibodies conjugated to Horseradish Peroxidase (HRP) and Anti Prolactin biotinylated **REF DCE002/1102-0**

4. Coated Microplate (1 breakable microplate)
Streptavidin adsorbed in the microplate **REF DCE002/1103-0**

5. TMB Substrate (1 vial, 15 mL)
H_2O_2 -TMB (0,26 g/L) *(avoid contact with skin)* **REF DCE004-0**

6. Stop Solution (1 vial, 15 mL)
Sulfuric Acid 0,15 mol/L *(avoid contact with skin)* **REF DCE005-0**

7. 10X Conc. Wash Solution (1 vial, 50 mL)
Phosphate buffer 0,2M pH 7.4 **REF DCE054-0**

3.2. Reagents necessary but not provided in the kit

Distilled water.

3.3. Material and instrumentation necessary

Automatic dispensers.
Microplate reader (450 nm, 620-630 nm).

Notes

Store all reagents at 2ö8°C, protected from light.

Open the bag of Reagent 4 (Coated microplate) only after bringing it to room temperature and close it immediately after withdrawing the strips to be used; once opened it is stable until the expiry date of the kit.

4. WARNINGS

- This test kit is for in vitro use, to be performed by skilled personnel. Not for internal or external use on Human or Animal beings.
- Use the provided personal protective equipment while working with the provided reagents.
- Follow Good Laboratory Practices (GLP) for handling products derived from blood.
- Some reagents contain small amounts of Proclin 300^R as preservative. Avoid contact with skin and mucous membranes.
- The TMB Substrate contains an irritant, which may be harmful if inhaled, ingested or absorbed through skin. To prevent injuries, avoid inhalation, ingestion or contact with skin and eyes.
- The Stop Solution is constituted by a diluted solution of sulfuric acid. Sulfuric acid is poisonous and corrosive and may be toxic if ingested. To prevent possible chemical burns, avoid contact with skin and eyes.
- Avoid exposure of the TMB/H_2O_2 reagent to direct sunlight, metals or oxidants. Do not freeze the solution.
- This method allows to determine concentrations of Prolactin from 5,0 ng/mL to 100,0 ng/mL.

5. PRECAUTIONS

- Please strictly follow the sequence of steps indicated in this protocol. The results presented here were obtained using specific reagents listed in these Instructions for Use.
- All reagents must be stored at controlled temperature of 2-8°C in their original containers. Any exceptions are clearly indicated. Reagents are stable up to the expiry date if stored and handled according to the instructions provided.
- Before use allow all components of the kit and samples to reach room temperature (22-28°C) and mix gently.
- Do not interchange components of kits with different lot numbers. Observe the expiry dates reported on the labels of the box and of all vials. Do not use components beyond the expiry date.
- If automatic instrumentation is used, it is responsibility of the user to verify that the kit has been properly validated.
- Incomplete or inaccurate washing of wells may cause poor precision and/or high background. To improve the performance of the kit on automatic instrumentation, it is recommended to increase the number of washes.
- For reproducibility of results, it is important that the reaction time is the same for all wells. To avoid time shifting during reagent dispensation, the time for dispensing wells should not exceed 10 minutes. If it does, it is recommended to follow the same dispensation order. If more than one plate is used, it is

raccomanda di ripetere la curva di calibrazione in ogni piastra.
- L'addizione del TMB Substrato dà inizio ad una reazione cinetica, la quale termina con l'addizione della Stop Solution. L'addizione del TMB Substrato e della Stop Solution deve avvenire nella stessa sequenza per evitare tempi di reazione differenti.
- Osservare le linee guida per l'esecuzione del controllo di qualità nei laboratori clinici testando controlli e/o pool di sieri.
- Osservare la massima precisione nella ricostituzione e dispensazione dei reagenti.
- Non usare campioni microbiologicamente contaminati, altamente lipemici o emolizzati.
- I lettori di micropiastre leggono l'assorbanza verticalmente. Non toccare il fondo dei pozzetti.

6. PROCEDIMENTO

6.1. Preparazione dei Calibratori (C_0…C_5)

I Calibratori sono pronti all'uso, sono calibrati contro il WHO 3rd IS 84/500 ed hanno le seguenti concentrazioni:

	C_0	C_1	C_2	C_3	C_4	C_5
ng/mL	0	5	10	25	50	100

I Calibratori sono stabili fino alla data di scadenza riportata in etichetta. Una volta aperti, i Calibratori sono stabili per 6 mesi a 2-8°C.

6.2. Preparazione della Wash Solution

Prima dell'uso, diluire il contenuto di ogni fiala di soluzione di lavaggio tamponata concentrata (10X) con acqua distillata fino al volume di 500 mL. Per preparare volumi minori rispettare il rapporto di diluizione di 1:10. La soluzione di lavaggio diluita è stabile a 2-8°C per almeno 30 giorni. Nella wash solution concentrata è possibile osservare la presenza di cristalli; in tal caso agitare a temperatura ambiente fino a completa dissoluzione dei cristalli; per una maggiore precisione diluire tutto il flacone della soluzione di lavaggio concentrata a 500 mL, avendo cura di trasferire anche i cristalli, poi agitare fino a completa dissoluzione dei cristalli.

6.3. Preparazione del campione

La determinazione della Prolattina si effettua su siero umano. **Non utilizzare plasma per questo dosaggio** (l'utilizzo di plasma può portare a valori alterati del dosaggio).
Non usare campioni emolizzati, itterici o lipemici.
Per ottenere il siero, raccogliere il sangue venoso, far coagulare, infine separare il siero centrifugando a temperatura ambiente. Non centrifugare prima che la coagulazione sia completata.
I campioni possono essere conservati per brevi periodi (massimo due giorni) a 2-8°C. Per periodi di conservazione più lunghi congelare a -20°C. Evitare cicli di congelamento e scongelamento. I campioni congelati devono essere miscelati molto bene prima dell'uso.
Per campioni con concentrazione superiore a 100 ng/mL diluite il campione 1:2 con il Calibratore 0.
Il Controllo è pronto all'uso.

6.4. Procedimento

- **Portare tutti i reagenti a temperatura ambiente (22-28°C) per almeno 30 minuti.** Al termine del dosaggio riporre immediatamente tutti i reagenti a 2-8°C: evitare lunghi periodi a temperatura ambiente.
- Le strisce di pozzetti non utilizzate devono essere rimesse immediatamente nella busta richiudibile contenente il materiale essicante e conservate a 2-8°C.
- Per evitare potenziali contaminazioni microbiche e/o chimiche non rimettere i reagenti inutilizzati nei flaconi originali.
- Al fine di aumentare l'accuratezza dei risultati del test è necessario operare in doppio, allestendo due pozzetti per ogni punto della curva di calibrazione (C_0-C_5), due per ogni Controllo, due per ogni Campione ed uno per il Bianco.

Reagenti	Calibratore	Campioni/ Controllo	Bianco
Campioni/ Controllo		**50 µL**	
Calibratore C_0-C_5	**50 µL**		
Coniugato	**100 µL**	**100 µL**	
Incubare *1 h* a temperatura ambiente (22÷28°C). Allontanare la miscela di reazione; lavare 3 volte aggiungendo in ogni pozzetto 0,3 mL di soluzione di lavaggio diluita. **Nota importante**: ad ogni step di lavaggio, agitare delicatamente la piastra per 5 secondi e successivamente rimuovere l'eccesso di soluzione di lavaggio sbattendo delicatamente la micropiastra capovolta su fogli di carta assorbente. **Lavaggi automatici**: se si utilizza strumentazione automatica effettuare almeno 5 lavaggi.			
TMB Substrato	**100 µL**	**100 µL**	**100 µL**
Incubare 15 minuti a temperatura ambiente (22÷28°C), al riparo dalla luce.			
Stop Solution	**100 µL**	**100 µL**	**100 µL**
Agitare delicatamente la micropiastra. Leggere l'assorbanza (E) a 450 nm contro una lunghezza d'onda di riferimento di 620-630 nm oppure contro il Bianco entro 5 minuti.			

7. CONTROLLO QUALITA'

Ogni laboratorio dovrebbe analizzare i campioni nella gamma dei livelli elevati, normali e bassi di Prolattina per il controllo delle prestazioni dell'analisi. Questi campioni dovrebbero essere trattati come ignoti ed i valori determinati in ogni test effettuato. Le tabelle di controllo qualità dovrebbero essere effettuate per seguire le prestazioni dei reagenti forniti. Metodi statistici adeguati dovrebbero essere impiegati per accertare il trend. Il laboratorio dovrebbe fissare i

limiti di accettabilità di prestazioni dell'analisi. Altri parametri che dovrebbero essere controllati includono le intercette di 80, 50 e 20% della curva di calibrazione per valutare la riproducibilità. In più, la capacità di assorbimento massima dovrebbe essere costante con l'esperienza precedente. Deviazioni significative rispetto alle prestazioni stabilite possono indicare un inosservato cambio di condizioni sperimentali o una degradazione dei reagenti del kit. Devono essere usati reagenti freschi per determinare la ragione delle variazioni.

8. RISULTATI

8.1. Estinzione Media

Calcolare l'estinzione media (Em) di ciascun punto della curva di calibrazione (C_0-C_5) e di ogni campione.

8.2. Curva di calibrazione

Tracciare il grafico dell'assorbanza (Em) in funzione delle concentrazioni degli calibratore (C_0-C_5) (es: Four Parameter Logistic o Sigmoide).

8.3. Calcolo dei risultati

Interpolare, dal grafico, i valori di assorbanza relativi a ciascun campione e leggerne la corrispondente concentrazione in ng/mL.

9. VALORI DI RIFERIMENTO

Ogni laboratorio dovrebbe stabilire il proprio range basandosi sulla popolazione dei pazienti.
I valori serici di Prolattina sono compresi nei seguenti intervalli:

Campioni		**Range ng/mL**
Uomini		1,8 - 17,0
Donne:	ciclo mestruale	1,2 - 19,5
	Menopausa	1,5 - 18,5

Alcuni campioni femminili testati in questo gruppo probabilmente usano contraccettivi orali, che possono aver influenzato i risultati.

È importante tenere presente che la determinazione di un range di valori attesi in un dato metodo per una popolazione "normale" è dipendente da molteplici fattori, quali la specificità e sensibilità del metodo in uso, e la popolazione in esame. Perciò ogni laboratorio dovrebbe considerare i range indicati dal Fabbricante come un'indicazione generale e produrre range di valori attesi propri basati sulla popolazione indigena dove il laboratorio risiede.

10. PARAMETRI CARATTERISTICI

10.1. Precisione

10.1.1. Intra-Assay

La variabilità all'interno dello stesso kit è stata determinata replicando (20x) la misura di tre differenti sieri di controllo.

Sample	N	X	σ	C.V.
Level 1	20	5,33	0,15	2,78%
Level 2	20	18,21	0,73	4,03%
Level 3	20	37,20	1,38	3,71%

10.1.2. Inter-Assay

La variabilità tra kit differenti è stata determinata replicando (10x) la misura di tre differenti sieri di controllo con kit appartenenti a lotti diversi.

Sample	N	X	σ	C.V.
Level 1	10	5,46	0,30	5,49%
Level 2	10	17,72	0,91	5,16%
Level 3	10	36,29	1,67	4,60%

10.2. Sensibilità

La concentrazione minima di Prolattina misurabile che può essere distinta dal Calibratore 0 è 0,12 ng/mL con un limite di confidenza del 95%.

10.3. Accuratezza

La prova di recupero condotta su tre campioni arricchiti con 3,13 - 6,25 - 12,50 - 25,00 - 50,00 ng/mL di Prolattina, ha dato un valore medio (±SD) di 102,52% ± 9,75%.
La prova di diluizione condotta su tre campioni diluiti 2 - 4 - 8 - 16 volte ha dato un valore medio (± SD) di 102,19% ± 9,80%.

10.4. Specificità

L'anticorpo impiegato presenta le seguenti reazioni crociate, calcolate al 50% secondo Abraham:

hProlactin	100%
LH	N.D.
FSH	N.D.
hCG	N.D.
TSH	N.D.
hGH	N.D.

10.5. Correlazione

Il kit Prolactin ELISA Diametra (y) è stato comparato con un kit disponibile in commercio (x). Sono stati testati i campioni di siero di 37 soggetti.
La curva di regressione è:
$y = 1,01\ x + 1,94$
$r^2 = 0,957$

Il nuovo kit Prolactin ELISA Diametra (y) è stato comparato con il vecchio kit Prolactin Diametra (x). Sono stati testati i campioni di siero di 37 soggetti.
La curva di regressione è:
$y = 0,85\ x + 2,58$
$r^2 = 0,937$

10.6. Effetto Hook

Il kit Prolactin ELISA Diametra non presenta effetto Hook fino a 200 ng/mL.

11. DISPOSIZIONI PER LO SMALTIMENTO

I reagenti devono essere smaltiti in accordo con le leggi locali.

BIBLIOGRAFIA

- Wisdom, G.B. Clin. Chem. 22/8 1243 - 1255 (1976)
- Shome, B. and Parlow, A.F., J. Clin. Endocr. Metab.,39, 199 – 203 (1974).
- Shome, B. and Parlow, A.F., J. Clin. Endocr. Metab.,39, 203 – 205 (1974).
- Uotila, M. Ruoslahti, E. Engvall, E., J. Immunol. Methds, 42, 11-15 (1981)
- Acosta, A.A.M.D. and Wright, G.L., Journal of Clinical Immunoassays, 6, 41 (1983).
- Cohen, K. L., Metabolism, 26 1165-1177 (1977)

Ed. 01/2015 **DCM011-12**

DiaMetra S.r.l. Headquater: Via Calabria 15
20090 SEGRATE (MI) Italy
Tel. +39-02-2139184
Fax +39-02-2133354
Manufactory: Via Pozzuolo 14,
06038 SPELLO (PG) Italy
Tel. +39-0742-24851
Fax +39-0742-316197
E-mail: info@diametra.com

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DCM011-12
Ed. 01/2015

PROLACTIN ELISA

for routine analysis

Direct immunoenzymatic determination of Prolactin in human serum.

IVD | **LOT** See external label | 2°C 8°C | Σ = 96 tests | **REF** **DKO011**

INTENDED USE

Immunoenzymatic colorimetric method for quantitative determination of Prolactin concentration in human serum.
Prolactin ELISA kit is intended for laboratory use only.

1. CLINICAL SIGNIFICANCE

Prolactin is a polypeptide hormone synthesized and secreted by the Adenohypophysis (anterior Pituitary gland) and the placenta. It is also produced in other tissues including the breast and the decidua. Pituitary prolactin secretion is regulated by neuroendocrine neurons in the hypothalamus, most importantly by neurosecretory dopamine neurons of the arcuate nucleus, which inhibit prolactin secretion.
Prolactin is present in several body fluids, including blood plasma, amniotic fluid, milk, mucosal secretions and cerebrospinal fluid.
Prolactin has many effects, the most important of which is to stimulate the mammary glands to produce milk (lactation). Other possible functions of prolactin include the surfactant synthesis of the fetal lungs at the end of the pregnancy and immune tolerance of the foetus by the maternal organism during pregnancy.
Prolactin may also have inhibitory effects on gonadal function when present in high concentrations.
There is a diurnal cycle in prolactin secretion.
During pregnancy, high circulating concentrations of estrogen promote prolactin production. The resulting high levels of prolactin secretion cause maturation of the mammary glands, preparing them for lactation. After childbirth, prolactin levels fall as the internal stimulus for them is removed.
High prolactin levels also tend to suppress the ovulatory cycle by inhibiting the secretion of both FSH and GnRH.
Prolactin levels may be checked as part of a sex hormone workup, as elevated prolactin secretion can suppress the secretion of FSH and GnRH, leading to hypogonadism, and sometimes causing erectile dysfunction in men.
Elevations in plasma prolactin concentrations occur during ovulation, pregnancy, nursing and stress. Abnormal elevations in plasma prolactin levels (hyperprolactinemia) can occur as a result of pituitary adenomas, other anatomic and traumatic abnormalities, in response to certain pharmacologic agents and in hypothyroidism.
Hypoprolactinemia (low prolactin levels) are observed in cases of hypopituitarism.

2. PRINCIPLE

The essential reagents required for an immunoenzymatic assay include high affinity and specificity antibodies (enzyme and immobilised) with different and distinct epitope recognition, in excess, and native antigen.
In this procedure the immobilization takes place during the assay at the surface of a microplate well through the interaction of streptavidin coated on the well and exogenously added biotinylated monoclonal anti-PRL antibody.
Upon mixing monoclonal biotinylated antibody, the enzyme labeled antibody and a serum containing the native antigen, a reaction results between the native antigen and the antibodies without competition or steric hindrance to form a soluble sandwich complex.
The interaction is illustrated by the following equation:

$$^{Enz}Ab_{(p)} + Ag_{PRL} + {}^{Btn}Ab_{(m)} \underset{K_{-a}}{\overset{K_a}{\rightleftarrows}} {}^{Enz}Ab_{(p)}\text{-}\ Ag_{PRL}\text{-}\ {}^{Btn}Ab_{(m)}$$

$^{Btn}Ab_{(m)}$ = Biotinylated Monoclonal Antibody (Excess quantity)

Ag_{PRL} = Native PRL antigen (variable quantity)

$^{Enz}Ab_{(p)}$ = Enzyme labeled policlonal antibody (Excess quantity)

$^{Enz}Ab_{(p)}$- Ag_{PRL}- $^{Btn}Ab_{(m)}$ = Antigen-Antibodies Sandwich complex

K_a = Rate constant of association

K_{-a} = Rate constant of disassociation

Simultaneously the complex is deposited to the well through the high affinity reaction of streptavidin and biotinylated antibody.
This interaction is illustrated below:

$^{Enz}Ab_{(p)}$-Ag_{PRL}-$^{Btn}Ab_{(m)}$ + $Streptavidin_{cw}$ ⇨Immobilized complex

Streptavidin$_{cw}$ = Streptavidin immobilized on well

Immobilized complex = Antibodies-Antigen sandwich bound.

After equilibrium is attained, the antibody-bound fraction is separated from unbound antigen by decantation or aspiration. The enzyme activity in the antibody-bound fraction is directly proportional to the native antigen concentration. By using several different serum references of known antigen values, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

3. REAGENTS, MATERIALS AND INSTRUMENTATION

3.1. Reagents and materials supplied in the kit

1. Calibrators (6 vials, 1 mL each)

CAL0	**REF DCE002/1106-0**
CAL1	**REF DCE002/1107-0**
CAL2	**REF DCE002/1108-0**
CAL3	**REF DCE002/1109-0**
CAL4	**REF DCE002/1110-0**
CAL5	**REF DCE002/1111-0**

2. Control (1 vial, 1 mL)
Control Concentration is indicated on the Certificate of Analysis **REF DCE045/1103-0**

3. Conjugate (1 vial, 12 mL)
Antibodies Anti Prolactin conjugated with Horseradish peroxidase (HRP) and Anti Prolactin biotinylated
REF DCE002/1102-0

4. Coated Microplate (1 breakable microplate)
Streptavidin adsorbed on microplate
REF DCE002/1103-0

5. TMB Substrate (1 vial, 15 mL)
H_2O_2-TMB 0.26 g/L *(avoid any skin contact)*
REF DCE004-0

6. Stop Solution (1 vial, 15 mL)
Sulphuric acid 0.15 mol/L *(avoid any skin contact)*
REF DCE005-0

7. 10X Conc. Wash Solution (1 vial, 50 mL)
Phosphate buffer 0.2M pH 7.4 **REF DCE054-0**

3.2. Reagents necessary not supplied

Distilled water.

3.3. Auxiliary materials and instrumentation

Automatic dispenser.
Microplates reader (450 nm, 620-630 nm)

Note

Store all reagents at 2ö8°C in the dark.
Open the bag of reagent 4 (Coated Microplate) only when it is at room temperature and close it immediately after use; once opened, it is stable until expiry date of the kit.

4. WARNINGS

- This kit is intended for in vitro use by professional persons only. Not for internal or external use in Humans or Animals.
- Use appropriate personal protective equipment while working with the reagents provided.
- Follow Good Laboratory Practice (GLP) for handling blood products.
- Some reagents contain small amounts of Proclin 300^R as preservative. Avoid the contact with skin or mucosa.
- The TMB Substrate contains an irritant, which may be harmful if inhaled, ingested or absorbed through the skin. To prevent injury, avoid inhalation, ingestion or contact with skin and eyes.
- The Stop Solution consists of a diluted sulphuric acid solution. Sulphuric acid is poisonous and corrosive and can be toxic if ingested. To prevent chemical burns, avoid contact with skin and eyes.
- Avoid the exposure of reagent TMB/H_2O_2 to directed sunlight, metals or oxidants. Do not freeze the solution.
- This method allows the determination of Prolactin from 5.0 to 100.0 ng/mL.

5. PRECAUTIONS

- Please adhere strictly to the sequence of pipetting steps provided in this protocol. The performance data represented here were obtained using specific reagents listed in this Instruction For Use.
- All reagents should be stored refrigerated at 2-8°C in their original container. Any exceptions are clearly indicated. The reagents are stable until the expiry date when stored and handled as indicated.
- Allow all kit components and specimens to reach room temperature (22-28°C) and mix well prior to use.
- Do not interchange kit components from different lots. The expiry date printed on box and vials labels must be observed. Do not use any kit component beyond their expiry date.
- If you use automated equipment, the user has the responsibility to make sure that the kit has been appropriately tested.
- The incomplete or inaccurate liquid removal from the wells could influence the assay precision and/or increase the background. To improve the performance of the kit on automatic systems is recommended to increase the number of washes.
- It is important that the time of reaction in each well is held constant for reproducible results. Pipetting of samples should not extend beyond ten minutes to avoid assay drift. If more than 10 minutes are needed, follow the same order of dispensation. If more than one plate is used, it is recommended to repeat the dose response curve in each plate
- Addition of the TMB Substrate solution initiates a kinetic reaction, which is terminated by the addition of the Stop Solution. Therefore, the TMB Substrate and the Stop Solution should be added in the same sequence to eliminate any time deviation during the reaction.
- Observe the guidelines for performing quality control in medical laboratories by assaying controls and/or pooled sera.

- Maximum precision is required for reconstitution and dispensation of reagents.
- Samples microbiologically contaminated, highly lipemeic or haemolysed should not be used in the assay.
- Plate readers measure vertically. Do not touch the bottom of the wells.

6. PROCEDURE

6.1. Preparation of the Calibrators (C_0…C_5)

The Calibrators are ready to use, are calibrated against WHO 3rd IS 84/500 and have the following concentrations:

	C_0	C_1	C_2	C_3	C_4	C_5
ng/mL	0	5	10	25	50	100

The Calibrators are stable until the expiry date printed on the label. Once opened, the Calibrators are stable 6 months at 2-8°C.

6.2. Preparation of Wash Solution

Dilute the contents of each vial of the buffered wash solution concentrate (10X) with distilled water to a final volume of 500 mL prior to use. For smaller volumes respect the 1:10 dilution ratio. The diluted wash solution is stable for 30 days at 2-8°C. In concentrated wash solution is possible to observe the presence of crystals; in this case mix at room temperature until the complete dissolution of crystals; for greater accuracy, dilute the whole bottle of concentrated wash solution to 500 mL, taking care to transfer completely the crystals, then mix until crystals are completely dissolved.

6.3. Preparation of the Sample

Prolactin determination can be done on human serum. **Do not use plasma for this assay** (plasma samples can lead to false results).
Samples microbiologically contaminated, highly lipemeic or haemolysed should not be used in the assay.
To obtain the serum, collect blood by venipuncture, allow to clot, and separate serum by centrifugation at room temperature. Do not centrifuge before complete clotting has occurred.
Specimen can be stored at 2÷8°C for at short time (max two days). For longer storage the specimen should be frozen at -20°C. Avoid repeated freezing and thawing. Thawed samples should be inverted several times prior to testing.
For sample with concentration over 100 ng/mL dilute the sample 1:2 with Calibrator 0.
The Control is ready for use.

6.4. Procedure

- **Allow all reagents to reach room temperature (22-28°C) for at least 30 minutes.** At the end of the assay, store immediately the reagents at 2-8°C: avoid long exposure to room temperature.
- Unused coated microwell strips should be released securely in the foil pouch containing desiccant and stored at 2-8°C.
- To avoid potential microbial and/or chemical contamination, unused reagents should never be transferred into the original vials.
- As it is necessary to perform the determination in duplicate in order to improve accuracy of the test results, prepare two wells for each point of the calibration curve (C_0-C_5), two for each Control, two for each sample, one for Blank.

Reagent	Calibrator	Sample/ Control	Blank
Sample/ Control		**50 µL**	
Calibrator C_0-C_5	**50 µL**		
Conjugate	**100 µL**	**100 µL**	
Incubate at room temperature (22÷28°C) for 1 hours. Remove the contents from each well; wash the wells 3 times with 300 µL of diluted Wash Solution. **Important note**: during each washing step, gently shake the plate for 5 seconds and remove excess solution by tapping the inverted plate on an absorbent paper towel. **Automatic washer**: if you use automated equipment, wash the wells at least 5 times.			
TMB Substrate	**100 µL**	**100 µL**	**100 µL**
Incubate at room temperature (22÷28°C) for 15 minutes in the dark.			
Stop Solution	**100 µL**	**100 µL**	**100 µL**
Shake the microplate gently. Read the absorbance (E) at 450 nm against a reference wavelength of 620-630 nm or against Blank within 5 minutes.			

7. QUALITY CONTROL

Each laboratory should assay controls at normal, high and low levels range of Prolactin for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. The individual laboratory should set acceptable assay performance limits. Other parameters that should be monitored include the 80, 50 and 20% intercepts of the calibration curve for run-to-run reproducibility. In addition, maximum absorbance should be consistent with past experience. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8. RESULTS

8.1. Mean Absorbance

Calculate the mean of the absorbance (Em) for each point of the calibration curve (C_0-C_5) and of each sample.

8.2. Calibration curve

Plot the values of absorbance (Em) of the calibrators (C_0-C_5) against concentration. Draw the best-fit curve through the plotted points (Es: Four Parameter Logistic or Sigmoide).

8.3. Calculation of Results

Interpolate the values of the samples on the calibration curve to obtain the corresponding values of the concentrations expressed in ng/mL.

9. REFERENCE VALUES

Each laboratory must establish its own normal ranges based on patient population.
The serum Prolactin values are comprised in the following intervals:

Sample		**Range ng/mL**
Male		1.8 - 17.0
Female:	menstrual cycle	1.2 - 19.5
	menopause	1.5 - 18.5

Some of the female population tested in this group were probably using oral contraptives, wich may affect results.

Please pay attention to the fact that the determination of a range of expected values for a “normal” population in a given method is dependent on many factors, such as specificity and sensitivity of the method used and type of population under investigation. Therefore each laboratory should consider the range given by the Manufacurer as a general indication and produce their own range of expected values based on the indigenous population where the laboratory works.

10. PERFORMANCE AND CHARACTERISTICS

10.1. Precision

10.1.1. Intra Assay Variation

Within run variation was determined by replicate (20x) the measurement of three different control sera in one assay.

Sample	N	X	σ	C.V.
Level 1	20	5.33	0.15	2.78%
Level 2	20	18.21	0.73	4.03%
Level 3	20	37.20	1.38	3.71%

10.1.2. Inter Assay Variation

Between run variation was determined by replicate (10x) the measurement of three different control sera with kits of different lots.

Sample	N	X	σ	C.V.
Level 1	10	5.46	0.30	5.49%
Level 2	10	17.72	0.91	5.16%
Level 3	10	36.29	1.67	4.60%

10.2. Sensitivity

The lowest detectable concentration of Prolactin that can be distinguished from the Calibrator 0 is 0.12 ng/mL at the 95 % confidence limit.

10.3. Accuracy

The recovery of 3,13 - 6,25 - 12,50 - 25,00 - 50,00 ng/mL of Prolactin added to sample gave an average value (±SD) of 102.52% ± 9.75% with reference to the original concentrations.
The dilution test performed on three sera diluted 2 - 4 - 8 - 16 times gave an average value (±SD) of 102.19% ± 9.80%.

10.4. Specificity

The cross reaction of the antibody calculated at 50% according to Abraham are shown in the table:

hProlactin	100%
LH	N.D.
FSH	N.D.
hCG	N.D.
TSH	N.D.
hGH	N.D.

10.5. Correlation

Diametra Prolactin ELISA kit (y) was compared to another commercially available Prolactin assay (x). Serum samples of 37 subjects were analysed.
The linear regression curve was calculated:
$y = 1.01 x + 1.94$
$r^2 = 0.957$

The new Diametra Prolactin ELISA kit (y) was compared to the old Diametra Prolactin ELISA kit (x). Serum samples of 37 subjects were analysed.
The linear regression curve was calculated:
$y = 0.85 x + 2.58$
$r^2 = 0.937$

10.6. Hook Effect

Diametra Prolactin assay shows no Hook effect up to 200 ng/mL.

11. WASTE MANAGEMENT

Reagents must be disposed off in accordance with local regulations.

BIBLIOGRAPHY

- Wisdom, G.B. Clin. Chem. 22/8 1243 - 1255 (1976)
- Shome, B. and Parlow, A.F., J. Clin. Endocr. Metab.,39, 199 – 202 (1974).
- Shome, B. and Parlow, A.F., J. Clin. Endocr. Metab.,39, 203 – 205 (1974).
- Uotila, M. Ruoslahti, E. Engvall, E., J. Immunol. Methds, 42, 11-15 (1981)
- Acosta, A.A.M.D. and Wright, G.L., Journal of Clinical Immunoassays, 6, 41 (1983).
- Cohen, K. L., Metabolism, 26 1165-1177 (1977)

Ed. 01/2015 **DCM011-12**

DiaMetra S.r.l. Headquater: Via Calabria 15
20090 SEGRATE (MI) Italy
Tel. +39-02-2139184
Fax +39-02-2133354
Manufactory: Via Pozzuolo 14,
06038 SPELLO (PG) Italy
Tel. +39-0742-24851
Fax +39-0742-316197
E-mail: info@diametra.com

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DCM011-12
Ed. 01/2015

PROLACTIN ELISA

para análisis de rutina

Determinación inmunoenzimática directa de la prolactina en suero humano.

IVD | **LOT** Ver etiqueta externa | 2°C – 8°C | Σ = 96 ensayos | **REF** **DKO011**

USO PREVISTO

Método inmunoenzimático colorimétrico para la determinación cuantitativa de la concentración de prolactina en suero humano.
El kit Prolactin ELISA está destinado al uso en laboratorio exclusivamente.

1. SIGNIFICADO CLÍNICO

La prolactina es una hormona polipeptídica sintetizada y secretada por la adenohipófisis (glándula pituitaria anterior) y la placenta. También se produce en otros tejidos, incluyendo el pecho y la decidua. La secreción pituitaria de prolactina está regulada por las neuronas neurosecretoras de dopamina del núcleo arqueado, que inhiben la secreción de prolactina.
La prolactina está presente en varios fluidos fisiológicos, incluyendo el plasma sanguíneo, el líquido amniótico, la leche, las secreciones mucosas y el líquido cefalorraquídeo. La prolactina tiene numerosos efectos, el principal es la estimulación de las glándulas mamarias para la producción de leche (lactancia). Entre otras funciones de la prolactina se incluyen la síntesis del agente tensioactivo de los pulmones fetales al final del embarazo y de la inmunotolerancia del feto del organismo materno durante el embarazo.
La prolactina también puede tener efectos inhibidores sobre la función de las gonadas cuando está presente en altas concentraciones.
La secreción de la prolactina presenta una regularidad cíclica diaria.
Durante el embarazo, las altas concentraciones de estrógeno circulante promueven la síntesis de prolactina. Los niveles elevados resultantes de la secreción de prolactina causan la maduración de las glándulas mamarias para la lactancia. Después del parto, los niveles de prolactina disminuyen puesto que el estímulo interno desaparece.
Los niveles elevados de prolactina tienden a suprimir el ciclo ovulatorio inhibiendo la secreción de FSH o de GnRH.
Los niveles de prolactina se pueden controlar como componente de un diagnóstico diferencial de las hormonas sexuales, puesto que la secreción elevada de prolactina puede suprimir la secreción de FSH y de GnRH, dando lugar a hipogonadismo y, en ocasiones, a disfunción eréctil en los hombres.
Se presentan altas concentraciones de prolactina en el plasma durante la ovulación, el embarazo y el estrés. Niveles normales de prolactina en plasma (hiperprolactinemia) pueden aparecer como consecuencia de adenomas pituitarios, de otras anomalías anatómicas y traumáticas, como respuesta a determinados agentes farmacológicos y en el hipotiroidismo. Se ha observado hipoprolactinemia (bajos niveles de prolactina) en casos de hipopituitarismo.

2. PRINCIPIO DEL MÉTODO

Los reactivos esenciales requeridos para el ensayo inmunoenzimático incluyen anticuerpos con alta afinidad y especificidad (conjugados con enzima e inmovilizados) con reconocimiento de epítopos distintos, en exceso, y antígeno nativo.
En este procedimiento, la inmovilización se produce durante el ensayo en la superficie de los pocillos de la microplaca mediante la interacción de la estreptavidina fijada en los pocillos y el anticuerpo anti-PRL biotinilado añadido.
Mezclando el anticuerpo biotinilado, el anticuerpo conjugado con enzima y un suero que contiene el antígeno nativo, se produce la reacción entre el antígeno nativo y los anticuerpos, sin competencia o impedimento estérico, para formar un complejo sándwich soluble.
La interacción se ilustra mediante la siguiente ecuación:

$$^{Enz}Ab_{(p)} + Ag_{PRL} + {}^{Btn}Ab_{(m)} \underset{K_{-a}}{\overset{K_a}{\leftrightarrows}} {}^{Enz}Ab_{(p)}\text{-}\ Ag_{PRL}\text{-}\ {}^{Btn}Ab_{(m)}$$

$^{Btn}Ab_{(m)}$ = anticuerpo biotinilado monoclonal (cantidad en exceso)
Ag_{PRL} = antígeno PRL nativo (cantidad variable)
$^{Enz}Ab_{(p)}$ = anticuerpo policlonal marcado con enzima (cantidad en exceso)
$^{Enz}Ab_{(p)}$- Ag_{PRL}- $^{Btn}Ab_{(m)}$ = complejo sándwich antígeno-anticuerpos
K_a = constante de asociación
K_{-a} = constante de disociación

Al mismo tiempo, el complejo se fija en el pocillo mediante la reacción de alta afinidad de la estreptavidina y el anticuerpo biotinilado.
Esta interacción se describe a continuación:

$^{Enz}Ab_{(p)}$-Ag_{PRL}-$^{Btn}Ab_{(m)}$ + estreptavidina$_{cw}$ ⇨complejo inmovilizado

Estreptavidina$_{cw}$ = estreptavidina inmovilizada en el pocillo
Complejo inmovilizado = complejo sándwich antígeno-anticuerpos

Tras lograr el equilibrio, la fracción de antígeno unida al anticuerpo se separa del antígeno libre mediante decantación o aspiración.
La actividad enzimática de la fracción unida es directamente proporcional a la concentración de antígeno nativo.
Usando distintos sueros de referencia con valores conocidos de antígeno se puede generar una curva dosis-respuesta con la que se puede determinar la concentración del antígeno de muestras desconocidas.

3. REACTIVOS, MATERIALES E INSTRUMENTACIÓN

3.1. Reactivos y materiales suministrados en el kit

1. Calibradores (6 frascos, 1 mL cada uno)

CAL0	**REF DCE002/1106-0**
CAL1	**REF DCE002/1107-0**
CAL2	**REF DCE002/1108-0**
CAL3	**REF DCE002/1109-0**
CAL4	**REF DCE002/1110-0**
CAL5	**REF DCE002/1111-0**

2. Control (1 frascos, 1 mL)
La concentración del Control se indica en el certificado de calidad (Certificate of Analysis)
REF DCE045/1103-0

3. Conjugado (1 frasco, 12 mL)
Anticuerpos anti-prolactina conjugado con peroxidasa de rabano (HRP) y anti-prolactina biotinilado
REF DCE002/1102-0

4. Microplaca recubierta (1 microplaca rompible)
Estreptavidina absorbida en la microplaca
REF DCE002/1103-0

5. Substrato TMB (1 frasco, 15 mL)
H_2O_2 -TMB (0,26 g/L) *(evitar el contacto con la piel)*
REF DCE004-0

6. Solución de parada (1 frasco, 15 mL)
Ácido sulfúrico 0,15 mol/L *(evitar el contacto con la piel)*
REF DCE005-0

7. Solución de lavado conc. 10X (1 frasco, 50 mL)
Tampón fosfato 0.2M pH 7.4 **REF DCE054-0**

3.2. Reactivos necesarios no suministrados en el kit

Agua destilada.

3.3. Material e instrumentación auxiliares

Dispensadores automáticos.
Lector de microplacas (450 nm, 620-630 nm).

Nota

Conservar todos los reactivos a 2ö8°C, protegidos de la luz. Abrir la bolsa del reactivo 4 (microplaca recubierta) solo cuando se encuentre a temperatura ambiente y cerrarla inmediatamente después de extraer las tiras que se vayan a utilizar; una vez abierta, permanece estable hasta la fecha de caducidad del kit.

4. ADVERTENCIAS

- Este kit de ensayo está previsto para usarse in vitro y por personal experto. No es para uso interno o externo en humanos o animales.
- Usar los equipos de protección individual previstos al trabajar con los reactivos suministrados.
- Siga las Buenas Prácticas de Laboratorio (GLP) en el manejo de las muestras sanguíneas y sus derivados.
- Algunos reactivos contienen pequeñas cantidades de Proclin 300^R como conservante. Evite el contacto con la piel y las mucosas.
- El cromógeno TMB contiene un irritante que puede ser dañino si se inhala, se ingiere o se absorbe a través de la piel. Para prevenir lesiones, evitar la inhalación, la ingestión o el contacto con la piel y con los ojos.
- La Solución de Parada está formada por una solución de ácido sulfúrico diluido. El ácido sulfúrico es venenoso y corrosivo, y puede ser tóxico si se ingiere. Para prevenir posibles quemaduras químicas, evitar el contacto con la piel y con los ojos.
- Evite la exposición de los reactivos TMB/H_2O_2 a la luz solar directa, metales u oxidantes. No congelar la solución.
- Este método permite determinar concentraciones de prolactina de 5,0 ng/mL a 100,0 ng/mL.

5. PRECAUCIONES

- Respetar rigurosamente la secuencia de los pasos indicados en este protocolo. Los resultados aquí presentados se han obtenido utilizando los reactivos específicos que figuran en estas instrucciones de uso.
- Todos los reactivos deben conservarse a una temperatura controlada de 2-8°C en sus recipientes originales. Todas las excepciones están claramente marcadas. Los reactivos son estables hasta la fecha de caducidad cuando se almacenan y manipulan de acuerdo con las instrucciones proporcionadas.
- Antes del uso, esperar hasta que todos los componentes del kit y las muestras se encuentren a temperatura ambiente (22-28°C) y mezclar cuidadosamente.
- No mezclar componentes de kits de lotes distintos. Se debe observar la fecha de caducidad indicada en la etiqueta de la caja y de todas las ampollas. No usar componentes después de la fecha de caducidad.
- Si utiliza un equipo automático, es responsabilidad del usuario asegurar que la metodología aplicada haya sido debidamente validada.
- Un lavado incompleto o impreciso y la aspiración insuficiente del líquido de los micropozos ELISA pueden causar una precisión pobre y/o un elevado fondo. Para mejorar el rendimiento del kit en los

sistemas automatizados, se recomienda aumentar el número de lavados.

- Para la reproducibilidad de los resultados, es importante que el tiempo de reacción sea igual para cada pocillo. El tiempo de dispensación de los pocillos no debe superar los 10 minutos; si se prolongara más allá de los 10 minutos, respétese el orden de dispensación. Si utiliza más de una placa, se recomienda repetir la curva de calibración en cada placa.
- Al añadir el Sustrato TMB se inicia una reacción cinética que termina al agregar la Solución de Parada. Tanto el Sustrato TMB como la Solución de Parada deben agregarse en la misma secuencia para evitar diferentes tiempos de reacción.
- Observar las directrices para la ejecución del control de calidad en los laboratorios clínicos al comprobar controles y/o pool de sueros.
- Observar la máxima precisión en la reconstitución y dispensación de los reactivos.
- No use muestras con contaminación microbiana, altamente lipémicas o hemolizadas.
- Los lectores de microplacas leen las DO verticalmente, por tanto no debe tocarse el fondo de los pocillos.

6. PROCEDIMIENTO

6.1. Preparación de los Calibradores (C_0…C_5)

Los Calibradores son listo para usar, son calibrados frente al WHO 3rd IS 84/500, y tienen las siguientes concentraciones:

	C_0	C_1	C_2	C_3	C_4	C_5
ng/mL	0	5	10	25	50	100

Los Calibradores son estables hasta la fecha de caducidad impresa en la etiqueta. Una vez abiertos, los calibradores permanecen estables al menos 6 meses a 2-8°C.

6.2. Preparación de la solución de lavado

Antes del uso, diluir el contenido de cada ampolla de "Solución de lavado conc. 10X" con agua destilada hasta un volumen de 500 mL. Para preparar volúmenes menores, respetar la relación de dilución de 1:10. La solución de lavado diluida se mantiene estable a 2-8°C durante al menos 30 días.
En la solución de lavado concentrada es posible observar la presencia de cristales. En ese caso, agitar a temperatura ambiente hasta que los cristales se disuelvan por completo. Para una mayor precisión, diluir todo el frasco de la solución de lavado concentrada a 500 mL, teniendo cuidado para transferir también los cristales y, a continuación, agitar hasta que se disuelvan por completo.

6.3. Preparación de la muestra

La determinación de la prolactina se realiza en suero humano. **No utilizar plasma**.
No use muestras con contaminación microbiana, altamente lipémicas o hemolizadas. La obtención de la muestra es por extracción de sangre venosa, dejar coagular y separar por centrifugado, recuperar el suero.
Si la dosificación no se realiza en un plazo de dos días desde la extracción, conservar la muestra a -20°C. No volver a congelar las muestras una vez descongeladas.
Para muestras con una concentración superior a 100 ng/mL, diluir 1:2 la muestra con Calibrador 0.
El Control está listo para usar.

6.4. Procedimiento

- **Esperar hasta que todos los reactivos se encuentren a temperatura ambiente (22-28°C) durante al menos 30 minutos.** Al final del ensayo inmediatamente poner todos los reactivos a 2-8°C para evitar largos periodos a temperatura ambiente.
- Las tiras de pocillos no utilizados se deben guardar de inmediato en la bolsa desechable que contiene desecantes y almacenarse a 2-8°C.
- Para evitar la contaminación microbiana y/o química no regrese porciones de reactivos no usados en los viales originales.
- Para aumentar la precisión de los resultados de la prueba es necesario trabajar en duplicado: preparar dos pocillos para cada punto de la curva de calibración (C_0-C_5), dos para cada control, dos para cada muestra, uno para el blanco.

Reactivos	Calibrador	Muestras /Control	Blanco
Muestras /Control		**50 µL**	
Calibrador C_0-C_5	**50 µL**		
Conjugado	**100 µL**	**100 µL**	
Incubar 1 h a temperatura ambiente (22÷28°C). Retirar la mezcla de reacción, lavar 3 veces añadiendo a cada pocillo 0,3 mL de solución de lavado diluida. **Nota importante**: agite suavemente la placa durante 5 segundos en cada paso del lavado. Después del último lavado asegúrese haber eliminado completamente la solución de lavado de los pozos, invierta la placa y golpéela repetidas veces contra una servilleta de papel absorbente. **Lavados automático**: si está utilizando una lavadora automática, lavar los pocillos al menos 5 veces.			
Substrato TMB	**100 µL**	**100 µL**	**100 µL**
Incubar 15 minutos a temperatura ambiente (22÷28°C), protegida de la luz.			
Solución de parada	**100 µL**	**100 µL**	**100 µL**
Agitar la microplaca con cuidado. Leer la absorbancia (E) a 450 nm frente una segunda lectura de referencia a 620-630 nm o frente al blanco dentro de los 5 minutos.			

7. CONTROL DE CALIDAD

Cada laboratorio debe analizar sueros control para los rangos bajo, medio y alto de prolactina para supervisar el rendimiento del análisis. Estas muestras deben tratarse como desconocidas y los valores deben determinarse en cada ensayo realizado. Se deben mantener los gráficos de control de calidad para seguir el rendimiento de los reactivos suministrados. Se deben emplear métodos estadísticos adecuados para determinar las tendencias. El laboratorio debe establecer los límites de aceptabilidad del rendimiento del análisis. Entre otros parámetros que se deben controlar, se incluyen las intersecciones de 80, 50 y 20% de la curva de calibración para evaluar la reproducibilidad. Además, la capacidad de absorción máxima debe ser constante con la experiencia anterior. Una desviación significativa del rendimiento establecido puede indicar un cambio inadvertido en las condiciones experimentales o la degradación de los reactivos del kit. Se deben usar reactivos frescos para determinar la causa de las variaciones.

8. RESULTADOS

8.1. Absorbancia media

Calcular la absorbancia media (Em) de cada punto de la curva de calibración (C_0-C_5) y de cada muestra.

8.2. Curva de calibración

Trazar el gráfico de la absorbancia (Em) en función de las concentraciones de los calibradores (C_0-C_5) (p. ej.: logística de cuatro parámetros o sigmoideo).

8.3. Cálculo de los resultados

Interpolar del gráfico los valores de absorbancia relativos a cada muestra y leer la concentración correspondiente en ng/mL.

9. VALORES DE REFERENCIA

Cada laboratorio debe establecer su propio rango basándose en la población de los pacientes.
Los valores séricos de prolactina se incluyen en los siguientes intervalos:

Muestras		**Rango ng/mL**
Hombres		1,8 - 17,0
Mujeres:	ciclo menstrual	1,2 - 19,5
	Menopausia	1,5 - 18,5

Algunas muestras femeninas comprobadas en este grupo probablemente usan anticonceptivos orales que pueden haber influido en los resultados.

Es importante señalar que la determinación de un rango de valores esperados en un método dado para una población "normal" depende de muchos factores, tales como la especificidad y sensibilidad del método en uso, y la población en estudio. Por lo tanto, cada laboratorio debe considerar el intervalo especificado por el fabricante como una guía general y producir su propio rango de valores calculados en base al estadístico obtenido por el laboratorio, donde reside la población local.

10. PARÁMETROS CARACTERÍSTICOS

10.1. Precisión

10.1.1. Intraensayo

La variabilidad dentro del mismo kit se ha determinado replicando (20x) la medición de tres sueros de control distintos.

Muestra	N	X	σ	C.V.
Nivel 1	20	5.33	0.15	2.78%
Nivel 2	20	18.21	0.73	4.03%
Nivel 3	20	37.20	1.38	3.71%

10.1.2. Interensayo

La variabilidad entre distintos kits se ha determinado replicando (10x) la medición de tres sueros de control distintos con kits pertenecientes a lotes distintos.

Muestra	N	X	σ	C.V.
Nivel 1	10	5.46	0.30	5.49%
Nivel 2	10	17.72	0.91	5.16%
Nivel 3	10	36.29	1.67	4.60%

10.2. Sensibilidad

La concentración mínima de prolactina medible que puede distinguirse del Calibrador 0 es de 0,12 ng/mL con un límite de confianza del 95%.

10.3. Exactitud

La prueba de recuperación realizada en una muestra enriquecida con 3.13 - 6.25 - 12.50 - 25.00 - 50.00 ng/mL de prolactina ha dado un valor medio (±DE) de 102.52% ± 9.75%.
La prueba de dilución conducta en tres muestras diluidas 2 - 4 - 8 - 16 veces dio una media (± DE) de 102.19% ± 9.80%.

10.4. Especificidad

El anticuerpo empleado presenta las siguientes reacciones cruzadas, calculadas al 50% según Abraham:

h. prolactina	100%
LH	N.D.
FSH	N.D.
hCG	N.D.
TSH	N.D.
hGH	N.D.

10.5. Correlación

El kit Prolactin ELISA (Diametra) se ha comparado con un kit disponible en el mercado. Se han comprobado 37 muestras de suero.
La curva de regresión es:
Diametra=1.01*(ensayo comercial) + 1.94
r^2 = 0,957

El kit Prolactin ELISA Diametra (Y) se ha comparado con el kit Prolactin ELISA Diametra del método anterior (X). Se probaron 37 muestras de suero.
La curva de regresión es la siguiente:
Y = 0,85*X + 2.58
r^2 = 0,937

10.6. Efecto "Hook"

Este método no afecta “Hook” se observó hasta 200 mIU/mL.

11. DISPOSICIONES PARA LA ELIMINACIÓN

Los reactivos deben eliminarse de acuerdo con las leyes locales.

BIBLIOGRAFÍA

- Wisdom, G.B. Clin. Chem. 22/8 1243 - 1255 (1976)
- Shome, B. and Parlow, A.F., J. Clin. Endocr. Metab.,39, 199 – 205 (1974).
- Uotila, M. Ruoslahti, E. Engvall, E., J. Immunol. Methds, 42, 11-15 (1981)
- Acosta, A.A.M.D. and Wright, G.L., Journal of Clinical Immunoassays, 6, 41 (1983).
- Cohen, K. L., Metabolism, 26 1165-1177 (1977)

Ed. 01/2015 **DCM011-12**

DiaMetra S.r.l. Headquater: Via Calabria 15
20090 SEGRATE (MI) Italy
Tel. +39-02-2139184
Fax +39-02-2133354
Manufactory: Via Pozzuolo 14, 06038 SPELLO (PG) Italy
Tel. +39-0742-24851
Fax +39-0742-316197
E-mail: info@diametra.com

DiaMetra	Packaging Information Sheet	Mod. PIS000-1

IVD	DE ES FR GB IT PT	In vitro Diagnostikum Producto sanitario para diagnóstico In vitro Dispositif medical de diagnostic in vitro In vitro Diagnostic Medical Device Dispositivo medico-diagnostico in vitro Dispositivos medicos de diagnostico in vitro		DE ES FR GB IT PT	Hergestellt von Elaborado por Fabriqué par Manufacturer Produttore Produzido por
	DE ES FR GB IT PT	Achtung, Begleitdokumente Precaución, consulte los documentos adjuntos Attention, veuillez consulter les documents d'accompagnement Caution, consult accompanying documents Attenzione, consultare la documentazione allegata Atenção,consultar os documentos de acompanhamento	 yyyy-mm	DE ES FR GB IT PT	Herstellungs datum Fecha de fabricacion Date de fabrication Date of manufacture Data di produzione Data de produção
 yyyy-mm-dd	DE ES FR GB IT PT	Verwendbar bis Establa hasta (usar antes de último día del mes) Utiliser avant (dernier jour du mois indiqué) Use by (last day of the month) Utilizzare prima del (ultimo giorno del mese) Utilizar (antes ultimo dia do mês)		DE ES FR GB IT PT	Biogefährdung Riesco biológico Risque biologique Biological risk Rischio biologico Risco biológico
	DE ES FR GB IT PT	Gebrauchsanweisung beachten Consultar las instrucciones Consulter le mode d'emploi Consult instructions for use Consultare le istruzioni per l'uso Consultar instruções para uso	LOT	DE ES FR GB IT PT	Chargenbezeichnung Codigo de lote Numero de lot Batch code Codice del lotto Codigo do lote
 Σ = xx	DE ES FR GB IT PT	Ausreichend für "n" Tests Contenido suficiente para "n" tests Contenu suffisant pour "n" tests Contains sufficient for "n" tests Contenuto sufficiente per "n" saggi Contém o suficiente para "n" testes	CONT	DE ES FR GB IT PT	Inhalt Contenido del estuche Contenu du coffret Contents of kit Contenuto del kit Conteúdo do kit
Max  Min	DE ES FR GB IT PT	Temperaturbereich Límitaciôn de temperatura Limites de température de conservation Temperature limitation Limiti di temperatura Temperaturas limites de conservação	REF	DE ES FR GB IT PT	Bestellnummer Nûmero de catálogo Référéncès du catalogue Catalogue number Numero di Catalogo Número do catálogo
	DE ES FR GB IT PT	Vor direkter sonneneinstrahlung schützen Mantener alejado de la luz solar Tenir à l'écart de la lumière du soleil Keep away from sunlight Tenere lontano dalla luce solare Mantenha longe da luz solar			

SUGGERIMENTI PER LA RISOLUZIONE DEI PROBLEMI/TROUBLESHOOTING

ERRORE CAUSE POSSIBILI/ SUGGERIMENTI

Nessuna reazione colorimetrica del saggio

- mancata dispensazione del coniugato
- contaminazione del coniugato e/o del Substrato
- errori nell'esecuzione del saggio (es. Dispensazione accidentale dei reagenti in sequenza errata o provenienti da flaconi sbagliati, etc.)

Reazione troppo blanda (OD troppo basse)

- coniugato non idoneo (es. non proveniente dal kit originale)
- tempo di incubazione troppo breve, temperatura di incubazione troppa bassa

Reazione troppo intensa (OD troppo alte)

- coniugato non idoneo (es. non proveniente dal kit originale)
- tempo di incubazione troppo lungo, temperatura di incubazione troppa alta
- qualità scadente dell'acqua usata per la soluzione di lavaggio (basso grado di deionizzazione,)
- lavaggi insufficienti (coniugato non completamente rimosso)

Valori inspiegabilmente fuori scala

- contaminazione di pipette, puntali o contenitori- lavaggi insufficienti (coniugato non completamente rimosso)

CV% intrasaggio elevato

- reagenti e/o strip non portate a temperatura ambiente prima dell'uso
- il lavatore per micropiastre non lava correttamente (suggerimento: pulire la testa del lavatore)

CV% intersaggio elevato

- condizioni di incubazione non costanti (tempo o temperatura)
- controlli e campioni non dispensati allo stesso tempo (con gli stessi intervalli) (controllare la sequenza di dispensazione)
- variabilità intrinseca degli operatori

ERROR POSSIBLE CAUSES / SUGGESTIONS

No colorimetric reaction

- no conjugate pipetted reaction after addition
- contamination of conjugates and/or of substrate
- errors in performing the assay procedure (e.g. accidental pipetting of reagents in a wrong sequence or from the wrong vial, etc.)

Too low reaction (too low ODs)

- incorrect conjugate (e.g. not from original kit)
- incubation time too short, incubation temperature too low

Too high reaction (too high ODs)

- incorrect conjugate (e.g. not from original kit)
- incubation time too long, incubation temperature too high
- water quality for wash buffer insufficient (low grade of deionization)
- insufficient washing (conjugates not properly removed)

Unexplainable outliers

- contamination of pipettes, tips or containers

insufficient washing (conjugates not properly removed) too high within-run

- reagents and/or strips not pre-warmed to CV% Room Temperature prior to use
- plate washer is not washing correctly (suggestion: clean washer head)

too high between-run - incubation conditions not constant (time, CV % temperature)

- controls and samples not dispensed at the same time (with the same intervals) (check pipetting order)
- person-related variation

ERROR / POSIBLES CAUSAS / SUGERENCIAS

No se produce ninguna reacción colorimétrica del ensayo

- no se ha dispensado el conjugado
- contaminación del conjugado y/o del substrato
- errores en la ejecución del ensayo (p. ej., dispensación accidental de los reactivos en orden incorrecto o procedentes de frascos equivocados, etc.)

Reacción escasa (DO demasiado bajas)

- conjugado no idóneo (p. ej., no procedente del kit original)
- tiempo de incubación demasiado corto, temperatura de incubación demasiado baja

Reacción demasiado intensa (DO demasiado altas)

- conjugado no idóneo (p. ej., no procedente del kit original)
- tiempo de incubación demasiado largo, temperatura de incubación demasiado alta
- calidad escasa del agua usada para la solución de lavado (bajo grado de desionización)
- lavados insuficientes (el conjugado no se ha retirado completamente)

Valores inexplicablemente fuera de escala

- contaminación de pipetas, puntas o contenedores- lavados insuficientes (el conjugado no se ha retirado completamente)

CV% intraensayo elevado

- los reactivos y/o tiras no se encontraban a temperatura ambiente antes del uso
- el lavador de microplacas no funciona correctamente (sugerencia: limpiar el cabezal del lavador)

CV% interensayo elevado

- condiciones de incubación no constantes (tiempo o temperatura)
- controles y muestras no dispensados al mismo tiempo (con los mismos intervalos) (controlar la secuencia de dispensación)
- variación en función de los operadores

ERREUR CAUSES POSSIBLES / SUGGESTIONS

Aucune réaction colorimétrique de l'essai

- non distribution du conjugué
- contamination du conjugué et/ou du substrat
- erreurs dans l'exécution du dosage (par ex., distribution accidentelle des réactifs dans le mauvais ordre ou en provenance des mauvais flacons, etc.)

Réaction trop faible (DO trop basse)

- conjugué non approprié (par ex., ne provenant pas du coffret original)
- temps d'incubation trop court, température d'incubation trop basse

Réaction trop intense (DO trop élevée)

- conjugué non approprié (par ex., ne provenant pas du coffret original)
- temps d'incubation trop long, température d'incubation trop élevée
- mauvaise qualité de l'eau utilisée pour la solution de lavage (bas degré de déionisation)
- lavages insuffisants (conjugué non entièrement éliminé)

Valeurs inexplicablement hors plage

- contamination des pipettes, embouts ou récipients - lavages insuffisants (conjugué non entièrement éliminé)

CV% intra-essai élevé

- les réactifs et/ou les bandes n'ont pas atteint la température ambiante avant usage
- le laveur de microplaques ne lave pas correctement (suggestion : nettoyer la tête du laveur)

CV% inter-essai élevé

- conditions d'incubation non constantes (temps ou température)
- contrôles et échantillons non distribués en même temps (avec les mêmes intervalles) (contrôler l'ordre de distribution)
- variabilité intrinsèque des opérateurs

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Free Prostate Specific Antigen (fPSA) Test System
Product Code: 2325-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Free Prostate Specific Antigen (fPSA) Concentration in Human Serum by a Microplate Enzyme Immunoassay, Colorimetric

2.0 SUMMARY AND EXPLANATION OF THE TEST

Prostate Specific antigen (PSA) is a serine protease with chymotrypsin-like activity.[1,2] The protein is a single chain glycoprotein with a molecular weight of 28.4 kDA.[3] PSA derives its name from the observation that it is a normal antigen of the prostate, but is not found in any other normal or malignant tissue. PSA is released from the normal prostate and appears at low serum concentrations in healthy men. Studies with reverse transcription-PCR have shown that PSA also is expressed at a low concentration in peripheral blood cells and other tissues.[4] High serum concentrations can be detected in patients with advanced prostate cancer (PCA).[5] Therefore, PSA is applied as a tumor marker for the clinical management of PCA.[6] However, increased PSA concentrations in serum also occur in patients with benign prostate hyperplasia (BPH).[7] Hence the goal is to discriminate clearly between BPH and PCA in the clinical laboratory to spare the patient invasive diagnostic procedures, such as a prostate biopsy.

In human serum, PSA occurs in two forms: free PSA (fPSA) and complexed PSA. The major form is a complex of PSA and α_1-antichymotrypsin (ACT). The fraction of fPSA was shown to be substantially smaller in patients with untreated PCA than in patients with BPH. Therefore, combined measurements of fPSA and total PSA (tPSA) may lead to a better discrimination between BPH and PCA Some recent studies have already shown that the fPSA/tPSA ratio is helpful in the differential diagnosis of BPH and PCA.

PSA is found in benign, malignant and metastatic prostate cancer. Since prostate cancer is the second most prevalent form of male malignancy, the detection of elevated PSA levels plays an important role in the early diagnosis. Serum PSA levels have been found to be more useful than prostatic acid phosphatase (PAP) in the diagnosis and management of patients due to increased sensitivity.[4]

In this method, fPSA calibrator, patient specimen or control is first added to a streptavidin coated well. Biotinylated monoclonal and enzyme labeled antibodies (directed against distinct and different free epitopes of fPSA) are added and the reactants mixed. Reaction between the various fPSA antibodies and native fPSA forms a sandwich complex that binds with the streptavidin coated to the well.

After the completion of the required incubation period, the enzyme-fPSA antibody bound conjugate is separated from the unbound enzyme-fPSA conjugate by aspiration or decantation. The activity of the enzyme present on the surface of the well is quantitated by reaction with a suitable substrate to produce color.

The employment of several serum references of known prostate specific antigen (fPSA) levels permits the construction of a dose response curve of activity and concentration. From comparison to the dose response curve, an unknown specimen's activity can be correlated with fPSA concentration.

3.0 PRINCIPLE

Immunoenzymometric assay (TYPE 3):
The essential reagents required for an immunoenzymometric assay include high affinity and specificity antibodies (enzyme and immobilized), with different and distinct epitope recognition, **in excess,** and native antigen. In this procedure, the immobilization takes place during the assay at the surface of a microplate well through the interaction of streptavidin coated on the well and exogenously added biotinylated monoclonal anti-PSA antibody.

Upon mixing monoclonal biotinylated antibody, the enzyme-labeled antibody and a serum containing the native antigen, a reaction results between the native antigen and the antibodies, without competition or steric hindrance, to form a soluble sandwich complex. The interaction is illustrated by the following equation:

$$^{Enz}Ab_{(P)} + Ag_{fPSA} + {}^{Btn}Ab_{(m)} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} {}^{Enz}Ab_{(p)} - Ag_{fPSA} - {}^{Btn}Ab_{(m)}$$

$^{Btn}Ab_{(m)}$ = Biotinylated Antibody (Excess Quantity)
Ag_{fPSA} = Native Antigen (Variable Quantity)
$^{Enz}Ab_{(p)}$ = Enzyme labeled Antibody (Excess Quantity)
$^{Enz}Ab_{(p)} - Ag_{fPSA} - {}^{Btn}Ab_{(m)}$ =Antigen-Antibodies Complex
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Dissociation

Simultaneously, the complex is deposited to the well through the high affinity reaction of streptavidin and biotinylated antibody. This interaction is illustrated below:

$^{Enz}Ab_{(p)} - Ag_{fPSA} - {}^{Btn}Ab_{(m)} + Streptavidin_{C.W.} \Rightarrow$ Immobilized complex

$Streptavidin_{C.W.}$ = Streptavidin immobilized on well
Immobilized complex = complex bound to the solid surface

After equilibrium is attained, the antibody-bound fraction is separated from unbound antigen by decantation or aspiration. The enzyme activity in the antibody-bound fraction is directly proportional to the native antigen concentration. By utilizing several different serum references of known antigen values, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

Materials Provided:

A. fPSA Calibrators – 1ml/vial - Icons A-F
Six (6) vials of serum references free PSA antigen at levels of 0(**A**), 0.5(**B**), 1.0(**C**), 2.5(**D**), 5.0(**E**) and 10.0(**F**) ng/ml. A preservative has been added. Store at 2-8°C.

Note: The calibrators, protein based buffered matrix, were calibrated using a reference preparation, which was assayed against the WHO 1st International Standard 96/668.

B. fPSA Enzyme Reagent – 13 ml/vial - Icon
One (1) vial containing enzyme labeled antibody, biotinylated specific free PSA monoclonal mouse IgG in buffer, dye, and preservative. Store at 2-8°C.

C. Streptavidin Coated Plate – 96 wells – Icon
One 96-well microplate coated with streptavidin and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

D. Wash Solution Concentrate – 20 ml/vial - Icon
One (1) vial containing a surfactant in buffered saline. A preservative has been added. Store at 2-8°C. (see Reagent Preparation Section).

E. Substrate A – 7ml/vial - Icon S^A
One (1) vial containing tetramethylbenzidine (TMB) in buffer. Store at 2-8°C.

F. Substrate B – 7ml/vial - Icon S^B
One (1) vial containing hydrogen peroxide (H_2O_2) in buffer. Store at 2-8°C.

G. Stop Solution – 8ml/vial - Icon
One (1) vial containing a strong acid (1N HCl). Store at 2-8°C.

H. Product Instructions.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Avoid extended exposure to heat and light. **Opened reagents are stable for sixty (60) days when stored at 2-8°C. Kit and component stability are identified on the label.**
Note 3: Above reagents are for a single 96-well microplate

Materials Required But Not Provided:
1. Pipette capable of delivering 0.50 & 0.100ml (50 & 100µl) volume with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100ml (100µl) and 0.350ml (350µl) volumes with a precision of better than 1.5%.
3. Microplate washers or a squeeze bottle (optional).
4. Microplate Reader with 450nm and 620nm wavelength absorbance capability.
5. Absorbent Paper for blotting the microplate wells.
6. Plastic wrap or microplate cover for incubation steps.
7. Vacuum aspirator (optional) for wash steps.
8. Timer.
9. Quality control materials

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA required tests. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.

Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood, serum in type and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube without additives or anti-coagulants. Allow the blood to clot. Centrifuge the specimen to separate the serum from the cells.

In patients receiving therapy with high biotin doses (i.e. >5mg/day), no sample should be taken until at least 8 hours after the last biotin administration, preferably overnight to ensure fasting sample.

Samples may be refrigerated at 2-8°C for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20°C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, 0.100ml (100µl) of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the low, normal and elevated range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION

1. **Wash Buffer**
Dilute contents of wash concentrate to 1000 ml with distilled or deionized water in a suitable storage container. Store at room temperature (2-30°C) for up to 60 days.
2. **Working Substrate Solution – Stable for one year**
Pour the contents of the amber vial labeled Solution 'A' into the clear vial labeled Solution 'B'. Place the yellow cap on the clear vial for easy identification. Mix and label accordingly. Store at 2 - 8°C.

Note 1: Do not use the working substrate if it looks blue.
Note 2: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum reference calibrators and controls to room temperature (20-27°C).
*****Test Procedure should be performed by a skilled individual or trained professional*****

1. Format the microplates' wells for each serum reference calibrator, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8°C.**
2. Pipette 0.050 ml (50µl) of the appropriate serum reference calibrator, control or specimen into the assigned well.
3. Add 0.100 ml (100µl) of the fPSA Enzyme Reagent to each well. **It is very important to dispense all reagents close to the bottom of the coated well.**
4. Swirl the microplate gently for 20-30 seconds to mix and cover.
5. Incubate 60 minutes at room temperature (20-27°C).
6. Discard the contents of the microplate by decantation or aspiration. If decanting, tap and blot the plate dry with absorbent paper.
7. Add 0.350ml (350µl) of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
8. Add 0.100 ml (100µl) of working substrate solution to all wells (see Reagent Preparation Section). **Always add reagents in the same order to minimize reaction time differences between wells.**
DO NOT SHAKE THE PLATE AFTER SUBTRATE ADDITION
9. Incubate at room temperature for fifteen (15) minutes.
10. Add 0.050ml (50µl) of stop solution to each well and mix gently for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
11. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader. **The results should be read within thirty (30) minutes of adding the stop solution.**

10.0 CALCULATION OF RESULTS

A dose response curve is used to ascertain the concentration of fPSA in unknown specimens.
1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1.
2. Plot the absorbance for each duplicate serum reference versus the corresponding fPSA concentration in ng/ml on linear graph paper (do not average the duplicates of the serum references before plotting).
3. Draw the best-fit curve through the plotted points.
4. To determine the concentration of fPSA for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in ng/ml) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (0.648) intersects the dose response curve at 2.28ng/ml fPSA concentration (See Figure 1).

Note: Computer data reduction software designed for ELISA assays may also be used for the data reduction. If such

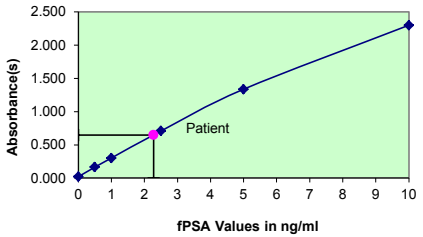
software is utilized, the validation of the software should be ascertained.

EXAMPLE 1

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value (ng/ml)
Cal A	A1	0.019	0.021	0
	B1	0.022		
Cal B	C1	0.167	0.164	0.5
	D1	0.161		
Cal C	E1	0.300	0.302	1.0
	F1	0.304		
Cal D	G1	0.701	0.707	2.5
	H1	0.714		
Cal E	A2	1.353	1.337	5.0
	B2	1.321		
Cal F	C2	2.286	2.300	10.0
	D2	2.314		
Patient	E2	0.647	0.648	2.28
	F2	0.648		

*The data presented in Example 1 and Figure 1 are for illustration only and **should not** be used in lieu of a dose response curve prepared with each assay.

Figure 1



11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. The absorbance (OD) of calibrator F should be ≥ 1.3.
2. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product are available on request from Monobind Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Patient specimens with fPSA concentrations above 10 ng/ml may be diluted (for example 1/10 or higher) with normal female serum (PSA = 0 ng/ml) and re-assayed. The sample's concentration is obtained by multiplying the result by the dilution factor (10).
10. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed, is essential. Any deviation from Monobind IFU may yield inaccurate results.
11. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
12. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
13. Risk Analysis, as required by CE Mark IVD Directive 98/79/EC, for this and other devices made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurements and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. The reagents for the test system procedure have been formulated to eliminate maximal interference; however, potential interaction between rare serum specimens and test reagents can cause erroneous results. Heterophilic antibodies often cause these interactions and have been known to be problems for all kinds of immunoassays. (*Boscato LM Stuart MC. 'Heterophilic antibodies: a problem for all immunoassays' Clin.Chem. 1988:3427-33).* For diagnostic purposes, the results from this assay should be used in combination with clinical examination, patient history and all other clinical findings.
4. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
5. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
6. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.
7. fPSA is elevated in benign prostatic hyperplasia (BPH). Clinically an elevated fPSA value alone is not of diagnostic value as a specific test for differential diagnosis of BPH. The ratio of fPSA/tPSA is a better marker and should be used in conjunction with other clinical observations (DRE) and diagnostic procedures (prostate biopsy).
8. When the total PSA (tPSA) reads 4-10 ng/ml, the fPSA/tPSA ratio is useful in the differential diagnosis of BPH and PC (Prostate Cancer). Depending on the ratio, the probability can be determined as follows:

fPSA/tPSA Ratio	Probability of Prostate Cancer
0-10%	55%
10-15%	28%
15- 20%	25%
> 20%	10%

13.0 EXPECTED RANGE OF VALUES

It is important to keep in mind that establishment of a range of values, which can be expected to be found by a given method for a population of "normal" persons, is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons, each laboratory should depend upon the range of expected values established by the Manufacturer only until an in-house range can be determined by the analysts using the method with a population indigenous to the area in which the laboratory is located.

TABLE I
Expected Values for the fPSA AccuBind® ELISA Test System

Healthy Males	≤ 1.3 ng/ml

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The within and between assay precisions of the fPSA AccuBind® ELISA test system were determined by analyses on three different levels of control sera. The number, mean value, standard deviation and coefficient of variation for each of these control sera are presented in Table 2 and Table 3.

TABLE 2
Within Assay Precision (Values in ng/ml)

Sample	N	X	σ	C.V.
Level 1	20	0.48	0.03	5.6%
Level 2	20	1.83	0.10	5.3%
Level 3	20	11.35	0.47	4.2%

TABLE 3
Between Assay Precision* (Values in ng/ml)

Sample	N	X	σ	C.V.
Level 1	20	0.53	0.05	9.4%
Level 2	20	1.93	0.14	7.2%
Level 3	20	>11	-	-

*As measured in ten experiments in duplicate.

14.2 Sensitivity

The theoretical sensitivity, or minimum detection limit, calculated by the interpolation of the mean plus two standard deviations of 20 replicates of the 0 ng/ml fPSA calibrator, is 0.008 ng/ml.

14.3 Accuracy

The fPSA AccuBind® ELISA test system was compared with a reference method. Clinical and non-clinical biological specimens from low, normal, and elevated concentrations were assayed. The total number of such specimens was 167. The least square regression equation and the correlation coefficient were computed for the fPSA AccuBind® ELISA method in comparison with the reference method. The data obtained is displayed in Table 4.

TABLE 4

Method	Mean	Least Square Regression Analysis	Correlation Coefficient
Monobind (x)	1.62	x = 0.0189 + 0.9649(y)	0.957
Reference (y)	1.66		

Only slight amounts of bias between the fPSA AccuBind® ELISA test system and the reference method are indicated by the closeness of the mean values. The least square regression equation and correlation coefficient indicates excellent method agreement.

14.4 Specificity:

The following substances did not interfere with the performance of fPSA determination using the fPSA AccuBind® ELISA test system. These substances were added to the pooled sera in concentrations 10-100 times more than normal.

Compound	*Concentration Added*
AFP	10 µg/ml
Atropine	100 µg/ml
Acetylsalicylic Acid	100 µg/ml
Ascorbic Acid	100 µg/ml
Caffeine	100 µg/ml
Dexamethasone	10 µg/ml
Flutamide	100 µg/ml
hCG	100 IU/ml
hLH	100 IU/ml
Methotrexate	100 µg/ml
Prolactin	100 µg/ml
TSH	100 mIU/ml

15.0 REFERENCES

1. Christensson A, Laurell CB, Lilja H, *Eur J Biochem,* 194, 755-63 (1990).
2. Watt KW, et al, Proc *Nat Acad Sci USA,* 83, 3166-70 (1986).
3. Chen Z, Prestiglacomo A, Stamey T, *Clin Chem*, 41 1273-82 (1995).
4. Wild D, *The Immunoassay Handbook*, Stockton Press, 452, (1994).
5. Junker R, Brandt B, Zechel C, Assmann G, *Clin Chem,* 43, 1588-94 (1997).
6. Prestigiacomo AF, Stamey TA, "Physiological variations of serum prostate antigen in the (4-10 ng/ml) range in male volunteers", *J Urol,* 155, 1977-80 (1996).
7. Stamey TA, McNeal JE, Yemoto CM, Sigal BM, Johnstone IM, "Biological determinants of cancer progression in men with prostate cancer", *JAMA,* 281, 1395-1400 (1999).
8. Chen Z, Prestigiacomo A, Stamey T, "Purification and characterization of Prostate Specific Antigen (PSA) Complexed to α_1- Anticymotrypsin: Potential reference Material for International Standardization of PSA Immunoassays", *Clin Chem*, 41/9, 1273-1282 (1995).
9. Horton GL, Bahnson RR, Datt M, Cfhan KM, Catalona WJ and Landenson JH, "Differences in values obtained with two assays of Prostate Specific Antigen", *J Urol,* 139, 762-72 (1988).
10. Stenman UH, Leinonen J, Alfthan H, Rannikko S, Tuhkanen K and Alfthan O, "A complex between prostate specific antigen and α1-anticymotrypsin is the major form of prostate specific antigen in serum of patients with prostate cancer:assay of complex improves clinical sensitivity for cancer", *Cancer Res*, 51, 222-26 (1991).

Effective Date: 2019-Jul-16 Rev 5 **DCO: 1353**
MP2325 **Product Code: 2325-300**

Size		96(A)	192(B)
Reagent (fill)	A)	1ml set	1ml set
	B)	1 (13ml)	2 (13ml)
	C)	1 plate	2 plates
	D)	1 (20ml)	1 (20ml)
	E)	1 (7ml)	2 (7ml)
	F)	1 (7ml)	2 (7ml)
	G)	1 (8ml)	2 (8ml)

For Orders and Inquires, please contact

Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA

Tel: +1 949.951.2665 Mail: info@monobind.com
Fax: +1 949.951.3539 Fax: www.monobind.com

IVD 2°–8° CE 0050

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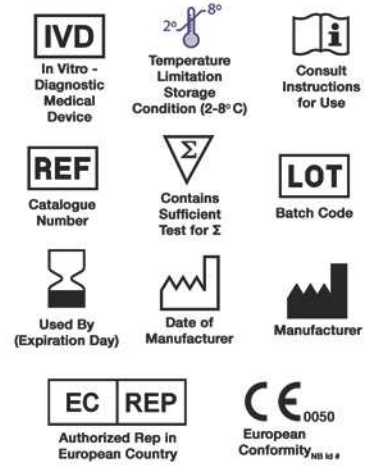
Glossary of Symbols
(EN 980/ISO 15223)



EC REP Authorized Rep in European Country

CE 0050 European Conformity

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Total Prostate Specific Antigen (PSA) Test System

Product Code: 2125-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Total Prostate Specific Antigen (PSA) Concentration in Human Serum by a Microplate Enzyme Immunoassay, Colorimetric

2.0 SUMMARY AND EXPLANATION OF THE TEST

Prostate Specific Antigen (PSA) is a serine protease with chymotrypsin-like activity.[1,2] The protein is a single chain glycoprotein with a molecular weight of 28.4 kDa.[3] PSA derives its name from the observation that it is a normal antigen of the prostate, but is not found in any other normal or malignant tissue.

PSA is found in benign, malignant and metastatic prostate cancer. Since prostate cancer is the second most prevalent form of male malignancy, the detection of elevated PSA levels plays an important role in the early diagnosis. Serum PSA levels have been found to be more useful than prostatic acid phosphatase (PAP) in the diagnosis and management of patients due to increased sensitivity.[4]

In this method, PSA calibrator, patient specimen or control is first added to a streptavidin coated well. Biotinylated monoclonal and enzyme labeled antibodies (directed against distinct and different epitopes of PSA) are added and the reactants mixed. Reaction between the various PSA antibodies and native PSA forms a sandwich complex that binds with the streptavidin coated to the well.

After the completion of the required incubation period, the enzyme-PSA antibody bound conjugate is separated from the unbound enzyme-PSA conjugate by aspiration or decantation. The activity of the enzyme present on the surface of the well is quantitated by reaction with a suitable substrate to produce color.

The employment of several serum references of known total prostate specific antigen (PSA) levels permits the construction of a dose response curve of activity and concentration. From comparison to the dose response curve, an unknown specimen's activity can be correlated with PSA concentration.

3.0 PRINCIPLE

Immunoenzymometric assay (TYPE 3):
The essential reagents required for an immunoenzymometric assay include high affinity and specificity antibodies (enzyme and immobilized), with different and distinct epitope recognition, **in excess,** and native antigen. In this procedure, the immobilization takes place during the assay at the surface of a microplate well through the interaction of streptavidin coated on the well and exogenously added biotinylated monoclonal anti-PSA antibody.
Upon mixing monoclonal biotinylated antibody, the enzyme-labeled antibody and a serum containing the native antigen, reaction results between the native antigen and the antibodies, without competition or steric hindrance, to form a soluble sandwich complex. The interaction is illustrated by the following equation:

$$^{Enz}Ab_{(p)} + Ag_{PSA} + {}^{Btn}Ab_{(m)} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} {}^{Enz}Ab_{(p)}\text{-}Ag_{PSA}\text{-}{}^{Btn}Ab_{(m)}$$

$^{Btn}Ab_{(m)}$ =Biotinylated Antibody (Excess Quantity)
Ag_{PSA} = Native Antigen (Variable Quantity)
$^{Enz}Ab_{(p)}$ = Enzyme labeled Antibody (Excess Quantity)
$^{Enz}Ab_{(p)}\text{-}Ag_{PSA}\text{-}{}^{Btn}Ab_{(m)}$ =Antigen-Antibodies Complex
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Dissociation

Simultaneously, the complex is deposited to the well through the high affinity reaction of streptavidin and biotinylated antibody. This interaction is illustrated below:
$^{Enz}Ab_{(p)}\text{-}Ag_{PSA}\text{-}{}^{Btn}Ab_{(m)}$+Streptavidin$_{C.W.}$⇒Immobilized complex
Streptavidin$_{C.W.}$ = Streptavidin immobilized on well
Immobilized complex = complex bound to the solid surface

After equilibrium is attained, the antibody-bound fraction is separated from unbound antigen by decantation or aspiration. The enzyme activity in the antibody-bound fraction is directly proportional to the native antigen concentration. By utilizing several different serum references of known antigen values, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

Materials Provided:

A. PSA Calibrators – 1 ml/vial – Icons A-F
Six (6) vials of serum references PSA Antigen at levels of 0(**A**), 5(**B**), 10(**C**), 25(**D**), 50(**E**) and 100(**F**) ng/ml. A preservative has been added. Store at 2-8°C.
Note: The calibrators, human serum based, were calibrated using a reference preparation, which was assayed against the 1st IS 96/670.

B. PSA Enzyme Reagent – 13 ml/vial – Icon E
One (1) vial containing enzyme labeled antibody, biotinylated monoclonal mouse IgG in buffer, dye, and preservative. Store at 2-8°C.

C. Streptavidin Coated Plate – 96 wells – Icon ⇓
One 96-well microplate coated with streptavidin and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

D. Wash Solution Concentrate – 20 ml/vial – Icon
One (1) vial containing a surfactant in buffered saline. A preservative has been added. Store at 2-8°C. (see Reagent Preparation Section).

E. Substrate A – 7 ml/vial – Icon S^A
One (1) vial containing tetramethylbenzidine (TMB) in buffer. Store at 2-8°C.

F. Substrate B – 7 ml/vial – Icon S^B
One (1) vial containing hydrogen peroxide (H_2O_2) in buffer. Store at 2-8°C. (see Reagent Preparation Section).

G. Stop Solution – 8 ml/vial – Icon STOP
One (1) vial containing a strong acid (1N HCl). Store at 2-8°C.

H. Product Instructions.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Avoid extended exposure to heat and light. **Opened reagents are stable for sixty (60) days when stored at 2-8ºC. Kit and component stability are identified on the label.**
Note 3: Above reagents are for a 96-well microplate. For other kit configurations, refer to the table at the end of this insert.

4.1 Required But Not Provided:
1. Pipette(s) capable of delivering 0.025, 0.050 & 0.100 ml (25, 50, & 100 µl) volumes with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100 & 0.350ml (100 & 350µl) volumes with a precision of better than 1.5%.
3. Microplate washers or a squeeze bottle (optional).
4. Microplate Reader with 450nm and 620nm wavelength absorbance capability.
5. Absorbent Paper for blotting the microplate wells.
6. Plastic wrap or microplate covers for incubation steps.
7. Vacuum aspirator (optional) for wash steps.
8. Timer.
9. Quality control materials

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA licensed reagents. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.

Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood, serum in type and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube without additives or anti-coagulants. Allow the blood to clot. Centrifuge the specimen to separate the serum from the cells.

In patients receiving therapy with high biotin doses (i.e. >5mg/day), no sample should be taken until at least 8 hours after the last biotin administration, preferably overnight to ensure fasting sample.

Samples may be refrigerated at 2-8°C for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20°C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, 0.050 ml (50 µl) of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the low, normal and elevated range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION

1. **Wash Buffer**
Dilute contents of wash concentrate to 1000ml with distilled or deionized water in a suitable storage container. Store diluted buffer at 2-30°C for up to 60 days.
2. **Working Substrate Solution –** Stable for one year
Pour the contents of the amber vial labeled Solution 'A' into the clear vial labeled Solution 'B'. Place the yellow cap on the clear vial for easy identification. Mix and label accordingly. Store at 2 - 8°C.

Note1: Do not use the working substrate if it looks blue.
Note 2: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum reference calibrators and controls to room temperature (20 - 27°C).
*****Test Procedure should be performed by a skilled individual or trained professional*****

1. Format the microplates' wells for each serum reference calibrator, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8ºC.**
2. Pipette 0.025ml (25µl) of the appropriate serum reference calibrator, control or specimen into the assigned well.
3. Add 0.100ml (100µl) of the PSA Enzyme Reagent to each well. **It is very important to dispense all reagents close to the bottom of the coated well.**
4. Swirl the microplate gently for 20-30 seconds to mix and cover.
5. Incubate 30 minutes at room temperature.
6. Discard the contents of the microplate by decantation or aspiration. If decanting, tap and blot the plate dry with absorbent paper.
7. Add 0.350ml (350µl) of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
8. Add 0.100ml (100µl) of working substrate solution to all wells (see Reagent Preparation Section). **Always add reagents in the same order to minimize reaction time differences between wells.**

DO NOT SHAKE THE PLATE AFTER SUBSTRATE ADDITION

9. Incubate at room temperature for fifteen (15) minutes.
10. Add 0.050ml (50µl) of stop solution to each well and mix gently for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
11. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader. **The results should be read within thirty (30) minutes of adding the stop solution.**

10.0 CALCULATION OF RESULTS

A dose response curve is used to ascertain the concentration of PSA in unknown specimens.

1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1.
2. Plot the absorbance for each duplicate serum reference versus the corresponding PSA concentration in ng/ml on linear graph paper (do not average the duplicates of the serum references before plotting).
3. Draw the best-fit curve through the plotted points.
4. To determine the concentration of PSA for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in ng/ml) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (1.142) intersects the dose response curve at (23.6 ng/ml) PSA concentration (See Figure 1).

Note: Computer data reduction software designed for ELISA assays may also be used for the data reduction. If such software is utilized, the validation of the software should be ascertained.

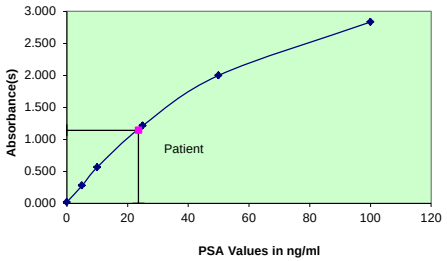
EXAMPLE 1

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value (ng/ml)
Cal A	A1	0.019	0.019	0
	B1	0.019		
Cal B	C1	0.279	0.276	5
	D1	0.273		
Cal C	E1	0.567	0.563	10
	F1	0.559		
Cal D	G1	1.248	1.213	25
	H1	1.179		
Cal E	A2	2.051	1.999	50
	B2	1.947		
Cal F	C2	2.892	2.833	100
	D2	2.775		
Patient	E2	1.186	1.142	23.6

	F2	1.099		

*The data presented in Example 1 and Figure 1 is for illustration only and **should not** be used in lieu of a dose response curve prepared with each assay.

Figure 1



11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. The absorbance (OD) of calibrator F should be ≥ 1.3.
2. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product are available on request from Monobind Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Patient specimens with PSA concentrations above 100 ng/ml may be diluted (for example 1/10 or higher) with normal female serum (PSA = 0 ng/ml) and re-assayed. The sample's concentration is obtained by multiplying the result by the dilution factor (10).
10. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind's IFU may yield inaccurate results.
11. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
12. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
13. Risk Analysis - as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurements and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. The reagents for AccuBind® ELISA procedure have been formulated to eliminate maximal interference; however, potential interactions between rare serum specimens and test reagents can cause erroneous results. Heterophilic antibodies often cause these interactions and have been known to be problems for all kinds of immunoassays (Boscato, LM, Stuart, MC. "Heterophilic antibodies: a problem for all immunoassays" *Clin. Chem.* 1988: 3427-33). For diagnostic purposes, the results from this assay should be used in combination with clinical examination, patient history and all other clinical findings.
4. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
5. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
6. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.
7. PSA is elevated in benign prostate hypertrophy (BPH). Clinically, an elevated **PSA value alone is not of diagnostic value as a specific test for cance**r and should only be used in conjunction with other clinical manifestations (observations) and diagnostic procedures (prostate biopsy). Free PSA determinations may be helpful in regard to the discrimination of BPH and prostate cancer conditions.[5]
8. Due to the variation in the calibration used in PSA/ fPSA test kits and differences in epitopic recognition of different antibodies, it is always suggested that the patient sample should be tested with PSA/ fPSA tests made by the same manufacturer**. (*Monobind Inc. offers a fPSA ELISA test that should be used for consistency reasons, when needed.*)**

13.0 PERFORMANCE CHARACTERISTICS

Healthy males are expected to have values below 4 ng/ml.[4]

TABLE I
Expected Values for PSA AccuBind® ELISA Test System

Healthy Males	<4 ng/ml

It is important to keep in mind that establishment of a range of values, which can be expected to be found by a given method for a population of "normal"-persons, is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons, each laboratory should depend upon the range of expected values established by the Manufacturer only until an in-house range can be determined by the analysts using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The within and between assay precisions of the PSA AccuBind® ELISA test system were determined by analyses on three different levels of control sera. The number, mean value, standard deviation and coefficient of variation for each of these control sera are presented in Table 2 and Table 3.

TABLE 2
Within Assay Precision (Values in ng/ml)

Sample	N	X	σ	C.V.
Level 1	20	1.06	0.06	5.2%
Level 2	20	3.56	0.18	5.1%
Level 3	20	23.07	0.88	3.8%

TABLE 3
Between Assay Precision* (Values in ng/ml)

Sample	N	X	σ	C.V.
Level 1	20	0.98	0.08	8.5%
Level 2	20	3.35	0.19	5.7%
Level 3	20	23.17	0.95	4.1%

*As measured in ten experiments in duplicate.

14.2 Sensitivity

The PSA AccuBind® ELISA test system has a sensitivity of 0.0003 ng/well. This is equivalent to a sample containing 0.013 ng/ml PSA concentration.

14.3 Accuracy

The PSA AccuBind® ELISA test system was compared with a reference Elisa method. Biological specimens from low, normal, and elevated concentrations were assayed. The total number of such specimens was 241. The least square regression equation and the correlation coefficient were computed for the PSA AccuBind® ELISA test method in comparison with the reference method. The data obtained is displayed in Table 4.

TABLE 4

Method	Mean	Least Square Regression Analysis	Correlation Coefficient
This Method (X)	5.62	y = -0.0598+0.98(X)	0.987
Reference (Y)	5.57		

Only slight amounts of bias between the PSA AccuBind® ELISA test system and the reference method are indicated by the closeness of the mean values. The least square regression equation and correlation coefficient indicates excellent method agreement.

14.4 Specificity:

No interference was detected with the performance of PSA AccuBind® ELISA test system upon addition of massive amounts of the following substances to a human serum pool.

Substance	Concentration
Acetylsalicylic Acid	100 µg/ml
Ascorbic Acid	100 µg/ml
Caffeine	100 µg/ml
CEA	10 µg/ml
AFP	10 µg/ml
CA-125	10,000 U/ml
hCG	1000 IU/ml
hLH	10 IU/ml
hTSH	100 mIU/ml
hPRL	100 µg/ml

15.0 REFERENCES

1. Christensson A, Laurell CB, Lilja H, *Eur J Biochem,* 194, 755-63 (1990).
2. Watt KW, et al., *Proc Nat Acad Sci USA*, 83, 3166-70 (1986).
3. Chen Z, Prestiglacomo A, Stamey T, *Clin Chem*, 41, 1273-82 (1995).
4. Wild D, *The Immunoassay Handbook*, Stockton Press, 452, (1994).
5. Junker R, Brandt B, Zechel C, Assmann G, *Clin Chem,* 43, 1588-94 (1997).
6. Prestigiacomo AF, Stamey TA, "Physiological variations of serum prostate antigen in the (4-10 ng/ml) range in male volunteers', *J Urol*, 155, 1977-80 (1996).
7. Stamey TA, McNeal JE, Yemoto CM, Sigal BM, Johnstone IM, "Biological determinants of cancer progression in men with prostate cancer" , *JAMA* 281, 1395-1400 (1999).
8. Chen Z, Prestigiacomo A, Stamey T, "Purification and characterization of Prostate Specific Antigen (PSA) Complexed to α_1- Anticymotrypsin: Potential *reference* Material for International Standardization of PSA Immunoassays", *Clin Chem,* 41/9, 1273-1282 (1995).
9. Horton GL, Bahnson RR, Datt M, Cfhan KM, Catalona WJ and Landenson JH, "Differences in values obtained with two assays of Prostate Specific Antigen", *J Urol*, 139, 762-72 (1988).
10. Stenman UH, Leinonen J, Alfthan H, Rannikko S, Tuhkanen K and Alfthan O,"*A* complex between prostate specific antigen and α1-anticymotrypsin is the major form of prostate specific antigen in serum of patients with prostate cancer: assay of complex improves clinical sensitivity for cancer", *Cancer Res*, 51, 222-26 (1991).

Revision: 6 Date: 2022-MAY-01 DCO: 1557
MP2125 Product Code: *2125-300*

Size		96(A)	192(B)
Reagent (fill)	A)	1ml set	1ml set
	B)	1 (13ml)	2 (13ml)
	C)	1 plate	2 plates
	D)	1 (20ml)	1 (20ml)
	E)	1 (7ml)	2 (7ml)
	F)	1 (7ml)	2 (7ml)
	G)	1 (8ml)	2 (8ml)

For Orders and Inquires, please contact

Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA

Tel: +1 949.951.2665 Mail: info@monobind.com
Fax: +1 949.951.3539 Fax: www.monobind.com

IVD 2° 8° CE 0050
EC REP **CEpartner4U,** Esdoornlaan 13
3951 DBMaarn, The Neatherlands
www.cepartner4u.eu

Please visit our website to learn more about our products and services.

Glossary of Symbols
(EN 980/ISO 15223)

IVD — In Vitro - Diagnostic Medical Device
2° 8° — Temperature Limitation Storage Condition (2-8° C)
Consult Instructions for Use
REF — Catalogue Number
Contains Sufficient Test for Σ
LOT — Batch Code
Used By (Expiration Day)
Date of Manufacturer
Manufacturer
EC REP — Authorized Rep in European Country
CE 0050 — European Conformity

LORNE LABORATORIES LTD.

GREAT BRITAIN

SYPHILIS SEROLOGY KIT

DIRECTIONS FOR USE

RPR CARBON KIT: For Detection Of Syphilis.

SUMMARY

At one time, syphilis was a major medical disease with a host of different manifestations transmitted primarily through sexual contact. The advent of penicillin in 1943 changed this. The etiologic agent of syphilis is *Treponema pallidum*, a spiral bacterium (spirochete). The spirochete causes some damage to the heart and the liver, releasing some tissue fragments. The patient's immune system produces antibodies, called reagins, against these fragments. There are two different techniques for the detection of syphilis. TPHA tests, which detect antibodies to *Treponemal pallidum*, and non-treponemal serologic tests, which detect Reagin in infected people.

PRINCIPLE

When used by the recommended techniques, the reagent will agglutinate (clump) in the presence of reagin. No agglutination usually indicates the absence of reagin (see **Limitations**).

KIT DESCRIPTION

Lorne RPR Carbon Kit is a non-treponemal serologic test for the detection of syphilis. The RPR Carbon Antigen contains micro particulate carbon, which aids in the microscopic reading of results. All the reagents are supplied at optimum dilution for use with all recommended techniques without the need for further dilution or addition. For lot reference number and expiry date see **Vial Labels**.

STORAGE

Do not freeze. Reagent vials should be stored at 2 - 8ºC on receipt. Prolonged storage at temperatures outside this range may result in accelerated loss of reagent reactivity.

SPECIMEN COLLECTION

Specimens should be drawn with or without anticoagulant using an aseptic phlebotomy technique. If testing is delayed specimens can be stored at 2-8ºC for 7 days or for up to 3 months at or below –20ºC. Specimens must be free from bacterial contamination, fibrin, haemolysis and lipaemia.

PRECAUTIONS

1. The kit is for *in vitro* diagnostic use only.
2. Do not use kit past expiration date (see **Vial and Box Labels**).
3. Protective clothing should be worn when handling the reagents, such as disposable gloves and a laboratory coat.
4. No known tests can guarantee products derived from human or animal sources are free from infectious agents. Care must be taken in the use and disposal of each vial and its contents.
5. RPR Positive Control: H319 - Causes serious eye irritation. Follow the precautionary statement given in the SDS.

DISPOSAL OF KIT REAGENT AND DEALING WITH SPILLAGES

For information on disposal of kit reagent and decontamination of a spillage site see **Material Safety Data Sheets**, available on request.

CONTROLS AND ADVICE

1. It is recommended the RPR Positive and Negative Controls be tested in parallel with each batch of tests. Tests must be considered invalid if controls do not show expected results.
2. Shake all the reagents well before use to ensure homogeneity.
3. Do not interchange components between different kits.
4. The circles on the agglutination cards should never be touched with fingers, as this may invalidate the test results.
5. Use of kit and interpretation of results must be carried out by properly trained and qualified personnel in accordance with the requirements of country where reagents are in use.
6. The user must the determine suitability of the kit for use in other techniques.

KIT COMPONENTS PROVIDED

1) RPR Carbon Antigen (Red Label): Carbon particles coated with a lipid complex (cardiolipin, lecithin and cholesterol) in phosphate buffer 20 mmol/L, pH 7.0 containing a preservative.
2) RPR Positive Control (Red cap): Artificial serum with reagin titer ≥ 1/4.
3) RPR Negative Control (Blue cap): Animal serum containing a preservative
4) Dispensing bottle (1 x 2 ml).
5) Dispensing Needle (x1).
6) Disposable agglutination slides.
7) Plastic stirrers.

MATERIALS AND EQUIPMENT NOT SUPPLIED

a) Pipette capable of accurately delivering 50 µl
b) Mechanical rotating table capable of rotating at 80-100 rpm.
c) 9 g/L saline solution.

QUALITATIVE TECHNIQUE

1. Allow the reagents and samples to reach room temperature. The sensitivity of the test may be reduced at low temperatures.
2. Place 50 µL of the sample and one drop of each Positive and Negative controls into separate circles on the slide test.
3. Swirl the RPR-carbon reagent gently before using. Invert the dropper assembly and press gently to remove air bubbles from the micropipette.
4. Place the micropipette in a vertical position and perpendicular to the slide, and add one drop (20 µL) of this reagent next to the samples to be tested.
5. Mix the drops with a stirrer, spreading them over the entire surface of the circle. Use different stirrers for each sample
6. Place the slide on a mechanical rotating table at 80-100 r.p.m. for 8 min. False positive results could appear if the test is read after more than 8 minutes.

INTERPRETATION OF QUALITATIVE RESULTS

1. **Reactive:** Visible agglutination (medium to large clumps) constitutes a positive result and within the accepted limitations of the test procedure, indicates the presence of reagin.
2. **Weak-Reactive:** Weak agglutination (small clumps) around the periphery of the test area constitutes a weak positive result and within the accepted limitations of the test procedure, indicates the presence of reagin.
3. **Negative:** No agglutination constitutes a negative result and within the accepted limitations of the test procedure, indicates the absence of reagin.

SEMI QUANTITATIVE TECHNIQUE

1. The semi-quantitative test can be performed in the same way as the quantitative technique using dilutions of the serum in 9 g/L saline solution.
2. Make doubling dilutions of specimen as follows:

Dilution	Serum	Saline
1/2	100 µl undiluted serum	100 µl
1/4	100 µl 1/2 diluted serum	100 µl
1/8	100 µl 1/4 diluted serum	100 µl
1/16	100 µl 1/8 diluted serum	100 µl

3. Test the specimen dilutions in the same way as for the quantitative technique above.
4. Read the test and note the last positive dilution series.

STABILITY OF THE REACTIONS

Slide tests should be interpreted straight after the 8-minute rotating period to avoid the possibility that a negative result may be incorrectly interpreted as positive due to drying of the reagent.

LIMITATIONS

1. RPR carbon test is non-specific for syphilis. All Reactive samples should be retested with treponemic methods such as TPHA and FTA-Abs to confirm the results.
2. A Non Reactive result by itself does not exclude a diagnosis of syphilis. Clinical diagnosis should not be made on findings of a single test result, but should integrate both clinical and laboratory data.
3. False positive results have been reported in diseases such as infectious mononucleosis, viral pneumonia, toxoplasmosis, pregnancy and autoimmune diseases.
4. Bilirubin (≤ 20 mg/dL), hemoglobin (≤ 10 g/L) and lipids (≤ 10 g/L), do not interfere. Rheumatoid factors (≥ 300 IU/mL), interfere. Other substances may interfere[5].
5. False positive or negative results may also occur due to:
   a) Not expelling air from end of needle
   b) Not maintaining dispensing bottle and needle in a vertical position when dispensing the antigen.
   c) When transferring the specimen from the collecting tube some of the specimen being drawn up in to the teat
   d) Contamination of test materials
   e) Improper storage of test materials or omission of reagents
   f) Deviation from the recommended techniques

SPECIFIC PERFORMANCE CHARACTERISTICS

1. The kit has been characterised by all the procedures mentioned in the **Recommended Techniques**.
2. Prior to release, each lot of Lorne RPR Syphilis Kit is tested by the **Recommended Techniques** to ensure suitable reactivity.
3. The reagent sensitivity is calibrated against the "Human Reactive Serum" from the CDC (Centres for Disease Control) and comparable to the RPR reagent from Becton Dickinson.
4. **Prozone effect:** No prozone effect was detected up to titers ≥1/128.
5. **Diagnostic sensitivity:** 100%
6. **Diagnostic specificity:** 100 %.

DISCLAIMER

1. The user is responsible for the performance of the kit by any method other than those mentioned in the **Recommended Techniques**.
2. Any deviations should be validated prior to use using established laboratory procedures.

BIBLIOGRAPHY

1. George P. Schimid. Current Opinion in Infectious Diseases 1994; 7: 34-40.
2. Sandra A Larsen et al. Clinical Microbiology Reviews 1995; 8 (1): 1-21.
3. Sandra Larsen et al. A manual of Test for Syphilis American Public Health Association 1990: 1-192.
4. Joseph Earle Moore et al. Gastrointestinal Haemorrhage 1952; 150(5): 467-473.
5. Young DS. Effects of drugs on clinical laboratory test, 4th ed. AACC Press, 1995.

AVAILABLE KIT SIZES

Kit Size	Catalogue Number
150 Tests Per Kit	044150A
500 Tests Per Kit	044500A

For the availability of other sizes, please contact:

Lorne Laboratories Limited
Unit 1 Cutbush Park Industrial Estate
Danehill
Lower Earley
Berkshire, RG6 4UT
England
Tel: +44 (0) 118 921 2264
Fax: +44 (0) 118 986 4518
E-mail: info@lornelabs.com

TABLE OF SYMBOLS

LOT	Batch Number	IVD	*in-vitro* Diagnostic
REF	Catalogue Reference		Store At
	Expiry Date		Manufacturer
	Read Pack Insert		

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Total Triiodothyronine (T3) Test System
Product Code: 125-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Total Triiodothyronine Concentration in T3 Calibrators or Plasma by a Microplate Enzyme Immunoassay

2.0 SUMMARY AND EXPLANATION OF THE TEST

Measurement of serum triiodothyronine concentration is generally regarded as a valuable tool in the diagnosis of thyroid dysfunction. This importance has provided the impetus for the significant improvement in assay methodology that has occurred in the last two decades. The advent of monospecific antiserum and the discovery of blocking agents to the T3 binding serum proteins have enabled the development of procedurally simple radioimmunoassays (1,2).
This microplate enzyme immunoassay methodology provides the technician with optimum sensitivity while requiring few technical manipulations. In this method, serum reference, patient specimen, or control is first added to a microplate well. Enzyme-T3 conjugate is added, and then the reactants are mixed. A competition reaction results between the enzyme conjugate and the native triiodothyronine for a limited number of antibody combining sites immobilized on the well.
After the completion of the required incubation period, the antibody bound T3-enzyme conjugate is separated from the unbound T3-enzyme conjugate by aspiration or decantation. The activity of the enzyme present on the surface of the well is quantitated by reaction with a suitable substrate to produce color.
The employment of several serum references of known triiodothyronine concentration permits construction of a graph of activity and concentration. From comparison to the dose response curve, an unknown specimen's activity can be correlated with T3 concentration.

3.0 PRINCIPLE

Competitive Enzyme Immunoassay (TYPE 5):
The essential reagents required for a solid phase enzyme immunoassay include immobilized antibody, enzyme-antigen conjugate and native antigen.
Upon mixing immobilized antibody, enzyme-antigen conjugate and a serum containing the native antigen, a competition reaction results between the native antigen and the enzyme-antigen conjugate for a limited number of insolubulized binding sites.

The interaction is illustrated by the following equation:

$$Enz_{Ag} + Ag + Ab_{C.W.} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} AgAb_{C.W.} + {}^{Enz}AgAb_{C.W.}$$

$Ab_{C.W.}$ = Monospecific Immobilized Antibody (Constant Quantity)
Ag = Native Antigen (Variable Quantity)
Enz_{Ag} = Enzyme-antigen Conjugate (Constant Quantity)
$AgAb_{C.W.}$ = Antigen-Antibody Complex
$Enz_{Ag}Ab_{C.W.}$ = Enzyme-antigen Conjugate -Antibody Complex
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Disassociation
$K = k_a / k_{-a}$ = Equilibrium Constant

After equilibrium is attained, the antibody-bound fraction is separated from unbound antigen by decantation or aspiration. The enzyme activity in the antibody-bound fraction is inversely proportional to the native antigen concentration. By utilizing several different serum references of known antigen concentration, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

Materials Provided:

A. T3 Calibrators References – 1ml/vial - Icons A-F
Six (6) vials of serum reference for triiodothyronine at concentrations of 0 (**A**), 0.5 (**B**), 1.0 (**C**), 2.5 (**D**), 5.0(**E**) and 7.5(**F**) ng/ml. Store at 2-8°C. A preservative has been added. **For SI units: ng/ml x 1.536 = nmol/L**

B. T3 Enzyme Reagent – 1.5ml/vial - Icon Ⓔ
One (1) vial of T3-horseradish peroxidase (HRP) conjugate in an albumin-stabilizing matrix. A preservative has been added. Store at 2-8°C

C. T3/T4 Conjugate Buffer – 13ml - Icon Ⓑ
One (1) bottle reagent containing buffer, red dye, preservative, and binding protein inhibitors. Store at 2-8°C.

D. T3 Antibody Coated Plate – 96 wells - Icon
One 96-well microplate coated with Sheep anti-T3 serum and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

E. Wash Solution Concentrate – 20ml - Icon
One (1) vial containing a surfactant in buffered saline. A preservative has been added. Store at 2-8°C.

F. Substrate A – 7 ml/vial - Icon S^A
One (1) bottle containing tetramethylbenzidine (TMB) in buffer. Store at 2-8°C.

G. Substrate B – 7 ml/vial - Icon S^B
One (1) bottle containing hydrogen peroxide (H_2O_2) in buffer. Store at 2-8°C.

H. Stop Solution – 8ml/vial - Icon STOP
One (1) bottle of stop solution containing a strong acid (1N HCL). Store at 2-30°C.

I. Product Instructions.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Opened reagents are stable for sixty (60) days when stored at 2-8°C. **Opened reagents are stable for sixty (60) days when stored at 2-8ºC. Kit and component stability are identified on the label.**
Note 3: Above reagents are for a 96-well microplate. For other kit configurations, see table at end of IFU.

4.1 Materials Required But Not Provided:
1 Pipettes capable of delivering 50µl volumes with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100ml and 0.350ml volumes with a precision of better than 1.5%.
3. Adjustable volume (20-200µl) and (200-1000µl) dispenser(s) for conjugate and substrate preparation.
4. Microplate washers or a squeeze bottle (optional).
5. Microplate Reader with 450nm and 620nm wavelength absorbance capability.
6. Test tubes for preparation of enzyme conjugate and substrate A plus B.
7. Absorbent Paper for blotting the microplate wells.
8. Plastic wrap or microplate cover for incubation steps.
9. Vacuum aspirator (optional) for wash steps.
10. Timer.
11. Quality control materials.

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA required tests. Since no known test can offer complete assurance that infectious agents are absent, all T3 Calibrators products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.

Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood; serum or plasma in type and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube without additives or anti-coagulants (for serum) or evacuated tube(s) containing EDTA or heparin. Allow the blood to clot for serum samples. Centrifuge the specimen to separate the serum or plasma from the cells.

Samples may be refrigerated at 2-8°C for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20°C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, 0.100ml of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay external controls at levels in the hypothyroid, euthyroid and hyperthyroid range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. The individual laboratory should set acceptable assay performance limits. In addition, maximum absorbance should be consistent with past experience. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION

1. Working Reagent A - T3-enzyme Conjugate Solution
Dilute the T3-enzyme conjugate 1:11 with T3/T4 conjugate buffer in a suitable container. For example, dilute 160µl of conjugate with 1.6ml of buffer for 16 wells (A slight excess of solution is made). This reagent should be used within twenty-four hours for maximum performance of the assay. Store at 2-8°C.
General Formula:
Amount of Buffer required = Number of wells * 0.1
Quantity of T3-Enzyme necessary = # of wells * 0.01
i.e. = 16 x 0.1 = 1.6ml for Total T3/T4 Conjugate Buffer
16 x 0.01 = 0.16ml (160µl) for T3 enzyme conjugate

2. Wash Buffer
Dilute contents of wash concentrate to 1000ml with distilled or deionized water in a suitable storage container. Store diluted buffer at 2-30°C for up to 60 days.

3. Working Substrate Solution
Pour the contents of the amber vial labeled Solution 'A' into the clear vial labeled Solution 'B'. Place the yellow cap on the clear vial for easy identification. Mix and label accordingly. Store at 2 - 8°C.

Note1 : Do not use the working substrate if it looks blue.
Note 2: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum references and controls to room temperature (20 - 27°C).
*****Test Procedure should be performed by a skilled individual or trained professional*****

1. Format the microplates' wells for each serum reference, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8ºC.**
2. Pipette 0.050 ml (50µl) of the appropriate serum reference, control or specimen into the assigned well.
3. Add 0.100 ml (100µl) of Working Reagent A, T3 Enzyme Reagent to all wells (see Reagent Preparation Section).
4. Swirl the microplate gently for 20-30 seconds to mix and cover.
5. Incubate 60 minutes at room temperature.
6. Discard the contents of the microplate by decantation or aspiration. If decanting, blot the plate dry with absorbent paper.
7. Add 350µl of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
8. Add 0.100 ml (100µl) of working substrate solution to all wells (see Reagent Preparation Section). **Always add reagents in the same order to minimize reaction time differences between wells.**

DO NOT SHAKE THE PLATE AFTER SUBSTRATE ADDITION

9. Incubate at room temperature for fifteen (15) minutes.
10. Add 0.050ml (50µl) of stop solution to each well and gently mix for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
11. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader **The results should be read within thirty (30) minutes of adding the stop solution.**

Note: For re-assaying specimens with concentrations greater than 7.5ng/ml, pipette 25µl of the specimen and 25µl of the 0 serum reference into the sample well (this maintains a uniform protein concentration). Multiply the readout value by 2 to obtain the triiodothyronine concentration.

10.0 CALCULATION OF RESULTS

A dose response curve is used to ascertain the concentration of triiodothyronine in unknown specimens.
1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1.
2. Plot the absorbance for each duplicate serum reference versus the corresponding T3 concentration in ng/ml on linear graph paper (do not average the duplicates of the serum references before plotting).
3. Draw the best-fit curve through the plotted points.
4. To determine the concentration of T3 for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis (y-axis) of the graph, find the intersecting point on the curve, and read the concentration (in ng/ml) from the horizontal axis (X-axis) of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (1.130) intersects the dose response curve at 1.95ng/ml T3 concentration (See Figure 1).

Note: Computer data reduction software designed for ELISA assays may be used for the data reduction. If such

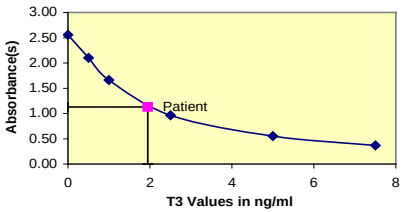
software is utilized, the validation of the software should be ascertained.

EXAMPLE 1

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value (ng/ml)
Cal A	A1	2.604	2.556	0
	B1	2.507		
Cal B	C1	2.073	2.101	0.5
	D1	2.128		
Cal C	E1	1.678	1.662	1.0
	F1	1.646		
Cal D	G1	0.964	0.966	2.5
	H1	0.969		
Cal E	A2	0.550	0.551	5.0
	B2	0.551		
Cal F	C2	0.372	0.370	7.5
	D2	0.369		
Ctrl 1	E2	1.701	1.726	***0.92***
	F2	1.638		
Ctrl 2	G2	0.755	0.734	***3.58***
	H2	0.791		
Patient	A3	1.145	1.130	***1.95***
	B3	1.115		

*The data presented in Example 1 and Figure 1 are for illustration only and **should not** be used in lieu of a dose response curve prepared with each assay.

Figure 1



11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. The absorbance (OD) of calibrator 0 ng/ml should be ≥ 1.3.
2. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product is available on request from Monobind Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Patient specimens with T3 concentrations above 7.5 ng/mL may be diluted ½ with '0' serum reference. The sample's concentration is obtained by multiplying the result by the dilution factor, 2.
10. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind's IFU may yield inaccurate results.
11. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
12. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
13. Risk Analysis- as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurements and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
4. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
5. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.
6. Total serum triiodothyronine concentration is dependent upon a multiplicity of factors: thyroid gland function and its regulation, thyroxine binding globulin (TBG) concentration, and the binding of triiodothyronine to TBG (3, 4). **Thus, total triiodothyronine concentration alone is not sufficient to assess clinical status.**
7. A decrease in total triiodothyronine values is found with protein-wasting diseases, certain liver diseases and administration of testosterone, diphenylhydantoin or salicylates. A table of interfering drugs and conditions, which affect total triiodothyronine values, has been compiled by the Journal of the American Association of Clinical Chemists[3].

13.0 EXPECTED RANGES OF VALUES

A study of euthyroid adult population was undertaken to determine expected values for the T3 AccuBind™ ELISA Test System. The mean (R) values standard deviations (σ) and expected ranges (±2 σ) are presented in Table 1. The total number of samples was 105.

TABLE I
Expected Values for the T3 ELISA Test System (in ng/ml)

Mean (X)	**1.184**
Standard Deviation (σ)	0.334
Expected Ranges (±2 σ)	0.52 – 1.85

It is important to keep in mind that establishment of a range of values which can be expected to be found by a given method for a population of "normal"-persons is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons each laboratory should depend upon the range of expected values established by the Manufacturer only until an in-house range can be determined by the analysts using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The within and between assay precisions of the T3 AccuBind™ ELISA test system were determined by analyses on three different levels of pool control sera. The number (N), mean value (X), standard deviation (σ) and coefficient of variation (C.V.) for each of these control sera are presented in Table 2 and Table 3.

TABLE 2
Within Assay Precision (Values in ng/ml)

Sample	N	X	σ	C.V.
Low	16	0.78	0.06	7.9%
Normal	16	1.92	0.10	5.4%
High	16	3.55	0.14	3.9 %

TABLE 3
Between Assay Precision (Values in ng/ml)

Sample	N	X	σ	C.V.
Low	10	0.76	0.07	8.9%
Normal	10	1.85	0.13	6.7%
High	10	3.43	0.16	4.5%

*As measured in ten experiments in duplicate over a ten day period.

14.2 Sensitivity

The T3 AccuBind™ ELISA test system has a sensitivity of 0.04 ng/ml. The sensitivity was ascertained by determining the variability of the 0 ng/ml serum calibrator and using the 2σ (95% certainty) statistic to calculate the minimum dose.

14.3 Accuracy

The T3 AccuBind™ ELISA method was compared with a reference radioimmunoassay method. Biological specimens from hypothyroid, euthyroid and hyperthyroid populations were used (The values ranged from 0.15ng/ml – 8.0ng/ml). The total number of such specimens was 120. The least square regression equation (y= mx+b) and the correlation coefficient were computed for the T3 AccuBind™ ELISA method in comparison with the reference method. The data obtained is displayed in Table 4.

TABLE 4

Method	Mean (x)	Least Square Regression Analysis	Correlation Coefficient
This Method	1.62	y = 3.8 + 0.947(x)	0.987
Reference	1.68		

Only slight amounts of bias between this method and the reference method are indicated by the closeness of the mean values. The least square regression equation and correlation coefficient indicates excellent method agreement.

14.4 Specificity

The cross-reactivity of the triiodothyronine antibody to selected substances was evaluated by adding the interfering substance to a serum matrix at various concentrations. The cross-reactivity was calculated by deriving a ratio between dose of interfering substance to dose of triiodothyronine needed to displace the same amount of conjugate.

Substance	Cross Reactivity	Concentration
l-Triiodothyronine	1.0000	-
l-Thyroxine	< 0.0002	10µg/ml
Iodothyrosine	< 0.0001	10µg/ml
Diiodothyrosine	< 0.0001	10µg/ml
Diiodothyronine	< 0.0001	10µg/ml
Phenylbutazone	< 0.0001	10µg/ml
Sodium Salicylate	< 0.0001	10µg/ml

15.0 REFERENCES

1. Gharib H., Ryan R.J, Mayberry W.E, & Hockett T., "Radioimmunoassay for Triiodothyronine (T3): Affinity and Specificity of Antibody for T3", *J Clinical Endocrinol.* **33,**509 (1971).
2. Chopra I.J., Ho R.S.,& Lam R. "An improved radio-immunoassay of triiodothyronine in T3 Calibrators", *J. Lab Clinical Med* **80,** 729 (1971).
3. Young D.S., Pestaner L.C., and Gilberman U., "Effects of Drugs on Clinical Laboratory Tests", *Clinical Chemistry* **21,** 3660 (1975).
4. Sterling L., "Diagnosis and Treatment of Thyroid Disease", *Cleveland CRC Press*, **p. 9-51** (1975).
5. Braverman LE.:"Evaluation of thyroid status in patients with thyrotoxicosis", *Clin.Chem*. **42,** 174-178 (1996).
6. Braverman LE., Utigen RD., Eds.: Werner and Ingbar's "The Thyroid – '*A Fundamental and Clinical Text*'", 7th Ed. Philadelphia, Lippinscott-Raven (1996).
7. Comeau L., Pianan U., Leo-Mensah T, et.al.:"An automated chemiluminescent immunoassay test for total triiodothyronine", *Clin.Chem*.**37,** 941 (1991).
8. Chopra IJ.:"Radioimmunoassay of iodothyronines-*Handbook of Radioimmunoassay*", G.E. Abraham.Ed.New York, Marcel Dekker, Inc**.** (1977).
9. Kozwich D., Davis G., Sockol C.:"Development of total triiodothyronine enzyme immunoassay in microtiter plate format", *Clin.Chem***. 37,** 1040 (1991).
10. Papanastasiou-Diamandi A., Khosravi M.:"Total T3 (triiodothyronine) measurement in serum by time resolved fluorescence immunoassay", *Clin.Chem***. 37,** 1029 (1991).

Revision: 4 **2022-May-01** **DCO: 1557**
Cat #: *125-300*

Size		96(A)	192(B)	480(D)	960(E)
Reagent (fill)	A)	1ml set	1ml set	2ml set	2ml set x2
	B)	1 (1.5ml)	2 (1.5ml)	1 (8ml)	2 (8ml)
	C)	1 (13ml)	2 (13ml)	1(60ml)	2 (60ml)
	D)	1 plate	2 plates	5 plates	10 plates
	E)	1 (20ml)	1 (20ml)	1 (60ml)	2 (60ml)
	F)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	G)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	H)	1 (8ml)	2 (8ml)	1 (30ml)	2 (30ml)

For Orders and Inquiries, please contact

Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA

Tel: +1 949.951.2665 Email: info@monobind.com
Fax: +1 949.951.3539 Web: www.monobind.com

Please visit our website to learn more about our other interesting products and services.

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EC REP **CEpartner4U,** Esdoornlaan 13, 3951DB Maarn, The Netherlands www.cepartner4u.eu

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Total Thyroxine (T4) Test System
Product Code: 225-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Total Thyroxine Concentration in Human Serum or Plasma by a Microplate Enzyme Immunoassay

2.0 SUMMARY AND EXPLANATION OF THE TEST

Measurement of serum thyroxine concentration is generally regarded as an important *in-vitro* diagnostic test for assessing thyroid function. This importance has provided the impetus for the significant improvement in assay methodology that has occurred in the last three decades. This procedural evolution can be traced from the empirical protein bound iodine (PBI) test (1) to the theoretically sophisticated radioimmunoassay (2).

This microplate enzyme immunoassay methodology provides the technician with optimum sensitivity while requiring few technical manipulations. In this method, serum reference, patient specimen, or control is first added to a microplate well. Enzyme-T4 conjugate is added, and then the reactants are mixed. A competition reaction results between the enzyme conjugate and the native thyroxine for a limited number of antibody combining sites immobilized on the well.

After the completion of the required incubation period, the antibody bound enzyme-thyroxine conjugate is separated from the unbound enzyme-thyroxine conjugate by aspiration or decantation. The activity of the enzyme present on the surface of the well is quantitated by reaction with a suitable substrate to produce color.

The employment of several serum references of known thyroxine concentration permits construction of a graph of activity and concentration. From comparison to the dose response curve, an unknown specimen's activity can be correlated with thyroxine concentration.

3.0 PRINCIPLE

Competitive Enzyme Immunoassay (TYPE 5)
The essential reagents required for a solid phase enzyme immunoassay include immobilized antibody, enzyme-antigen conjugate and native antigen.

Upon mixing immobilized antibody, enzyme-antigen conjugate and a serum containing the native antigen, a competition reaction results between the native antigen and the enzyme-antigen conjugate for a limited number of insolubulized binding sites. The interaction is illustrated by the equation in the following below.

$$Enz_{Ag} + Ag + Ab_{C.W.} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} AgAb_{C.W.} + Enz_{AgAb_{C.W.}}$$

$Ab_{C.W}$ = Monospecific Immobilized Antibody (Constant Quantity)
Ag = Native Antigen (Variable Quantity)
Enz_{Ag} = Enzyme-antigen Conjugate (Constant Quantity)
$AgAb_{C.W.}$ = Antigen-Antibody Complex
$Enz_{Ag\,Ab_{C.W.}}$ = Enzyme-antigen Conjugate -Antibody Complex
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Disassociation
$K = k_a / k_{-a}$ = Equilibrium Constant

After equilibrium is attained, the antibody-bound fraction is separated from unbound antigen by decantation or aspiration. The enzyme activity in the antibody-bound fraction is inversely proportional to the native antigen concentration. By utilizing several different serum references of known antigen concentration, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

A. T4 **Calibrators – 1ml/vial - Icons A-F**
Six (6) vials of serum reference for thyroxine at concentrations of 0 (**A**), 2.0 (**B**), 5.0 (**C**), 10.0 (**D**), 15.0 (**E**) and 25.0 (**F**) µg/dl. Store at 2-8°C. A preservative has been added. **For SI units: µg/dl x 12.9 = nmol/L**

B. T4-Enzyme Reagent – 1.5ml/vial - Icon Ⓔ
One (1) vial of thyroxine-horseradish peroxidase (HRP) conjugate in a bovine albumin-stabilizing matrix. A preservative has been added. Store at 2-8°C.

C. T3/T4 Conjugate Buffer – 13 ml - Icon Ⓑ
One (1) bottle reagent containing buffer, red dye, preservative, and binding protein inhibitors. Store at 2-8°C.

D. T4 Antibody Coated Plate – 96 wells - Icon
One 96-well microplate coated with sheep anti-thyroxine serum and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

E. Wash Solution Concentrate – 20ml - Icon
One (1) vial containing a surfactant in buffered saline. A preservative has been added. Store at 2-8°C.

F. Substrate A – 7ml/vial - Icon S^A
One (1) bottle containing tetramethylbenzidine (TMB) in buffer. Store at 2-8°C.

G. Substrate B – 7ml/vial - Icon S^B
One (1) bottle containing hydrogen peroxide (H_2O_2) in buffer. Store at 2-8°C.

H. Stop Solution – 8ml/vial - Icon STOP
One (1) bottle containing a strong acid (1.0N HCl). Store at 2-8°C.

I. Product Insert.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Avoid extended exposure to heat and light. **Opened reagents are stable for sixty (60) days when stored at 2-8ºC. Kit and component stability are identified on the label.**
Note 3: Above reagents are for a 96-well microplate. For other kit configurations, see table at the end of this IFU.

4.1 Required But Not Provided:
1. Pipette capable of delivering 25µl & 50µl volumes with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100ml and 0.350ml volumes with a precision of better than 1.5%.
3. Adjustable volume (20-200µl) and (200-1000µl) dispenser(s) for conjugate and substrate preparation
4. Microplate washer or a squeeze bottle (optional).
5. Microplate Reader with 450nm and 620nm wavelength absorbance capability.
6. Test tubes for preparation of enzyme conjugate.
7. Absorbent Paper for blotting the microplate wells.
8. Plastic wrap or microplate cover for incubation steps.
9. Vacuum aspirator (optional) for wash steps.
10. Timer.
11. Quality control materials.

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA required tests. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.

Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PEPARATION

The specimens shall be blood; serum or plasma in type and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube without additives or anti-coagulants (for serum) or evacuated tube(s) containing EDTA or heparin. Allow the blood to clot for serum samples. Centrifuge the specimen to separate the serum or plasma from the cells.

Samples may be refrigerated at 2-8°C for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20°C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, 0.050ml of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the hypothyroid, euthyroid and hyperthyroid range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. The individual laboratory should set acceptable assay performance limits. In addition, maximum absorbance should be consistent with past experience. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION

1. **Working Reagent A = T4-Enzyme Conjugate Solution**
   Dilute the T4-enzyme conjugate 1:11 with Total T3/T4 conjugate buffer in a suitable container. For example, dilute 160µl of conjugate with 1.6ml of buffer for 16 wells (A slight excess of solution is made). This reagent should be used within twenty-four hours for maximum performance of the assay. Store at 2-8°C.
   General Formula:
   Amount of Buffer required = Number of wells * 0.1
   Quantity of T4 Enzyme necessary = # of wells * 0.01
   i.e. = 16 x 0.1 = 1.6ml for Total T3/T4 conjugate buffer
   16 x 0.01 = 0.16ml (160µl) for T4 enzyme conjugate
2. **Wash Buffer**
   Dilute contents of wash concentrate to 1000ml with distilled or deionized water in a suitable storage container. Store diluted buffer at 2-30°C for up to 60 days.
3. **Working Substrate Solution**
   Pour the contents of the amber vial labeled Solution 'A' into the clear vial labeled Solution 'B'. Place the yellow cap on the clear vial for easy identification. Mix and label accordingly. Store at 2 - 8°C.

Note1 : Do not use the working substrate if it looks blue.

Note 2: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum references and controls to room temperature (20 - 27°C).
Test Procedure should be performed by a skilled individual or trained professional*

1. Format the microplate's wells for each serum reference, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8ºC.**
2. Pipette 0.025 ml (25µl) of the appropriate serum reference, control or specimen into the assigned well.
3. Add 0.100 ml (100µl) of Working Reagent A, T4 Enzyme Reagent to all wells (see Reagent Preparation Section).
4. Swirl the microplate gently for 20-30 seconds to mix and cover.
5. Incubate 60 minutes at room temperature.
6. Discard the contents of the microplate by decantation or aspiration. If decanting, blot the plate dry with absorbent paper.
7. Add 350µl of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
8. Add 0.100 ml (100µl) of working substrate solution to all wells (see Reagent Preparation Section). **Always add reagents in the same order to minimize reaction time differences between wells.**

   DO NOT SHAKE THE PLATE AFTER SUBSTRATE ADDITION
9. Incubate at room temperature for fifteen (15) minutes.
10. Add 0.050ml (50µl) of stop solution to each well and gently mix for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
11. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader. **The results should be read within thirty (30) minutes of adding the stop solution.**

Note: For reassaying specimens with concentrations greater than 25 µg/dl, pipet 12.5µl of the specimen and 12.5µl of the 0 serum reference into the sample well (this maintains a uniform protein concentration). Multiply the readout value by 2 to obtain the thyroxine concentration.

10.0 CALCULATION OF RESULTS

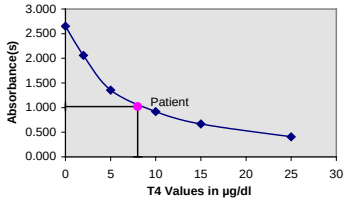
A dose response curve is used to ascertain the concentration of thyroxine in unknown specimens.
1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1.
2. Plot the absorbance for each duplicate serum reference versus the corresponding T4 concentration in µg/dl on linear graph paper (do not average the duplicates of the serum references before plotting).
3. Connect the points with a best-fit curve.
4. To determine the concentration of T4 for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in µg/dl) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (1.022) intersects the standard curve at (8 µg/dl) T4 concentration (See Figure 1).

Note: Computer data reduction software designed for ELISA assays may also be used for the data reduction. If such software is utilized, the validation of the software should be ascertained.

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value (µg/dl)
Cal A	A1	2.648	2.650	0
	B1	2.652		
Cal B	C1	2.090	2.060	2
	D1	2.031		
Cal C	E1	1.344	1.355	5
	F1	1.366		
Cal D	G1	0.897	0.918	10
	H1	0.939		
Cal E	A2	0.676	0.668	15
	B2	0.659		
Cal F	C2	0.408	0.406	25
	D2	0.404		
Ctrl 1	E2	1.425	1.435	**4.6**
	F2	1.383		
Ctrl 2	G2	0.611	0.613	**16.3**
	H2	0.608		
Patient	A3	0.984	1.022	**8.0**
	B3	1.060		

EXAMPLE 1

Figure 1



The data presented in Example 1 and Figure 1 are for illustration only and **should not** be used in lieu of a standard curve prepared with each assay.

11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. The absorbance (OD) of calibrator 0 µg/dl should be ≥ 1.3.
2. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product is available on request from Monobind Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Patient specimens with T4 concentrations greater than 35 µg/dl may be diluted ½ with the '0' serum reference into the sample well; pipet 12.5µl of the specimen and 12.5µl of the '0' serum reference in the sample well to maintain a uniform protein concentration. The sample's concentration is obtained by multiplying the result by the dilution factor, 2.
10. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind's IFU may yield inaccurate results.
11. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
12. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
13. Risk Analysis- as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurements and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
4. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
5. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.
2. Total serum thyroxine concentration is dependent upon a multiplicity of factors: thyroid gland function and its regulation, thyroxine binding globulin (TBG) concentration, and the binding of thyroxine to TBG (3, 4). **Thus, total thyroxine concentration alone is not sufficient to assess clinical status.**
3. Total serum thyroxine values may be elevated under conditions such as pregnancy or administration of oral contraceptives. A T3 uptake test may be performed to estimate the relative TBG concentration in order to determine if the elevated T4 is caused by TBG variation.
4. A decrease in total thyroxine values is found with protein-wasting diseases, certain liver diseases and administration of testosterone, diphenylhydantoin or salicylates. A table of interfering drugs and conditions, which affect total thyroxine values, has been compiled by the Journal of the American Association of Clinical Chemists.

"NOT INTENDED FOR NEWBORN SCREENING"

13.0 EXPECTED RANGES OF VALUES

A study of euthyroid adult population was undertaken to determine expected values for the T4 AccuBind™ ELISA Test System. The mean (X) values, standard deviations (**σ**) and expected ranges (±2 **σ**) are presented in Table 1.

TABLE 1

Expected Values for the T4 ELISA Test System (in µg/dl)

	Male	Female *
Number of Specimens	42	58
Mean (X)	7.6	8.2
Std.Dev (σ)	1.6	1.7
Expected Ranges (±2 σ)	4.4 – 10.8	4.8 – 11.6

*Normal patients with high TBG levels were **not** excluded except if pregnant.

It is important to keep in mind that establishment of a range of values which can be expected to be found by a given method for a population of "normal"-persons is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons each laboratory should depend upon the range of expected values established by the Manufacturer only until an in-house range can be determined by the analysts using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The within and between assay precisions of the T4 AccuBind™ ELISA test system were determined by analyses on three different levels of pool control sera. The number (N), mean values (X), standard deviation (σ) and coefficient of variation (C.V.) for each of these control sera are presented in Table 2 and Table 3.

TABLE 2

Within Assay Precision (Values in µg/dl)

Sample	N	X	σ	C.V.%
Low	20	6.87	0.16	2.3
Normal	20	9.95	0.16	1.6
High	20	13.13	0.17	1.3

TABLE 3

Between Assay Precision (Values in µg/dl)

Sample	N	X	σ	C.V.%
Low	20	5.76	0.37	6.3
Normal	20	9.41	0.57	6.1
High	20	16.18	1.21	7.5

*As measured in ten experiments in duplicate over a ten day period.

14.2 Sensitivity

The T4 AccuBind™ ELISA test system has a sensitivity of 3.2ng/well. This is equivalent to a sample containing a concentration of 0.128 µg/dl. The sensitivity was ascertained by determining the variability of the 0 µg/dl serum calibrator and using the 2σ (95% certainty) statistic to calculate the minimum dose.

14.3 Accuracy

The tT4 AccuBind™ ELISA method was compared with a coated tube radioimmunoassay method. Biological specimens from hypothyroid, euthyroid and hyperthyroid populations were used (The values ranged from 0.8µg/dl – 25µg/dl). The total number of such specimens was 131. The least square regression equation and the correlation coefficient were computed for the T4 AccuBind™ ELISA method in comparison with the reference method. The data obtained is displayed in Table 4.

TABLE 4

Method	Mean (x)	Least Square Regression Analysis	Correlation Coefficient
This Method	8.07	y = 0.39+0.952(x)	0.934
Reference	8.06		

Only slight amounts of bias between this method and the reference method are indicated by the closeness of the mean values. The least square regression equation and correlation coefficient indicates excellent method agreement.

14.4 Specificity

The cross-reactivity of the thyroxine antibody to selected substances was evaluated by adding the interfering substance to a serum matrix at various concentrations. The cross-reactivity was calculated by deriving a ratio between dose of interfering substance to dose of thyroxine needed to displace the same amount of conjugate.

Substance	Cross Reactivity	Concentration
l–Thyroxine	1.0000	-
d-Thyroxine	0.9800	10µg/dl
d-Triiodothyronine	0.0150	100µg/dl
l–Triiodothyronine	0.0300	100µg/dl
Iodothyrosine	0.0001	100µg/ml
Diiodothyrosine	0.0001	100µg/ml
Diiodothyronine	0.0001	100µg/ml

15.0 REFERENCES

1. Barker S.B., "Determination of Protein Bound Iodine", *Journal Biological Chemistry* **173, 175** (1948).
2. Chopra I.J., Solomon D.H., Ho R.S., "A Radioimmunoassay of Thyroxine", J. Clinical EndocrinoL **33,** 865 (1971).
3. Young D.S., Pestaner L.C., and Gilberman U., "Effects of Drugs on Clinical Laboratory Tests", *Clinical Chemistry* **21**, 3660 (1975).
4. Sterling L., "Diagnosis and Treatment of Thyroid Disease". Cleveland *CRC Press* **19-51** (1975).
5. Rae P, Farrar J, Beckett G, Toft A, "Assessment of thyroid status in elderly people". *British Med. Jour.* **307,**177-180.(1993).
6. Charkes ND, "The many causes of subclinical hyperthyroidism". *Thyroid* **6,** 391-396. (1996)
7. Chou FF, Wang PW, Huang SC, "Results of Subtotal Thyroidectomy for Graves disease". *Thyroid* **9,** 253-256.
8. Muzzaffari EL, Gharib H, "Thyroxine suppressive therapy in patients with nodular thyroid disease". *Ann Intern Med* **128,** 386-394 (1998).
9. Attwood EC, Seddon RM, Probert DE: "The T4/TBG ratio and the investigation of thyroid function". *Clin Biochem*. **11,** 218 (1978).
10. Jain R, Isaac RM, Gottschalk ME et al: "Transient central hypothyroidism as a cause of failure to thrive in newborns and infants". *J. Endocrinology Invest.* **17,** 631-637 (1994).

Revision: 4 **Date: 2022-May-01** **DCO: 1557**

Cat #: *225-300*

Size		96(A)	192(B)	480(D)	960(E)
Reagent (fill)	A)	1ml set	1ml set	2ml set	2ml set x2
	B)	1 (1.5ml)	2 (1.5ml)	1 (8ml)	2 (8ml)
	C)	1 (13ml)	2 (13ml)	1(60ml)	2 (60ml)
	D)	1 plate	2 plates	5 plates	10 plates
	E)	1 (20ml)	1 (20ml)	1 (60ml)	2 (60ml)
	F)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	G)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	H)	1 (8ml)	2 (8ml)	1 (30ml)	2 (30ml)

For Orders and Inquiries, please contact

Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA

Tel: +1 949.951.2665 Email: info@monobind.com
Fax: +1 949.951.3539 Web: www.monobind.com

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NovaTec Immundiagnostica GmbH

NovaLisa®

Taenia solium IgG

ELISA

CE

Only for in-vitro diagnostic use

Product Number: TAEG0420 (96 Determinations)

ENGLISH

1. INTRODUCTION

Taenia solium is a tapeworm of 2-7 m in length which resides in the small intestine of humans but also other animal species (monkeys, hamsters). The tapeworms produce proglottids (less than 1,000, and each with 50,000 eggs) which mature, become gravid, detach from the tapeworm, and migrate to the anus or are passed in the stool. The eggs contained in the gravid proglottids and passed with the faeces can survive for months to years in the environment. After ingestion of a suitable intermediate host (pigs and other animals, including humans) the eggs release the oncosphere, invade the intestinal wall and migrate to the striated muscles, into the brain, liver and other tissues of the host where they develop in cysticerci. In the human intestine, a cysticercus develops over 2 months into an adult tapeworm, which can survive for up to 25 years. The important parasitic infection caused by Taenia solium is cysticercosis which may involve the eye and the central nervous system. The swine tapeworm Taenia solium is worldwide in distribution. Prevalence is higher in poorer communities where humans live in close contact with pigs and eat undercooked pork, and is very rare in Muslim countries. The main symptom of Taeniasis (only mild) is often the passage (passive) of proglottids.

The most important feature of Taeniasis solium is the risk of development of Cysticercosis.

Species	Disease	Symptoms (e.g.)	Transmission route
Taenia solium	Taeniasis	Abdominal pain; Nausea; Weakness and fatigue; Weight loss; Flatulence (gases); Diarrhea or constipation; Appetite changes (too much hunger or loss of appetite)	Ingestion of undercooked pork meat containing cysticerci or ingestion of Taenia solium eggs via fecally contaminated food or water
	Cysticercosis (Neurocysticercosis)	Cysticerci in the brain may cause increased cranial pressure, convulsions and altered mental states	

Infection or presence of pathogen may be identified by:

- Histology
- Microscopy
- PCR
- Serology: e.g. ELISA

2. INTENDED USE

The Taenia solium IgG ELISA is intended for the qualitative determination of IgG class antibodies against Taenia solium in human serum or plasma (citrate, heparin).

3. PRINCIPLE OF THE ASSAY

The qualitative immunoenzymatic determination of specific antibodies is based on the ELISA (Enzyme-linked Immunosorbent Assay) technique.
Microtiterplates are coated with specific antigens to bind corresponding antibodies of the sample. After washing the wells to remove all unbound sample material a horseradish peroxidase (HRP) labelled conjugate is added. This conjugate binds to the captured antibodies. In a second washing step unbound conjugate is removed. The immune complex formed by the bound conjugate is visualized by adding Tetramethylbenzidine (TMB) substrate which gives a blue reaction product.
The intensity of this product is proportional to the amount of specific antibodies in the sample. Sulphuric acid is added to stop the reaction. This produces a yellow endpoint colour. Absorbance at 450/620 nm is read using an ELISA Microtiterplate reader.

4. MATERIALS

4.1. Reagents supplied

- **Microtiterplate:** 12 break-apart 8-well snap-off strips coated with Taenia solium antigens; in resealable aluminium foil.
- **IgG Sample Dilution Buffer:** 1 bottle containing 100 mL of phosphate buffer (10 mM) for sample dilution; pH 7.2 ± 0.2; coloured yellow; ready to use; white cap; ≤ 0.0015% (v/v) CMIT/ MIT (3:1).
- **Stop Solution:** 1 bottle containing 15 mL sulphuric acid, 0.2 mol/L; ready to use; red cap.
- **Washing Buffer (20x conc.):** 1 bottle containing 50 mL of a 20-fold concentrated phosphate buffer (0.2 M), pH 7.2 ± 0.2, for washing the wells; white cap.
- **Conjugate:** 1 bottle containing 20 mL of peroxidased Protein A in phosphate buffer (10 mM); coloured blue; ready to use; black cap.
- **TMB Substrate Solution:** 1 bottle containing 15 mL 3,3',5,5'-tetramethylbenzidine (TMB), < 0.1 %; ready to use; yellow cap.
- **Positive Control:** 1 vial containing 2 mL control; coloured yellow; ready to use; red cap; ≤ 0.02% (v/v) MIT.
- **Cut-off Control:** 1 vial containing 3 mL control; coloured yellow; ready to use; green cap; ≤ 0.02% (v/v) MIT.
- **Negative Control:** 1 vial containing 2 mL control; coloured yellow; ready to use; blue cap; ≤ 0.0015% (v/v) CMIT/ MIT (3:1).

For hazard and precautionary statements see 12.1
For potential hazardous substances please check the safety data sheet.

4.2. Materials supplied

- 1 Cover foil
- 1 Instruction for use (IFU)
- 1 Plate layout

4.3. Materials and Equipment needed

- ELISA Microtiterplate reader, equipped for the measurement of absorbance at 450/620 nm
- Incubator 37 °C
- Manual or automatic equipment for rinsing Microtiterplate
- Pipettes to deliver volumes between 10 and 1000 µL
- Vortex tube mixer
- Distilled water
- Disposable tubes

5. STABILITY AND STORAGE

Store the kit at 2...8 °C. The opened reagents are stable up to the expiry date stated on the label when stored at 2...8 °C.

6. REAGENT PREPARATION

It is very important to bring all reagents and samples to room temperature (20…25 °C) and mix them before starting the test run!

6.1. Microtiterplate

The break-apart snap-off strips are coated with Taenia solium antigens. Immediately after removal of the strips, the remaining strips should be resealed in the aluminium foil along with the desiccant supplied and stored at 2...8 °C.

6.2. Washing Buffer (20x conc.)

Dilute Washing Buffer 1 + 19; e. g. 10 mL Washing Buffer + 190 mL distilled water. The diluted buffer is stable for 5 days at room temperature (20…25 °C). In case crystals appear in the concentrate, warm up the solution to 37°C e.g. in a water bath. Mix well before dilution.

6.3. TMB Substrate Solution

The reagent is ready to use and has to be stored at 2...8 °C, away from the light. The solution should be colourless or could have a slight blue tinge. If the substrate turns into blue, it may have become contaminated and should be thrown away.

7. SAMPLE COLLECTION AND PREPARATION

Use human serum or plasma (citrate, heparin) samples with this assay. If the assay is performed within 5 days after sample collection, the samples should be kept at 2...8 °C; otherwise they should be aliquoted and stored deep-frozen (-70…-20 °C). If samples are stored frozen, mix thawed samples well before testing. Avoid repeated freezing and thawing.
Heat inactivation of samples is not recommended.

7.1. Sample Dilution

Before assaying, all samples should be diluted 1+100 with IgG Sample Dilution Buffer. Dispense 10 µL sample and 1 mL IgG Sample Dilution Buffer into tubes to obtain a 1+100 dilution and thoroughly mix with a Vortex.

8. ASSAY PROCEDURE

Please read the instruction for use carefully **before** performing the assay. Result reliability depends on strict adherence to the instruction for use as described. The following test procedure is only validated for manual procedure. If performing the test on ELISA automatic systems we recommend increasing the washing steps from three up to five and the volume of Washing Buffer from 300 µL to 350 µL to avoid washing effects. Pay attention to chapter 12. Prior to commencing the assay, the distribution and identification plan for all samples and standards/controls (duplicates recommended) should be carefully established on the plate layout supplied in the kit. Select the required number of microtiter strips or wells and insert them into the holder.

Perform all assay steps in the order given and without any delays.

A clean, disposable tip should be used for dispensing each standard/control and sample.

Adjust the incubator to 37 ± 1 °C.

1. Dispense 100 µL standards/controls and diluted samples into their respective wells. Leave well A1 for the Substrate Blank.
2. Cover wells with the foil supplied in the kit.
3. **Incubate for 1 hour ± 5 min at 37 ± 1 °C.**
4. When incubation has been completed, remove the foil, aspirate the content of the wells and wash each well three times with 300 µL of Washing Buffer. Avoid overflows from the reaction wells. The interval between washing and aspiration should be > 5 sec. At the end carefully remove remaining fluid by tapping strips on tissue paper prior to the next step!

   Note: Washing is important! Insufficient washing results in poor precision and false results.
5. Dispense 100 µL Protein A conjugate into all wells except for the Substrate Blank well A1.
6. **Incubate for 30 min at room temperature (20...25 °C).** Do not expose to direct sunlight.
7. Repeat step 4.
8. Dispense 100 µL TMB Substrate Solution into all wells.
9. **Incubate for exactly 15 min at room temperature (20...25 °C) in the dark.** A blue colour occurs due to an enzymatic reaction.
10. Dispense 100 µL Stop Solution into all wells in the same order and at the same rate as for the TMB Substrate Solution, thereby a colour change from blue to yellow occurs.
11. Measure the absorbance at 450/620 nm within 30 min after addition of the Stop Solution.

8.1. Measurement

Adjust the ELISA Microtiterplate reader **to zero** using the **Substrate Blank**.

If - due to technical reasons - the ELISA Microtiterplate reader cannot be adjusted to zero using the Substrate Blank, subtract its absorbance value from all other absorbance values measured in order to obtain reliable results!

Measure the absorbance of all wells at **450 nm** and record the absorbance values for each standard/control and sample in the plate layout.

Bichromatic measurement using a reference wavelength of 620 nm is recommended.

Where applicable calculate the mean absorbance values of all duplicates.

9. RESULTS

9.1. Run Validation Criteria

In order for an assay run to be considered valid, these Instructions for Use have to be strictly followed and the following criteria must be met:

- **Substrate Blank**: Absorbance value **< 0.100**
- **Negative Control**: Absorbance value **< 0.200 and < Cut-off**
- **Cut-off Control**: Absorbance value **0.150 – 1.300**
- **Positive Control**: Absorbance value **> Cut-off**

If these criteria are not met, the test is not valid and must be repeated.

9.2. Calculation of Results

The Cut-off is the mean absorbance value of the Cut-off Control determinations.

Example: Absorbance value Cut-off Control 0.44 + absorbance value Cut-off control 0.42 = 0.86 / 2 = 0.43
Cut-off = 0.43

9.2.1. Results in Units [NTU]

$$\frac{\text{Sample (mean) absorbance value} \times 10}{\text{Cut-off}} = \text{[NovaTec Units = NTU]}$$

Example: $\frac{1.591 \times 10}{0.43} = 37$ NTU

9.3. Interpretation of Results

Cut-off	10 NTU	-
Positive	> 11 NTU	Antibodies against the pathogen are present. There has been a contact with the antigen (pathogen resp. vaccine).
Equivocal	9 – 11 NTU	Antibodies against the pathogen could not be detected clearly. It is recommended to repeat the test with a fresh sample in 2 to 4 weeks. If the result is equivocal again the sample is judged as **negative**.
Negative	< 9 NTU	The sample contains no antibodies against the pathogen. A previous contact with the antigen (pathogen resp. vaccine) is unlikely.
Diagnosis of an infectious disease should not be established on the basis of a single test result. A precise diagnosis should take into consideration clinical history, symptomatology as well as serological data. In immunocompromised patients and newborns serological data only have restricted value.		

10. SPECIFIC PERFORMANCE CHARACTERISTICS

The results refer to the groups of samples investigated; these are not guaranteed specifications.

For further information about the specific performance characteristics please contact NovaTec Immundiagnostica GmbH.

10.1. Precision

Intraassay	n	Mean (E)	CV (%)
#1	24	0.460	4.89
#2	24	0.782	6.40
#3	24	0.790	8.29

Interassay	n	Mean (NTU)	CV (%)
#1	12	17.20	5.23
#2	12	20.32	7.84
#3	12	3.70	13.87

10.2. Diagnostic Specificity

The diagnostic specificity is defined as the probability of the assay of scoring negative in the absence of the specific analyte.
It is 100% (95% confidence interval: 96.67% - 100%).

10.3. Diagnostic Sensitivity

The diagnostic sensitivity is defined as the probability of the assay of scoring positive in the presence of the specific analyte.
It is 100% (95% confidence interval: 78.2% - 100%).

10.4. Interferences

Interferences with hemolytic, lipemic or icteric samples are not observed up to a concentration of 10 mg/mL hemoglobin, 5 mg/mL triglycerides and 0.5 mg/mL bilirubin.

10.5. Cross Reactivity

Cross reaction of the antigens with antibodies against Echinococcus and Entamoeba is possible.

11. LIMITATIONS OF THE PROCEDURE

Bacterial contamination or repeated freeze-thaw cycles of the sample may affect the absorbance values.

12. PRECAUTIONS AND WARNINGS

- The test procedure, the information, the precautions and warnings in the instructions for use have to be strictly followed. The use of the testkits with analyzers and similar equipment has to be validated. Any change in design, composition and test procedure as well as for any use in combination with other products not approved by the manufacturer is not authorized; the user himself is responsible for such changes. The manufacturer is not liable for false results and incidents for these reasons. The manufacturer is not liable for any results by visual analysis of the patient samples.
- Only for in-vitro diagnostic use.
- All materials of human or animal origin should be regarded and handled as potentially infectious.
- All components of human origin used for the production of these reagents have been tested for anti-HIV antibodies, anti-HCV antibodies and HBsAg and have been found to be non-reactive.
- Do not interchange reagents or Microtiterplates of different production lots.
- No reagents of other manufacturers should be used along with reagents of this test kit.
- Do not use reagents after expiry date stated on the label.
- Use only clean pipette tips, dispensers, and lab ware.
- Do not interchange screw caps of reagent vials to avoid cross-contamination.
- Close reagent vials tightly immediately after use to avoid evaporation and microbial contamination.
- After first opening and subsequent storage check conjugate and standard/control vials for microbial contamination prior to further use.
- To avoid cross-contamination and falsely elevated results pipette patient samples and dispense reagents without splashing accurately into the wells.
- The ELISA is only designed for qualified personnel following the standards of good laboratory practice (GLP).
- For further internal quality control each laboratory should additionally use known samples.

12.1. Safety note for reagents containing hazardous substances

Reagents may contain CMIT/MIT (3:1) or MIT (refer to 4.1)
Therefore, the following hazard and precautionary statements apply.

Warning

H317	May cause an allergic skin reaction.
P261	Avoid breathing spray.
P280	Wear protective gloves/ protective clothing.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P333+P313	If skin irritation or rash occurs: Get medical advice/ attention.
P362+P364	Take off contaminated and Wash it before reuse.

Further information can be found in the safety data sheet.

12.2. Disposal Considerations

Residues of chemicals and preparations are generally considered as hazardous waste. The disposal of this kind of waste is regulated through national and regional laws and regulations. Contact your local authorities or waste management companies which will give advice on how to dispose hazardous waste.

13. ORDERING INFORMATION

Prod. No.: TAEG0420 Taenia solium IgG ELISA (96 Determinations)

DEUTSCH

1. EINLEITUNG

Taenia solium (Schweinebandwurm) ist ein weltweit verbreiteter Bandwurm (Cestode) von etwa 2-7m Länge. Er lebt im Dünndarm des Menschen und verschiedener Tiere (Affe, Hamster). Der Bandwurm produziert Proglottiden (< 1.000, jede Proglottide enthält 50.000 Eier), die reifen, sich vom Bandwurm abschnüren, zum Anus wandern oder mit dem Stuhl transportiert werden. Die in den Proglottiden enthaltenen Eier sind in der Umwelt Monate bis Jahre überlebensfähig. Nach der Aufnahem der Eier durch einen geeigneten Zwischenwirt (Schweine und andere Tiere inkl. Mensch) reifen die Larven schnell heran und werden freigesetzt. Sie durchdringen in die Darmwand und wandern in die Muskulatur, das Gehirn, Leber und andere Wirtsgewebe, wo sich die Zystizerken entwickeln. Im menschlichen Darm entwickelt sich ein Zystikerkus innerhalb von 2 Monaten zu einem adulten Bandwurm. Dieser kann bis zu 25 Jahre überleben. Das Hauptsymptom einer milden Taeniasis ist die passive Passage von Proglottiden. Das wichtigste Risiko einer durch T. solium ausgelöste Erkrankung ist die Zystizerkose, die sich im Auge oder ZNS entwickeln kann. Die Prävalenz für eine Infektion ist in armen Gemeinschaften, wo Mensch und Schwein in engem Kontakt zueinander leben und ungares Schweinefleisch gegessen wird, größer. In islamischen Ländern ist die Erkrankung sehr selten.

Spezies	**Erkrankung**	**Symptome (z.B.)**	**Infektionsweg**
Taenia solium	Taeniasis	Bauchschmerzen; Übelkeit; Schwäche und Müdigkeit; Gewichtsverlust; Flatulenz (Gas); Durchfall oder Verstopfung; Änderungen von Appetit (Hunger oder Appetitlosigkeit)	Aufnahme von Bandwurmeiern über Unzureichend gekochter Schweinefleisch oder durch Fäkalien kontaminierte Nahrung oder Wasser
	Zystizerkose (Neurocysticercose)	Cysticerci im Gehirn kann erhöhten Schädeldruck, Krämpfe und veränderte geistige Zustände verursachen	

Nachweis des Erregers bzw. der Infektion durch:

- Histologie
- Mikroskopie
- PCR
- Serologie: z.B. ELISA

2. VERWENDUNGSZWECK

Der Taenia solium IgG ELISA ist für den qualitativen Nachweis spezifischer IgG-Antikörper gegen Taenia solium in humanem Serum oder Plasma (Citrat, Heparin) bestimmt.

3. TESTPRINZIP

Die qualitative immunenzymatische Bestimmung von spezifischen Antikörpern beruht auf der ELISA (Enzyme-linked Immunosorbent Assay) Technik.
Die Mikrotiterplatten sind mit spezifischen Antigenen beschichtet, an welche die korrespondierenden Antikörper aus der Probe binden. Ungebundenes Probenmaterial wird durch Waschen entfernt. Anschließend erfolgt die Zugabe eines Meerettich-Peroxidase (HRP) Konjugates. Dieses Konjugat bindet an die an der Mikrotiterplatte gebundenen spezifischen Antikörper. In einem zweiten Waschschritt wird ungebundenes Konjugat entfernt. Die Immunkomplexe, die durch die Bindung des Konjugates entstanden sind, werden durch die Zugabe von Tetramethylbenzidin (TMB)-Substratlösung und eine resultierende Blaufärbung nachgewiesen.
Die Intensität des Reaktionsproduktes ist proportional zur Menge der spezifischen Antikörper in der Probe. Die Reaktion wird mit Schwefelsäure gestoppt, wodurch ein Farbumschlag von blau nach gelb erfolgt. Die Absorption wird bei 450/620 nm mit einem Mikrotiterplatten-Photometer gemessen.

4. MATERIALIEN

4.1. Mitgelieferte Reagenzien

- **Mikrotiterplatte:** 12 teilbare 8er-Streifen, beschichtet mit Taenia solium Antigenen; in wieder verschließbarem Aluminiumbeutel.
- **IgG-Probenverdünnungspuffer:** 1 Flasche mit 100 mL Phosphatpuffer (10 mM) zur Probenverdünnung; pH 7,2 ± 0,2; gelb gefärbt; gebrauchsfertig; weiße Verschlusskappe; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Stopplösung:** 1 Flasche mit 15 mL Schwefelsäure, 0,2 mol/L; gebrauchsfertig; rote Verschlusskappe.
- **Waschpuffer (20x konz.):** 1 Flasche mit 50 mL eines 20-fach konzentrierten Phosphatpuffers (0,2 M), zum Waschen der Kavitäten; pH 7,2 ± 0,2; weiße Verschlusskappe.
- **Konjugat:** 1 Flasche mit 20 mL Peroxidase-konjugiertem Protein A in Phosphatpuffer (10 mM); blau gefärbt; gebrauchsfertig; schwarze Verschlusskappe.
- **TMB-Substratlösung:** 1 Flasche mit 15 mL 3,3`,5,5`-Tetramethylbenzidin (TMB), < 0,1 %; gebrauchsfertig; gelbe Verschlusskappe.
- **Positivkontrolle:** 1 Fläschchen mit 2 mL Kontrolle; gelb gefärbt; rote Verschlusskappe; gebrauchsfertig; ≤ 0,02% (v/v) MIT.
- **Cut-off Kontrolle:** 1 Fläschchen mit 3 mL Kontrolle; gelb gefärbt; grüne Verschlusskappe; gebrauchsfertig; ≤ 0,02% (v/v) MIT.
- **Negativkontrolle:** 1 Fläschchen mit 2 mL Kontrolle; gelb gefärbt; blaue Verschlusskappe; gebrauchsfertig; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Für Gefahren- und Sicherheitshinweise siehe 12.1.
Für potenzielle Gefahrstoffe überprüfen Sie bitte das Sicherheitsdatenblatt.

4.2. Mitgeliefertes Zubehör

- 1 selbstklebende Abdeckfolie
- 1 Arbeitsanleitung
- 1 Plattenlayout

4.3. Erforderliche Materialien und Geräte

- Mikrotiterplatten-Photometer mit Filtern 450/620 nm
- Inkubator 37 °C
- Manuelle oder automatische Waschvorrichtung für Mikrotiterplatten
- Mikropipetten (10 - 1000 µL)
- Vortex-Mischer
- Destilliertes Wasser
- Plastikröhrchen für den einmaligen Gebrauch

5. STABILITÄT UND LAGERUNG

Testkit bei 2...8 °C lagern. Die geöffneten Reagenzien sind bis zu den auf den Etiketten angegebenen Verfallsdaten verwendbar, wenn sie bei 2...8 °C gelagert werden.

6. VORBEREITUNG DER REAGENZIEN

Es ist sehr wichtig, alle Reagenzien und Proben vor ihrer Verwendung auf Raumtemperatur (20...25 °C) zu bringen und zu mischen!

6.1. Mikrotiterplatte

Die abbrechbaren Streifen sind mit Taenia solium Antigenen beschichtet. Nicht verbrauchte Vertiefungen im Aluminiumbeutel zusammen mit dem Trockenmittel sofort wieder verschließen und bei 2...8 °C lagern.

6.2. Waschpuffer (20x konz.)

Der Waschpuffer ist im Verhältnis 1 + 19 zu verdünnen; z.B. 10 mL Waschpuffer + 190 mL destilliertes Wasser.
Der verdünnte Puffer ist bei Raumtemperatur (20…25 °C) 5 Tage haltbar. Sollten Kristalle im Konzentrat auftreten, die Lösung z.B. in einem Wasserbad auf 37 °C erwärmen und vor dem Verdünnen gut mischen.

6.3. TMB-Substratlösung

Die gebrauchsfertige Lösung ist bei 2...8 °C vor Licht geschützt aufzubewahren. Die Lösung ist farblos, kann aber auch leicht hellblau sein. Sollte die TMB-Substratlösung blau sein, ist sie kontaminiert und kann nicht im Test verwendet werden.

7. ENTNAHME UND VORBEREITUNG DER PROBEN

Es sollten humane Serum- oder Plasmaproben (Citrat, Heparin) verwendet werden. Werden die Bestimmungen innerhalb von 5 Tagen nach Blutentnahme durchgeführt, können die Proben bei 2...8 °C aufbewahrt werden, sonst aliquotieren und tiefgefrieren (-70…-20 °C). Wieder aufgetaute Proben vor dem Verdünnen gut schütteln. Wiederholtes Tiefgefrieren und Auftauen vermeiden!
Hitzeinaktivierung der Proben wird nicht empfohlen.

7.1. Probenverdünnung

Proben vor Testbeginn im Verhältnis 1 + 100 mit IgG-Probenverdünnungspuffer verdünnen, z. B. 10 µL Probe und 1 mL IgG-Probenverdünnungspuffer in die entsprechenden Röhrchen pipettieren, um eine Verdünnung von 1 + 100 zu erhalten; gut mischen (Vortex).

8. TESTDURCHFÜHRUNG

Arbeitsanleitung **vor** Durchführung des Tests sorgfältig lesen. Für die Zuverlässigkeit der Ergebnisse ist es notwendig, die Arbeitsanleitung genau zu befolgen. Die folgende Testdurchführung ist für die manuelle Methode validiert. Beim Arbeiten mit ELISA Automaten empfehlen wir, um Wascheffekte auszuschließen, die Zahl der Waschschritte von drei auf bis zu fünf und das Volumen des Waschpuffers von 300 µL auf 350 µL zu erhöhen. Kapitel 12 beachten. Vor Testbeginn auf dem mitgelieferten Plattenlayout die Verteilung bzw. Position der Proben und der Standards/Kontrollen (Doppelbestimmung empfohlen) genau festlegen. Die benötigte Anzahl von Mikrotiterstreifen (Kavitäten) in den Streifenhalter einsetzen.

Den Test in der angegebenen Reihenfolge und ohne Verzögerung durchführen.

Für jeden Pipettierschritt der Standards/Kontrollen und Proben saubere Einmalspitzen verwenden.

Den Inkubator auf 37 ± 1 °C einstellen.

1. Je 100 µL Standards/Kontrollen und vorverdünnte Proben in die entsprechenden Vertiefungen pipettieren. Vertiefung A1 ist für den Substratleerwert vorgesehen.
2. Die Streifen mit der mitgelieferten Abdeckfolie bedecken.
3. **1 h ± 5 min bei 37 ± 1 °C inkubieren.**
4. Am Ende der Inkubationszeit Abdeckfolie entfernen und die Inkubationsflüssigkeit aus den Teststreifen absaugen. Anschließend dreimal mit 300 µL Waschpuffer waschen. Überfließen von Flüssigkeit aus den Vertiefungen vermeiden. Das Intervall zwischen Waschen und Absaugen sollte > 5 sec betragen. Nach dem Waschen die Teststreifen auf Fließpapier ausklopfen, um die restliche Flüssigkeit zu entfernen.

   Beachte: Der Waschvorgang ist wichtig, da unzureichendes Waschen zu schlechter Präzision und falschen Messergebnissen führt!
5. 100 µL Konjugat in alle Vertiefungen, mit Ausnahme der für die Berechnung des Leerwertes A1 vorgesehenen, pipettieren. Mit Folie abdecken.
6. **30 min bei Raumtemperatur (20...25 °C) inkubieren.** Nicht dem direkten Sonnenlicht aussetzen.
7. Waschvorgang gemäß Punkt 4 wiederholen.
8. 100 µL TMB-Substratlösung in alle Vertiefungen pipettieren.
9. **Genau 15 min im Dunkeln bei Raumtemperatur (20...25 °C) inkubieren.** Bei enzymatischer Reaktion findet eine Blaufärbung statt.
10. In alle Vertiefungen 100 µL Stopplösung in der gleichen Reihenfolge und mit den gleichen Zeitintervallen wie bei Zugabe der TMB-Substratlösung pipettieren, dadurch erfolgt ein Farbwechsel von blau nach gelb.
11. Die Extinktion der Lösung in jeder Vertiefung bei 450/620 nm innerhalb von 30 min nach Zugabe der Stopplösung messen.

8.1. Messung

Mit Hilfe des Substratleerwertes den **Nullabgleich** des Mikrotiterplatten-Photometers vornehmen.

Falls diese Eichung aus technischen Gründen nicht möglich ist, muss nach der Messung der Extinktionswert des Substratleerwertes von allen anderen Extinktionswerten subtrahiert werden, um einwandfreie Ergebnisse zu erzielen!

Extinktion aller Kavitäten bei **450 nm** messen und die Messwerte der Standards/Kontrollen und Proben in das Plattenlayout eintragen.

Eine **bichromatische** Messung mit der Referenzwellenlänge 620 nm wird empfohlen.

Falls Doppel- oder Mehrfachbestimmungen durchgeführt wurden, den **Mittelwert der Extinktionswerte** berechnen.

9. BERECHNUNG DER ERGEBNISSE

9.1. Testgültigkeitskriterien

Damit ein Testlauf als valide betrachtet werden kann, muss diese Gebrauchsanweisung strikt befolgt werden, und die folgenden Kriterien müssen erfüllt sein:

- **Substrat-Leerwert**: Extinktionswert **< 0,100**
- **Negativkontrolle**: Extinktionswert **< 0,200 und < Cut-off**
- **Cut-off Kontrolle**: Extinktionswert **0,150 – 1,300**
- **Positivkontrolle**: Extinktionswert **> Cut-off**

Sind diese Kriterien nicht erfüllt, ist der Testlauf ungültig und muss wiederholt werden.

9.2. Messwertberechnung

Der Cut-off ergibt sich aus dem Mittelwert der gemessenen Extinktionen der Cut-off Kontrolle.

Beispiel: 0,44 OD Cut-off Kontrolle + 0,42 OD Cut-off Kontrolle = 0,86: 2 = 0,43
Cut-off = 0,43

9.2.1. Ergebnisse in Einheiten [NTU]

$$\frac{\text{Mittlere Extinktion der Probe} \times 10}{\text{Cut-off}} = \text{[NovaTec Einheiten = NTU]}$$

Beispiel: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretation der Ergebnisse

Cut-off	10 NTU	-
Positiv	> 11 NTU	Es liegen Antikörper gegen den Erreger vor. Ein Kontakt mit dem Antigen (Erreger bzw. Impfstoff) hat stattgefunden.
Grenzwertig	9 – 11 NTU	Antikörper gegen den Erreger können nicht eindeutig nachgewiesen werden. Es wird empfohlen den Test nach 2 bis 4 Wochen mit einer frischen Patientenprobe zu wiederholen. Finden sich die Ergebnisse erneut im grenzwertigen Bereich, gilt die Probe als **negativ**.
Negativ	< 9 NTU	Es liegen keine Antikörper gegen den Erreger vor. Ein vorausgegangener Kontakt mit dem Antigen (Erreger bzw. Impfstoff) ist unwahrscheinlich.
Die Diagnose einer Infektionskrankheit darf nicht allein auf der Basis des Ergebnisses einer Bestimmung gestellt werden. Die anamnestischen Daten sowie die Symptomatologie des Patienten müssen zusätzlich zu den serologischen Ergebnissen in Betracht gezogen werden. Bei Immunsupprimierten und Neugeborenen besitzen die Ergebnisse serologischer Tests nur einen begrenzten Wert.		

10. TESTMERKMALE

Die Ergebnisse beziehen sich auf die untersuchten Probenkollektive; es handelt sich nicht um garantierte Spezifikationen.

Für weitere Informationen zu den Testmerkmalen kontaktieren Sie bitte NovaTec Immundiagnostica GmbH.

10.1. Präzision

Intraassay	**n**	**Mittelwert (E)**	**Vk (%)**
#1	24	0,460	4,89
#2	24	0,782	6,40
#3	24	0,790	8,29
Interassay	**n**	**Mittelwert (NTU)**	**Vk (%)**
#1	12	17,20	5,23
#2	12	20,32	7,84
#3	12	3,70	13,87

10.2. Diagnostische Spezifität

Die diagnostische Spezifität ist definiert als die Wahrscheinlichkeit des Tests, ein negatives Ergebnis bei Fehlen des spezifischen Analyten zu liefern. Sie beträgt 100% (95% Konfidenzintervall: 96,67% - 100%).

10.3. Diagnostische Sensitivität

Die diagnostische Sensitivität ist definiert als die Wahrscheinlichkeit des Tests, ein positives Ergebnis bei Vorhandensein des spezifischen Analyten zu liefern. Sie ist 100% (95% Konfidenzintervall: 78,2% - 100%).

10.4. Interferenzen

Hämolytische, lipämische und ikterische Proben ergaben bis zu einer Konzentration von 10 mg/mL Hämoglobin, 5 mg/mL Triglyceride und 0,5 mg/mL Bilirubin keine Interferenzen im vorliegenden ELISA.

10.5. Kreuzreaktivität

Eine Kreuzreaktion mit Echinococcus und Entamoeba ist möglich.

11. GRENZEN DES VERFAHRENS

Kontamination der Proben durch Bakterien oder wiederholtes Einfrieren und Auftauen können zu einer Veränderung der Messwerte führen.

12. SICHERHEITSMASSNAHMEN UND WARNHINWEISE

- Die Testdurchführung, die Information, die Sicherheitsmaßnahmen und Warnhinweise in der Arbeitsanleitung sind strikt zu befolgen. Bei Anwendung des Testkits auf Diagnostika-Geräten ist die Testmethode zu validieren. Jede Änderung am Aussehen, der Zusammensetzung und der Testdurchführung sowie jede Verwendung in Kombination mit anderen Produkten, die der Hersteller nicht autorisiert hat, ist nicht zulässig; der Anwender ist für solche Änderungen selbst verantwortlich. Der Hersteller haftet für falsche Ergebnisse und Vorkommnisse aus solchen Gründen nicht. Auch für falsche Ergebnisse aufgrund von visueller Auswertung wird keine Haftung übernommen.
- Nur für in-vitro-Diagnostik.
- Alle Materialien menschlichen oder tierischen Ursprungs sind als potentiell infektiös anzusehen und entsprechend zu behandeln.
- Alle verwendeten Bestandteile menschlichen Ursprungs sind auf Anti-HIV-AK, Anti-HCV-AK und HBsAg nicht-reaktiv getestet.
- Reagenzien und Mikrotiterplatten unterschiedlicher Chargen nicht untereinander austauschen.
- Keine Reagenzien anderer Hersteller zusammen mit den Reagenzien dieses Testkits verwenden.
- Nicht nach Ablauf des Verfallsdatums verwenden.
- Nur saubere Pipettenspitzen, Dispenser und Labormaterialien verwenden.
- Verschlusskappen der einzelnen Reagenzien nicht untereinander vertauschen, um Kreuzkontaminationen zu vermeiden.
- Flaschen sofort nach Gebrauch fest verschließen, um Verdunstung und mikrobielle Kontamination zu vermeiden.
- Nach dem ersten Öffnen Konjugat und Standards/Kontrollen vor weiterem Gebrauch auf mikrobielle Kontamination prüfen.
- Zur Vermeidung von Kreuzkontamination und falsch erhöhten Resultaten, Reagenzien sorgfältig in die Kavitäten pipettieren.
- Der ELISA ist nur für qualifiziertes Personal bestimmt, das den Standards der Guten Laborpraxis (GLP) folgt.
- Zur weiteren internen Qualitätskontrolle sollte jedes Labor zusätzlich bekannte Proben verwenden.

12.1. Sicherheitshinweis für Reagenzien, die Gefahrstoffe enthalten

Die Reagenzien können CMIT/MIT (3:1) oder MIT enthalten (siehe 4.1)
Daher gelten die folgenden Gefahren- und Sicherheitshinweise.

Achtung

H317	Kann allergische Hautreaktionen verursachen.
P261	Einatmen von Aerosol vermeiden.
P280	Schutzhandschuhe/ Schutzkleidung tragen
P302+P352	BEI BERÜHRUNG MIT DER HAUT: Mit viel Seife und Wasser waschen.
P333+P313	Bei Hautreizung oder -ausschlag: Ärztlichen Rat einholen/ ärztliche Hilfe hinzuziehen.
P362+P364	Kontaminierte Kleidung ausziehen und vor erneutem Tragen waschen

Weitere Informationen können dem Sicherheitsdatenblatt entnommen werden.

12.2. Entsorgungshinweise

Chemikalien und Zubereitungen sind in der Regel Sonderabfälle. Deren Beseitigung unterliegt den nationalen abfallrechtlichen Gesetzen und Verordnungen. Die zuständige Behörde informiert über die Entsorgung von Sonderabfällen.

13. BESTELLINFORMATIONEN

Produktnummer: TAEG0420 Taenia solium IgG ELISA (96 Bestimmungen)

FRANÇAIS

1. INTRODUCTION

Taenia solium est un ténia de 2-7 m de longueur qui réside dans l'intestin grêle des humains mais également de toute autre espèce animale (singes, hamsters). Les ténias produisent des proglottis (moins de 1.000, et chacun avec 50.000 œufs) qui mûrissent, deviennent gravides, se détachent du ténia, et migrent à l'anus ou sont excrétés par les selles. Les œufs contenus dans les proglottis gravides et excrétés par les selles peuvent survivre pendant des mois ou même des années. Après l'ingestion par un hôte intermédiaire (des porcs et d'autres animaux, y compris des humains) convenable, l'œuf éclore dans l'intestin grêle et libère l'oncosphère qui pénètre le mur intestinal et migre dans les muscles striés, dans le cerveau, le foie et d'autres tissus du hôte où elle se développe en cysticercus. Dans l'intestin humain, un cysticercus se développe pendant 2 mois en ténia adulte, qui peut survivre pendant jusqu'à 25 ans. L'infection parasitaire provoquée par Taenia solium est un cysticerque qui peut atteindre l'œil et le système nerveux central. Le Taenia solium de porc est distribué dans le monde entier. L'infection se produit plus fréquemment dans des communautés pauvres où les humains vivent en contact étroit avec des porcs et mangent du porc pas assez cuit. L'infection est donc très rare dans les pays musulmans. Le passage (passif) des proglottis est souvent le symptôme principal de Taeniasis (doux). Le Taeniasis pose le risque du développement de cysticerque.

Espèce	La maladie	Symptômes (p.ex.)	Modes de transmission
Taenia solium	Tæniasis	Douleur abdominale; La nausée; Faiblesse et fatigue; Perte de poids; Flatulence (gaz); Diarrhée ou constipation; Changements d'appétit (trop de faim ou perte d'appétit)	Ingestion de la viande de porc pas assez cuite contenant de cysticercus ou ingestion des œufs de Taenia solium par de la nourriture ou d'eau souillées de selles
	Cysticerque (neurocysticercose)	Cysticercus dans le cerveau peuvent causer de la pression intracrânienne élevée, et des dérangements mentaux	

L'infection ou la présence d'un agent pathogène peut être identifiée par:

- Histologie
- Microscopie
- PCR
- Sérologie: p. ex. ELISA

2. INDICATION D'UTILISATION

La trousse Taenia solium IgG ELISA est prévue pour la détection qualitative des anticorps IgG anti-Taenia solium dans le sérum humain ou plasma (citrate, héparine).

3. PRINCIPE DU TEST

La détermination immunoenzymatique qualitative des anticorps spécifiques est basée sur le la technique ELISA (du anglais, Enzyme-Linked Immunosorbent Assay).
Plaques de Microtitrage sont recouvertes d'antigènes spécifiques pour lier les anticorps correspondants de l'échantillon. Après le lavage des puits pour éliminer l'échantillon détaché, le conjugué peroxydase de raifort (HRP) est ajouté. Ce conjugué se lie aux anticorps capturés. Dans une deuxième étape de lavage, le conjugué non lié est éliminé. Le complexe immun formé par le conjugué lié est visualisé par l'addition tétraméthylbenzidine (TMB) qui donne un produit de réaction bleu.
L'intensité de ce produit est proportionnelle à la quantité d'anticorps spécifiques dans l'échantillon. L'acide sulfurique est ajouté pour arrêter la réaction. Cela produit un changement du bleu au jaune. L'absorbance à 450/620 nm est lue en utilisant un photomètre de Plaque de Microtitrage ELISA.

4. MATERIEL

4.1. Réactifs fournis

- **Plaque de Microtitrage :** 12 barrettes de 8 puits sécables revêtus d'antigène d'Taenia solium; en sachets d'aluminium refermables.
- **Tampon de Dilution d'Échantillon IgG:** 1 flacon contenant 100 mL de tampon phosphaté (10 mM) pour la dilution de l'échantillon; pH 7,2 ± 0,2; prêt à l'emploi; couleur jaune; bouchon blanc; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Solution d'arrêt:** 1 flacon contenant 15 mL d'acide sulfurique, 0,2 mol/L; prêt à l'emploi; bouchon rouge.
- **Tampon de Lavage (concentré x 20):** 1 flacon contenant 50 mL d'un tampon phosphaté (0,2 M) concentré 20 fois (pH 7,2 ± 0,2) pour laver les puits; bouchon blanc.
- **Conjugué:** 1 flacon contenant 20 mL de Protéine A conjuguées à de la peroxydase du raifort dans le tampon phosphaté (10 mM); prêt à l'emploi; couleur bleue, bouchon noir.
- **Solution de Substrat TMB:** 1 flacon contenant 15 mL de 3,3',5,5'-tétraméthylbenzidine (TMB) ; < 0,1 %; prêt à l'emploi; bouchon jaune.
- **Contrôle Positif:** 1 flacon contenant 2 mL contrôle; prêt à l'emploi; couleur jaune; bouchon rouge; ≤ 0,02% (v/v) MIT.
- **Contrôle Cut-off:** 1 flacon contenant 3 mL contrôle; prêt à l'emploi; couleur jaune; bouchon vert; ≤ 0,02% (v/v) MIT.
- **Contrôle Négatif:** 1 flacon contenant 2 mL contrôle; prêt à l'emploi; couleur jaune; bouchon bleu; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Pour les mentions de danger et les conseils de prudence voir chapitre 12.1.
Pour les substances potentiellement dangereuses s'il vous plaît vérifiez la fiche de données de sécurité.

4.2. Matériel fourni

- 1 couvercle autocollante
- 1 instructions d'utilisation
- 1 présentation de la plaque

4.3. Matériel et équipement requis

- Photomètre de Plaque de Microtitrage ELISA, pour mesurer l'absorbance à 450/620 nm
- Incubateur 37 °C
- Laveur manuel ou automatique pour le lavage des Plaque de Microtitrage
- Pipettes pour utilisation entre 10 et 1000 µL
- Mélangeur Vortex
- Eau distillée
- Tubes jetables

5. STABILITE ET CONSERVATION

Conserver le kit à 2...8 °C. Les réactifs ouverts sont stables jusqu'à la date de péremption indiquée sur l'étiquette lorsqu'il est conservé à 2...8°C.

6. PREPARATION DES REACTIFS

Il est très important porter tous les réactifs et échantillons à température ambiante (20 ... 25 °C) et les mélanger avant de commencer le test!

6.1. Plaque de Microtitrages

Les barrettes sécables sont revêtues d'antigène d'Taenia solium. Immédiatement après avoir prélevé les barrettes nécessaires, les barrette restantes doivent être scellés le vide dans de feuille d'aluminium avec le sac de silicium (le déshydratant) fourni et emmagasiner à 2...8 °C.

6.2. Tampon de Lavage (conc. x 20)

Diluer le Tampon de Lavage 1+19; par exemple 10 mL du Tampon de Lavage + 190 mL d'eau distillée. Le Tampon de Lavage diluée est stable pendant 5 jours à la température ambiante (20...25 °C). Cas apparaissent des cristaux dans le concentré, chauffer la solution à 37 °C par exemple dans un bain-marie mélangez bien avant dilution.

6.3. Solution de Substrat TMB

La solution est prête à utiliser et doit être emmagasiné à 2...8 °C, à l'abri de la lumière. La solution doit être incolore ou pourrait avoir une légère couleur bleu clair. Si le substrat devient bleu, il peut avoir été contaminé et ne peut pas être utilisé dans le test.

7. PRELEVEMENT ET PREPARATION DES ECHANTILLONS

Utiliser des échantillons humains de sérum ou plasma (citrate, héparine) pour ce test. Si le test est réalisé dans les 5 jours après le prélèvement, les échantillons doivent être conservés à 2...8 °C; autrement ils doivent être aliquotés et conservés surgelés (-70…-20 °C). Si les échantillons sont conservés congelés, bien mélanger les échantillons décongelés avant le test. Éviter les cycles répétés de congélation et décongélation.
L'inactivation par la chaleur des échantillons n'est pas recommandée.

7.1. Dilution de l'échantillon

Avant du test, tous les échantillons doivent être dilués 1 + 100 avec diluant de l'échantillon IgG. Diluer 10 µL d'échantillon avec 1 mL I diluant de l'échantillon IgG dans des tubes pour obtenir une dilution 1 + 100 et mélanger soigneusement sur un Vortex.

8. PROCEDE DE TEST

Lire attentivement les instructions d'utilisation **avant de** réaliser le test. La fiabilité des résultats dépend du suivi strict d'utilisation comme décrit. La technique de test suivante a été validée uniquement pour une procédure manuelle. Si le test doit être effectué sur un systèmes automatiques pour ELISA, nous conseillons d'augmenter le nombre d'étapes de lavage de trois à cinq et le volume du Tampon de Lavage de 300 à 350 µL. Faites attention au chapitre 12. Avant de commencer le test, le plan de distribution et d'identification de tous les échantillons et les étalons/contrôles (il est recommandé déterminer en double) doivent être soigneusement établi sur la feuille présentation de la plaque prévue dans le conseil de kit. Sélectionner le nombre de barrettes ou de puits nécessaires et les placer sur le support.

Réaliser toutes les étapes du test dans l'ordre donné et sans délai.

Un embout de pipette propre et jetable doit être utilisé pour distribuer chaque étalon/contrôle et échantillon.

Régler l'incubateur à 37 ± 1 °C.

1. Pipeter 100 µL de étalons/contrôles et d'échantillons dilués dans leurs puits respectifs. Garder le puits A1 pour le blanc substrat.
2. Couvrir les puits avec le couvercle, fourni dans le kit.
3. **Incuber pendant 1 heure ± 5 minutes à 37 ± 1 °C.**
4. A la fin de l'incubation, enlever le couvercle, aspirer le contenu des puits et laver chaque puits trois fois avec 300 µL de Tampon du lavage. Éviter les débordements des puits de réaction. L'intervalle entre le cycle de lavage et l'aspiration doit être > 5 sec. À la fin, enlever soigneusement le liquide restant en tapotant les barrettes sur du papier absorbant avant la prochaine étape.

   Note: L'étape de lavage est très importante! Un lavage insuffisant peut conduire à une précision faible et de faux résultats !
5. Pipeter 100 µL du conjugué dans tous les puits sauf le puits Blanc A1.
6. **Incuber pendant 30 minutes à température ambiante (20…25°C).** N'exposer pas à la lumière directe du soleil.
7. Répéter l'étape numéro 4.
8. Pipeter 100 µL de la Solution de Substrat TMB dans tous les puits.
9. **Incuber pendant exactement 15 minutes à température ambiante (20…25°C) dans l'obscurité.** Une couleur bleue se produit en raison d'une réaction enzymatique.
10. Pipeter 100 µL de la solution d'arrêt dans tous les puits dans le même ordre et à la même vitesse que pour la Solution de Substrat TMB, ainsi, il y a un changement du bleu au jaune.
11. Mesurer l'absorbance à 450/620 nm dans les 30 minutes après l'addition de la solution d'arrêt.

8.1. Mesure

Réglez le Photomètre de Plaque de Microtitrages ELISA **à zéro** en utilisant **le Blanc substrat.**
Si - pour des raisons techniques - le Photomètre de Plaque de Microtitrages ELISA ne peut pas être ajusté à zéro en utilisant le Blanc substrat, la valeur d'absorbance de cette doit être soustraire la valeur d'absorbance de toutes les autres valeurs d'absorbance mesurées afin d'obtenir des résultats fiables!

Mesurer l'absorbance de tous les puits **à 450 nm** et enregistrer les valeurs d'absorbance pour chaque étalon/contrôle et échantillon dans la présentation de la plaque.

Il est recommandé d'effectuer la mesure **dichromatique** utilisant 620 nm comme longueur d'onde de référence.
Si doubles déterminations ont été effectuées, calculer **les valeurs moyennes d'absorbance.**

9. RESULTATS

9.1. Critères de validation

Pour qu'une série d'analyses soit considérée comme valide, ces instructions d'utilisation doivent être strictement suivies, et les critères suivants doivent être respectés:

- **Blanc Substrat**: Valeur d'absorbance **< 0,100**
- **Contrôle négatif**: Valeur d'absorbance **< 0,200 et < Cut-off**
- **Contrôle Cut-off**: Valeur d'absorbance **0,150 – 1,300**
- **Contrôle positif**: Valeur d'absorbance **> Contrôle Cut-off**

Lorsque ces critères ne sont pas remplis, le test n'est pas valide et doit être recommencé.

9.2. Calcul des résultats

La valeur seuil correspond à la moyenne des valeurs d'absorbance du Contrôle Cut-off.

Exemple: 0,44 DO Contrôle Cut-off + 0,42 DO Contrôle Cut-off = 0,86: 2 = 0,43

Cut-off = 0,43

9.2.1. Résultats en unités [NTU]

$$\frac{\text{Valeur (moyenne) d'absorbance de l' échantillon} \times 10}{\text{Cut-off}} = \text{[unités NovaTec = NTU]}$$

Exemple: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interprétation des résultats

Cut-off	10 NTU	-
Positif	> 11 NTU	Les anticorps dirigés contre l'agent pathogène sont présents. Il ya eu un contact avec l'antigène (pathogène resp. vaccin).
Zone grise	9 – 11 NTU	Les anticorps dirigés contre l'agent pathogène ne pouvaient pas être détectés clairement. Il est recommandé de répéter le test avec un échantillon frais dans 2 à 4 semaines. Si le résultat est encore dans la zone grise l'échantillon est jugé **négatif**.
Negatif	< 9 NTU	L'échantillon ne contient pas d'anticorps contre l'agent pathogène. Un contact préalable avec l'antigène (pathogène resp. vaccin) est peu probable.
Le diagnostic d'une maladie infectieuse ne devrait pas être établi sur la base du résultat d'une seule analyse. Un diagnostic précis devrait prendre en considération l'histoire clinique, la symptomatologie ainsi que les données sérologiques. Les données sérologiques sont de valeur limité dans le cas des patients immunodéprimés et des nouveaux-nés.		

10. PERFORMANCES DU TEST

Ces résultats s'appuient sur les groupes d'échantillons étudiés; il n'agit pas de caractéristiques techniques garanties.

Pour plus d'informations sur les performances du test s'il vous plaît contactez NovaTec Immundiagnostica GmbH.

10.1. Précision

Intra-essai	**n**	**moyenne (E)**	**CV (%)**
#1	24	0,460	4,89
#2	24	0,782	6,40
#3	24	0,790	8,29
Inter-essai	**n**	**moyenne (NTU)**	**CV (%)**
#1	12	17,20	5,23
#2	12	20,32	7,84
#3	12	3,70	13,87

10.2. Spécificité diagnostique

La spécificité diagnostique est définie comme la probabilité d'obtenir un résultat négatif en l'absence d'un analyte spécifique. Elle est 100% (95% Intervalle de confiance: 96,67% - 100%).

10.3. Sensibilité diagnostique

La sensibilité diagnostique est définie comme la probabilité d'obtenir un résultat positif en présence d'un analyte spécifique. Elle est 100% (95% Intervalle de confiance: 78,2% - 100%).

10.4. Interférences

Des échantillons hémolytiques ou lipémiques ou ictériques n'ont pas montré d'interférences, avec des concentrations jusqu'à 10 mg/mL de hémoglobine, 5 mg/mL de triglycérides et 0,5 mg/mL de bilirubine.

10.5. Réaction croisée

Réactions croisées des antigènes avec des anticorps contre Echinococcus et Entamoeba est possible.

11. LIMITES DE LA TECHNIQUE

Une contamination bactérienne ou des cycles de congélation/décongélation répétés de léchantillon peuvent affecter les valeurs d'absorption.

12. PRECAUTIONS ET AVERTISSEMENTS

- La procédure de test, l'information, les précautions et mises en garde de la notice d'emploi, doivent être suivies de façon stricte. L'utilisation de ces trousses avec des automates ou dispositifs similaires doit être validée. Aucun changement de la conception, composition et procédure de test, ainsi que l'utilisation avec d'autres produits non approuvés par le fabricant, ne sont pas autorisés; seul l'utilisateur est responsable de tels changements. Le fabricant n'est pas responsable des faux résultats et des incidents dus à ces motifs. Le fabricant n'est pas responsable des résultats fournis par analyse visuelle des échantillons des patients.
- Uniquement pour diagnostic in vitro.
- Tous les matériaux d'origine humaine ou animale doivent être considérés et traités comme étant potentiellement infectieux.
- Tous les composants d'origine humaine utilisés pour la fabrication de ces réactifs ont été analysés et ont été trouvés non réactifs en Ag HBs, en anticorps anti-VHI 1 et 2 et en anticorps anti-VHC.
- Ne pas échanger les réactifs ou les Plaque de Microtitrage provenant de différents lots de production.
- Ne pas utiliser de réactifs provenant d'autres fabricants avec les réactifs de cette trousse.
- Ne pas utiliser les réactifs après la date de péremption indiquée sur l'étiquette.
- Utiliser seulement des embouts de pipette, des distributeurs et du matériel de laboratoire propres.
- Ne pas échanger les bouchons des flacons, pour éviter la contamination croisée.
- Fermer soigneusement les flacons après utilisation pour éviter l'évaporation et la contamination microbienne.
- Avant une nouvelle utilisation, vérifier les flacons de conjugué et de étalon/contrôle, déjà utilisés, pour exclure une contamination microbienne.
- Pour éviter la contamination croisée et des résultats faussement élevés, introduire les échantillons de patients et les réactifs exactement au fond des puits sans éclabousser.
- L'ELISA est uniquement conçu pour le personnel qualifié suivant les normes de bonnes pratiques de laboratoire (Good Laboratory Practice, GLP).
- Pour un contrôle de qualité interne plus poussé, chaque laboratoire doit en outre utiliser des échantillons connus.

12.1. Note de sécurité pour les réactifs contenant des substances dangereuses

Les réactifs peuvent contenir du CMIT/MIT ou du MIT (voir chapitre 4.1)
Par conséquent, les mentions de danger et les conseils de prudence suivants s'appliquent.

Attenttion	H317	Peut provoquer une allergie cutanée.
	P261	Éviter de respirer les aérosols.
	P280	Porter des gants de protection/ des vêtements de protection.
	P302+P352	EN CAS DE CONTACT AVEC LA PEAU: Laver abondamment savon à l'eau.
	P333+P313	En cas d'irritation ou d'éruption cutanée: consulter un médecin.
	P362+P364	Enlever les vêtements contaminés et les laver avant réutilisation.

De plus amples informations peuvent être trouvées dans la fiche de données de sécurité.

12.2. Elimination des déchets

Les résidus des produits chimiques et des préparations sont considérés en général comme des déchets dangereux. L'élimination de ce type de déchet est réglementée par des lois et réglementations nationales et régionales. Contacter les autorités compétentes ou les sociétés de gestion des déchets pour obtenir des renseignements sur l'élimination des déchets dangereux.

13. INFORMATION POUR LES COMMANDES

Référence: TAEG0420 Taenia solium IgG ELISA (96 déterminations)

ITALIANO

1. INTRODUZIONE

La Taenia solium è un verme platelminta di 2-7 m di lunghezza che vive nell'intestino tenue degli uomini e di altre specie animali (scimmie, criceti). La tenia produce proglottidi (fino a 1.000 e ciascuno con 50.000 uova) che una volta mature, producono uova, si staccano dalla tenia e migrano verso l'ano o vengono espulsi con le feci. Le uova contenute nelle proglottidi e espluse con le feci possono sopravvivere nell'ambiente da mesi fino ad anni. Dopo l'ingestione in un ospite intermedio (maiali e altri animali, compreso l'uomo) le uova rilasciano le oncosfere, che invadono la parete intestinale e migrano nella muscolatura striata, nel cervello, nel fegato, e negli altri tessuti dell'ospite, dove si sviluppano in cisticerchi.

Nell'intestino umano un cisticerco diventa, in circa 2 mesi una tenia adulta, che può sopravvivere fino a 25 anni. L'infezione parassitaria causata da Taenia solium è la cisticercosi che può interessare gli occhi e il sistema nervoso centrale. L'infezione da Taenia solium è diffusa in tutto il mondo. La prevalenza è più alta nelle comunità povere dove gli uomini vivono a stretto contatto con suini e mangiamo carne di maiale poco cotta ed è molto rara nei paesi Mussulmani. Il principale sintomo della teniasi (nella forma lieve) è l'espulsione (passiva) dei proglottidi.

La caratteristica più importante della teniasi causata dalla Taenia solium è il rischio di sviluppare la cisticercosi.

▪ Specie	Malattia	Sintomi (p.es.)	Via di trasmissione
Taenia solium	Teniasi	Dolore addominale; Nausea; Debolezza e affaticamento; Perdita di peso; Flatulenza (gas); Diarrea o costipazione; alterazioni dell'appetito (troppa fame o perdita di appetito).	Ingestione di carne di maiale poco cotta contenente cisticerchi o ingestione di uova di Taenia solium attraverso acqua e cibo contaminati.
	Cisticercosi (Neuro-cisticercosi)	I cisticerchi localizzati nel cervello causano un aumento della pressione intracranica, convulsioni e stato mentale alterato.	

L'infezione o la presenza di un agente patogeno può essere identificata da:
- Istologia
- Microscopia
- PCR
- Sierologia p.es. ELISA

2. USO PREVISTO

Il Taenia solium IgG ELISA è un kit per la determinazione qualitativa degli anticorpi specifici della classe IgG per Taenia solium nel siero o plasma (citrato, eparina) umano.

3. PRINCIPIO DEL TEST

La determinazione immunoenzimatico qualitativa degli anticorpi specifici si basa sulla tecnica ELISA (d'inglese Enzyme-linked immunosorbent assay).
Piastre di Microtitolazione sono rivestiti con antigeni specifici che si legano agli anticorpi presenti nel campione. Dopo aver lavato i pozzetti per rimuovere tutto il materiale campione non legato, il coniugato di perossidasi di rafano (HRP) è aggiunto. Questo coniugato si lega agli anticorpi catturati. In una seconda fase di lavaggio coniugato, non legato è rimosso. Il complesso immunitario formato dal coniugato legato sarà evidenziato aggiungendo tetrametilbenzidina (TMB) substrato che dà una colorazione blu.
L'intensità di questa colorazione è direttamente proporzionale alla quantità di anticorpi specifici presenti nel campione. Acido solforico è aggiunto per bloccare la reazione. Questo produce un cambiamento di colore dal blu al giallo. Assorbanza a 450/620 nm viene letto utilizzando un fotometro di Piastre di Microtitolazione ELISA.

4. MATERIALI

4.1. Reagenti forniti

- **Piastre di Microtitolazione:** 12 strisce divisibili in 8 pozzetti, con adesi antigeni della Taenia solium; dentro una busta d'alluminio richiudibile.
- **Tampone di Diluizione del Campione IgG:** 1 flacone contenente 100 mL di tampone fosfato (10 mM) per diluire i campioni; pH 7,2 ± 0,2; colore giallo; pronto all'uso; tappo bianco; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Soluzione Bloccante:** 1 flacone contenente 15 mL di acido solforico, 0,2 mol/L, pronto all'uso; tappo rosso.
- **Tampone di Lavaggio (20x conc.):** 1 flacone contenente 50 mL di un tampone fosfato concentrato 20 volte (0,2 M) per il lavaggio dei pozzetti; pH 7,2 ± 0,2; tappo bianco.
- **Coniugato:** 1 flacone contenente 20 mL della Proteina A con perossidasi in tampone fosfato (10 mM); colore azzurro; pronto all'uso; tappo nero.
- **Soluzione Substrato TMB:** 1 flacone contenente 15 mL di 3,3`,5,5`-Tetrametilbenzidina (TMB), < 0,1 %; pronto all'uso; tappo giallo.
- **Controllo Positivo:** 1 flacone da 2 mL controllo; colore giallo; tappo rosso; pronto all'uso; ≤ 0,02% (v/v) MIT.
- **Controllo Cut-off:** 1 flacone da 3 mL controllo; colore giallo; tappo verde; pronto all'uso; ≤ 0,02% (v/v) MIT.
- **Controllo Negativo:** 1 flacone da 2 mL controllo; colore giallo; tappo blu; pronto all'uso; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Le indicazioni di pericolo e consigli di prudenza vedi capitolo 12.1.

Per le sostanze potenziali pericolose si prega di leggere la scheda di dati di sicurezza.

4.2. Accessori forniti

- 1 pellicola adesiva
- 1 istruzione per l'uso
- 1 schema della piastra

4.3. Materiali e attrezzature necessari

- Fotometro per Piastre di Microtitolazione con filtri da 450/620 nm
- Incubatrice 37 °C
- Lavatore, manuale o automatico, di Piastre di Microtitolazione
- Micropipette per l'uso tra 10-1000 µL
- Vortex-Mixer
- Acqua distillata
- Provette monouso

5. MODALITÀ DI CONSERVAZIONE

Conservare il kit a 2...8 °C. I reagenti aperti sono stabili fino alla data di scadenza indicata sull'etichetta quando sono conservati a 2...8 °C.

6. PREPARAZIONE DEI REAGENTI

È molto importante, portare tutti i reagenti e campioni a temperatura ambiente (20…25 °C) e mescolare prima di iniziare il test.

6.1. Piastre di Microtitolazione

Le strisce divisibili sono rivestite con gli antigeni della Taenia solium. Immediatamente dopo la rimozione degli strisce necessari, le strisce rimanenti devono essere sigillare nuovamente in un foglio di alluminio insieme con il sacchetto di gel di silice conservati a 2...8 °C.

6.2. Tampone di Lavaggio (20x conc.)

Diluire il Tampone di Lavaggio 1+19; per esempio: 10 mL del Tampone di Lavaggio + 190 mL di acqua distillata. Il Tampone di Lavaggio diluito è stabile per 5 giorni a temperatura ambiente (20...25 °C). Se cristalli appaiono nel concentrato, riscaldare la soluzione a 37 °C per esempio in un bagnomaria. Mescolare bene prima della diluizione.

6.3. Soluzione Substrato TMB

La soluzione sta pronta all'uso e deve essere conservata a 2...8 °C, al riparo dalla luce. La soluzione deve essere incolore o potrebbe avere un leggero colore blu chiaro. Se il substrato diventa blu, potrebbe essere stato contaminato e non può essere utilizzato nel test.

7. PRELIEVO E PREPARAZIONE DEI CAMPIONI

Per questo test si prega di usare campioni di siero o plasma (citrato, eparina) umano. Se il test è fatto entro 5 giorni dal prelievo i campioni possono essere conservati tra 2...8 °C. Altrimenti devono essere aliquotati e congelati tra (-70…-20 °C). Se i campioni sono conservati congelati, mescolare bene i campioni scongelati prima del test. Evitare cicli ripetuti di congelamento/scongelamento.
L'inattivazione dei campioni per mezzo del calore non è raccomandata.

7.1. Diluizione dei campioni

Prima del test, diluire i campioni 1+100 con Tampone di Diluizione del Campione IgG. Per esempio, pipettare nelle provette 10 µL di campione + 1 mL di Tampone di Diluizione del Campione IgG e mescolare bene (Vortex).

8. PROCEDIMENTO

Leggere bene le istruzioni per l'uso **prima** di iniziare il teste. L'affidabilità dei risultati dipende dalla stretta aderenza le istruzioni per l'uso di prova come descritto. La seguente procedura è stata validata per l'esecuzione manuale. Per un'esecuzione su strumentazione automatica si consiglia di incrementare il numero di lavaggi de 3 a 5 volte e il volume della Tampone di Lavaggio da 300 a 350 µL per evitare effetti di lavaggio. Prestare attenzione al capitolo 12. Stabilire innanzitutto il piano di distribuzione e identificazione dei campioni e standards/controlli (è raccomandato determinare in duplicato) sullo schema della piastra fornito con il kit. Inserire i pozzetti necessari nel supporto.

Eseguire il test nell'ordine stabilito dalle istruzioni, senza ritardi.

Sul pipettaggio utilizzare puntali nuovi e puliti per ogni campione e standard/controllo.

Regolare l'incubatore a 37 ± 1 °C.

1. Pipettare 100 µL di standard/controllo e di campione diluito nei relativi pozzetti. Usare il pozzetto A1 per il Bianco-substrato.
2. Coprire i pozzetti con la pellicola adesiva, fornita nel kit.
3. **Incubare 1 ora ± 5 min a 37 ± 1°C.**
4. Al termine dell'incubazione, togliere la pellicola e aspirare il liquido dai pozzetti. Successivamente lavare i pozzetti tre volte con 300 µL di Tampone di Lavaggio. Evitare che la soluzione trabocchi dai pozzetti. L'intervallo tra il lavaggio e l'aspirazione deve essere > 5 sec. Dopo il lavaggio picchiettare delicatamente i pozzetti su una carta assorbente per togliere completamente il liquido, prima del passo successivo.

   Attenzione: Il lavaggio è una fase molto importante. Da lavaggio insufficiente risulta una bassa precisione e risultati falsi!
5. Pipettare 100 µL di Coniugato in tutti i pozzetti, escludendo quello con il Bianco-substrato (Blank) A1.
6. **Incubare per 30 min a temperatura ambiente (20...25 °C).** Non esporre a fonti di luce diretta.
7. Ripetere il lavaggio secondo punto 4.
8. Pipettare 100 µL di Soluzione Substrato TMB in tutti i pozzetti.
9. **Incubare precisamente per 15 min a temperatura ambiente (20...25 °C) al buio.** Un colore blu verifica a causa della reazione enzimatica.
10. Pipettare 100 µL di Soluzione Bloccante in tutti i pozzetti, nello stesso ordine della Soluzione Substrato TMB, in tal modo un cambiamento di colore dal blu al giallo avviene.
11. Misurare l'assorbanza a 450/620 nm entro 30 min dopo l'aggiunta della Soluzione Bloccante.

8.1. Misurazione

Regolare il fotometro per le Piastre di Microtitolazione ELISA **a zero** usando il substrato-Bianco (Blank).

Se, per motivi tecnici, non è possibile regolare il fotometro per le Piastre di Microtitolazione a zero usando il Bianco-substrato, il valore de assorbanza de questo deve essere sottratto dai valori dell'assorbanza da tutti i valori delle altre assorbanze per ottenere risultati affidabili!

Misurare l'assorbanza di tutti i pozzetti a **450 nm** e inserire tutti i valori misurati nello schema della piastra.

È raccomandato fare le misurazioni delle onde **bichrome** (due colori). Utilizzando la lunghezza d'onda de 620 nm come misura di riferimento.

Dove sono state misurate in doppio, calcolare **la media delle assorbanze**.

9. RISULTATI

9.1. Validazione del test

Affinché un test possa essere considerato valido, le presenti Istruzioni per l'uso devono essere rigorosamente seguite e devono essere soddisfatti i seguenti criteri:

- **Substrato Bianco (Blank)**: Valore di assorbanza **< 0,100**
- **Controllo Negativo**: Valore di assorbanza **< 0,200 e < Cut-off**
- **Controllo Cut-off**: Valore di assorbanza **0,150 – 1,300**
- **Controllo Positivo**: Valore di assorbanza **> Cut-off**

Se non sono soddisfatti questi criteri, il test non è valido e deve essere ripetuto.

9.2. Calcolo dei risultati

Il Cut-off è la media dei valori di assorbanza dei Controlli Cut-off.

Esempio: Valore di assorbanza del Controllo Cut-off 0,44 + valore di assorbanza del Controllo Cut-off 0,42 = 0,86/2 = 0,43
Cut-off = 0,43

9.2.1. Risultati in unità [NTU]

$$\frac{\text{Assorbanza media del campione} \times 10}{\text{Cut-off}} = \text{[unità NovaTec = NTU]}$$

Esempio: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretazione dei risultati

Cut-off	10 NTU	-
Positivo	> 11 NTU	Anticorpi contro il patogeno sono presenti. C'è stato un contatto con l'antigene (patogeno resp. vaccino).
Zona grigia	9 – 11 NTU	Anticorpi contro il patogeno non è stato possibile rilevare chiaramente. Si consiglia di ripetere il test con un nuovo campione in 2-4 settimane. Se il risultato è nuovamente nella zona grigia, il campione viene giudicato come **negativo**.
Negativo	< 9 NTU	Il campione non contiene anticorpi contro il patogeno. Un precedente contatto con l'antigene (patogeno resp. vaccino) è improbabile.
La diagnosi di una malattia infettiva non deve essere fatta soltanto sulla risultanza di un unico test. È importante considerare anche l'anamnesi ed i sintomi del paziente. I risultati del test da pazienti immunosoppressi e neonati hanno un valore limitato.		

10. CARATTERISTICHE DEL TEST

I risultati si riferiscono al gruppo di campioni investigato; questi non sono specifiche garantite.

Per ulteriori informazioni su caratteristiche del test, si prega, di contattare NovaTec Immundiagnostica GmbH.

10.1. Precisione

Intradosaggio	**n**	**Media (E)**	**CV (%)**
#1	24	0,460	4,89
#2	24	0,782	6,40
#3	24	0,790	8,29
Interdosaggio	**n**	**Media (NTU)**	**CV (%)**
#1	12	17,20	5,23
#2	12	20,32	7,84
#3	12	3,70	13,87

10.2. Specificità diagnostica

La specificità diagnostica è la probabilità del test di fornire un risultato negativo in assenza di analitai specifici.
La specificità diagnostica è 100% (95% intervallo di confidenza: 96,67% - 100%).

10.3. Sensibilità diagnostica

La sensibilità diagnostica è la probabilità del test di fornire un risultato positivo alla presenza di analita specifici.
La sensibilità diagnostica è 100% (95% intervallo di confidenza: 78,2% - 100%).

10.4. Possibili interferenze

Campioni emolitici, lipidici et itterici contenenti fino a 10 mg/mL di emoglobina, 5 mg/mL di trigliceridi e 0,5 mg/mL di bilirubina non hanno presentato fenomeni di interferenza nel presente test.

10.5. Reattività crociata

Reazioni crociata degli antigeni con anticorpi contro Echinococcus e Entamoeba è possibile.

11. LIMITAZIONI

Una contaminazione da microorganismi o ripetuti cicli di congelamento-scongelamento possono alterare i valori delle assorbanze.

12. PRECAUZIONI E AVVERTENZE

- La procedura analitica, le informazioni, le precauzioni e le avvertenze contenute nelle istruzioni per l'uso devono essere seguite scrupolosamente. L'uso dei kit con analizzatori e attrezzature similari deve essere previamente convalidato. Qualunque cambiamento nello scopo, nel progetto, nella composizione o struttura e nella procedura analitica, così come qualunque uso dei kit in associazione ad altri prodotti non approvati dal produttore non è autorizzato; l'utilizzatore stesso è responsabile di questi eventuali cambiamenti. Il produttore non è responsabile per falsi risultati e incidenti che possano essere causati da queste ragioni. Il produttore non è responsabile per qualunque risultato ottenuto attraverso esame visivo dei campioni dei pazienti.
- Solo per uso diagnostico in-vitro.
- Tutti i materiali di origine umana o animale devono essere considerati potenzialmente contagiosi e infettivi.
- Tutti gli elementi di origine umana sono stati trovati non reattivi con Anti-HIV-Ab, Anti-HCV-Ab e HBsAg.
- Non scambiare reagenti e Piastre di Microtitolazione di lotti diversi.
- Non utilizzare reagenti d'altri produttori insieme con i reagenti di questo kit.
- Non usare dopo la data di scadenza.
- Utilizzare soltanto punte per pipette, distributori, e articoli da laboratorio puliti.
- Non scambiare i tappi dei flaconi, per evitare contaminazione crociata.
- Richiudere i flaconi immediatamente dopo l'uso per evitare la vaporizzazione e contaminazione.
- Una volta aperti e dopo relativo stoccaggio verificare i reagenti per una loro eventuale contaminazione prima dell'uso.
- Per evitare contaminazioni crociate e risultati erroneamente alti pipettare i campioni e reagenti con molta precisione nei pozzetti senza spruzzi.
- L'ELISA è progettato solo per il personale qualificato che segue le norme di buona pratica di laboratorio (Good Laboratory Practice, GLP).
- Per un ulteriore controllo di qualità interno ogni laboratorio dovrebbe inoltre utilizzare campioni noti.

12.1. Nota di sicurezza per i reagenti contenenti sostanze pericolose

I reagenti possono contenere CMIT/MIT (3:1) o MIT (vedi capitolo 4.1)
Pertanto, si applicano le seguenti indicazioni di pericolo e le consigli di prudenza.

Attenzione

H317	Può provocare una reazione allergica cutanea.
P261	Evitare di respirare gli aerosol.
P280	Indossare guanti/ indumenti protettivi.
P302+P352	IN CASO DI CONTATTO CON LA PELLE: lavare abbondantemente con sapone acqua.
P333+P313	In caso di irritazione o eruzione della pelle: consultare un medico.
P362+P364	Togliere tutti gli indumenti contaminati e lavarli prima di indossarli nuovamente.

Ulteriori informazioni sono disponibili nella scheda di dati di sicurezza.

12.2. Smaltimento

In genere tutte le sostanze chimiche sono considerati rifiuti pericolosi. Lo smaltimento è regolato da leggi nazionali. Per ulteriori informazioni contattare l'autorità locale.

13. INFORMAZIONI PER GLI ORDINI

Numero del prodotto: TAEG0420 Taenia solium IgG ELISA (96 determinazioni)

ESPAÑOL

1. INTRODUCCIÓN

Delgado del hombre así como en otras especies animales (monos, hamsters). Las proglótides de los platelmintos (menos de 1.000 y de 50.000 huevos cada una) se desprenden del mismo al madurar y migran hacia el ano o pasan a las heces.

Los huevos de las proglótides contenidas en las heces pueden sobrevivir en el ambiente en un período que oscila de meses a años.

Después de la ingestión de un huésped intermediario adecuado (cerdo u otros animales) los huevos liberan la oncosfera, invaden la pared intestinal y migran hacia los músculos estriados, al cerebro, hígado y otros tejidos del huésped donde desarrollan el cisticerco.

Después de dos meses en el intestino humano el cisticerco se transforma en un adulto que puede sobrevivir durante 25 años.

La infección parasitaria más importante causada por la Taenia solium es la cisticercosis que puede afectar a los ojos y al sistema nervioso central.

La Taenia solium del cerdo está mundialmente distribuida. Su prevalencia es mayor en comunidades con bajos recursos donde la gente vive en contacto directo con los cerdos e ingieren este animal poco cocido y es muy poco frecuente en paises musulmanes.

El principal síntoma de la Teniasis (enfermedad suave) es la transferencia pasiva de proglotides.

El riesgo más importante que conlleva la infección por Taenia solium es la posibilidad de desarrollar la cisticercosis..

Especies	Enfermedad	Síntomas (p.ej.)	Vía de transmisión
Taenia solium	Taeniasis	Dolor abdominal; Náusea; Debilidad y fatiga; Pérdida de peso; Flatulencia (gases); Diarrea o estreñimiento; Cambios en el apetito (demasiada hambre o pérdida de apetito)	Ingestión de cerdo poco cocido que contenga cisticercos o la ingestión de huevos de Taenia solium a través de agua o comida contaminada por heces
	Cysticercosis (Neurocisticercosis)	La cisticercosis en el cerebro puede causar aumento de la presión craneal, convulsiones y confusión mental	

La infección o la presencia de un patógeno puede identificarse mediante:

- Histología
- Microscopia
- PCR
- Serología: p. ej. ELISA

2. USO PREVISTO

El enzimoinmunoensayo Taenia solium IgG ELISA se utiliza para la determinación cualitativa de anticuerpos IgG específicos contra Taenia solium en suero o plasma (citrato, heparina) humano.

3. PRINCIPIO DEL ENSAYO

La determinación inmunoenzimática cualitativa de anticuerpos específicos se basa en la técnica ELISA (Enzyme-linked Immunosorbent Assay).
Las Placas de Microtitulación están recubiertas con antígenos específicos unen a los anticuerpos de la muestra. Después de lavar los pocillos para eliminar todo el material de muestra no unida, el conjugado de peroxidasa de rábano (HRP) se añade. Este conjugado se une a los anticuerpos capturados. En una segunda etapa de lavado se retira el conjugado no unido. El complejo inmune formado por el conjugado unido se visualiza añadiendo substrato tetrametilbencidina (TMB), que da un producto de reacción azul.
La intensidad de este producto es proporcional a la cantidad de anticuerpos específicos en la muestra. se añade ácido sulfúrico para detener la reacción. Esto produce un cambio de color de azul a amarillo. La extinción a 450/620 nm se mide con un fotómetro de Placa de Microtitulación ELISA.

4. MATERIALES

4.1. Reactivos suministrados

- **Placa de Microtitulación:** 12 tiras de 8 pocillos rompibles, recubiertos con antígenos de Taenia solium, en bolsa de aluminio.
- **Tampón de dilución de Muestras IgG:** 1 botella de 100 mL de solución de tampón de fosfato (10 mM) para diluir la muestra; pH 7,2 ± 0,2; color amarillo; listo para ser utilizado; tapa blanca; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Solución de Parada:** 1 botella de 15 mL de ácido sulfúrico, 0,2 mol/L, listo para ser utilizado; tapa roja.
- **Tampón de Lavado (20x conc.):** 1 botella de 50 mL de una solución de tampón de fosfato 20x concentrado (0,2 M) para lavar los pocillos; pH 7,2 ± 0,2; tapa blanca.
- **Conjugado:** 1 botella de 20 mL Proteina A con peroxidasa en tampón de fosfato (10 mM); color azul; tapa negra; listo para ser utilizado.
- **Solución de Sustrato de TMB:** 1 botella de 15 mL 3,3',5,5'-tetrametilbenzindina (TMB), < 0,1 %; listo para ser utilizado; tapa amarilla.
- **Control Positivo:** 1 botella de 2 mL control; color amarillo; tapa roja; listo para ser utilizado; ≤ 0,02% (v/v) MIT.
- **Control Cut-off:** 1 botella de 3 mL control; color amarillo; tapa verde; listo para ser utilizado; ≤ 0,02% (v/v) MIT.
- **Control Negativo:** 1 botella de 2 mL control; color amarillo; tapa azul; listo para ser utilizado; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Para indicaciones de peligro y consejos de prudencia consulte el cap. 12.1.
Para sustancias potencialmente peligrosas por favor revise la ficha de datos de seguridad.

4.2. Accesorios suministrados

- 1 lámina autoadhesiva
- 1 instrucciones de uso
- 1 esquema de la placa

4.3. Materiales e instrumentos necesarios

- Fotómetro de Placa de Microtitulación con filtros de 450/620 nm
- Incubadora 37 °C
- Dispositivo de lavado manual o automático de Placa de Microtitulación
- Micropipetas para uso de (10-1000 µL)
- Mezcladora Vortex
- Agua destilada
- Tubos de plástico desechables

5. ESTABILIDAD Y ALMACENAJE

Almacene el kit a 2...8 °C. Los reactivos abiertos son estables hasta la fecha de caducidad indicada en la etiqueta cuando se almacena a 2...8 °C.

6. PREPARACIÓN DE LOS REACTIVOS

Es muy importante llevar todos los reactivos y las muestras a temperatura ambiente (20...25 °C) y mezclarlos antes de ser utilizados!

6.1. Placa de Microtitulación

Las tiras rompibles están recubiertas con antígeno de Taenia solium. Inmediatamente después de la eliminación de las tiras, las tiras restantes deben sellarse de nuevo en el papel de aluminio junto con la bolsita di dióxio de silicio y almacenar a 2...8 °C.

6.2. Tampón de Lavado (20x conc.)

Diluir el Tampón de Lavado 1+19; por ejemplo 10 mL del Tampón de Lavado + 190 mL de agua destilada. El Tampón de Lavado diluido es estable durante 5 días a temperatura ambiente (20…25 °C). En caso de aparecer cristales en el concentrado, calentar la solución a 37 °C, por ejemplo, en un baño María. Mezclar bien antes de la dilución.

6.3. Solución de Sustrato de TMB

La solución está lista para su uso y debe almacenarse a 2...8 °C, protegida de la luz. La solución debe ser incolora o podría tener un color ligeramente azul claro. Si el sustrato se convierte en azul, es posible que haya sido contaminado y no puede ser utilizado en el ensayo.

7. TOMA Y PREPARACIÓN DE LAS MUESTRAS

Usar muestras de suero o plasma (citrato, heparina) humano. Si el ensayo se realiza dentro de 5 días después de la toma de sangre, las muestras pueden ser almacenadas a 2...8 °C, en caso contrario deben ser alicuotadas y almacenadas congeladas (-70...-20 °C). Agitar bien las muestras descongeladas antes de diluirlas. Evitar congelaciones y descongelaciones repetidas.
No se recomienda la inactivación por calor de las muestras.

7.1. Dilución de las muestras

Antes del ensayo, las muestras tienen que estar diluidas en relación 1 + 100 con el Tampón de dilución de Muestras IgG, p. e. 10 µL de la muestra con 1 mL de Tampón de dilución de Muestras IgG, mezclar bien con la mezcladora Vortex.

8. PROCEDIMIENTO

Por favor, leer cuidadosamente las instrucciones de uso del ensayo **antes** de realizarlo. Para el buen funcionamiento de la técnica es necesario seguir las instrucciones. El siguiente procedimiento es válido solamente para el método manual. Si se realiza el ensayo en los sistemas automáticos de ELISA es aconsejable elevar el número de lavados de tres hasta cinco veces y el volumen de Tampón de Lavado de 300 µL a 350 µL para excluir efectos de lavado. Preste atención al capítulo 12. Antes de comenzar, especificar exactamente la repartición y posición de las muestras y de los estándares/controles (se recomienda determinar en duplicado) en el esquema de la placa suministrada. Usar la cantidad necesaria de tiras o pocillos e insertarlos en el soporte.

Realizar el ensayo en el orden indicado y sin retraso.

Para cada paso de pipeteado en los estándares/controles y en las muestras, usar siempre puntas de pipeta de un solo uso.

Graduar la incubadora a 37 ± 1°C.

1. Pipetear 100 µL de estándares/controles y muestras en los pocillos respectivos. Dejar el pocillo A1 para el blanco.
2. Recubrir las tiras con los autoadhesivos suministrados.
3. **Incubar 1 h ± 5 min a 37 ± 1°C.**
4. Después de la incubación, retirar el autoadhesivo, aspirar el líquido de la tira y lavarla tres veces con 300 µL del Tampón de Lavado. Evitar el rebosamiento de los pocillos. El intervalo entre lavado y aspiración debe ser > 5 segundos. Para sacar el líquido restante de las tiras, es conveniente sacudirlas sobre papel absorbente.

   Nota: El lavado es muy importante! Un mal lavado insuficiente provoca una baja precisión y resultados falsamente elevados!
5. Pipetear 100 µL de conjugado en cada pocillo con excepción del blanco substrato A1.
6. **Incubar 30 min a la temperatura ambiente (20…25 °C).** Evitar la luz solar directa.
7. Repetir el lavado como en el paso numero 4.
8. Pipetear 100 µL de la Solución de Sustrato de TMB en todos los pocillos.
9. **Incubar exactamente 15 min en oscuridad a temperatura ambiente (20...25 °C).** Un color azul se produce en las muestras positivas debido a la reacción enzimática.
10. Pipetear en todos los pocillos 100 µL de la Solución de Parada en el mismo orden y mismo intervalo de tiempo como con el Solución de Sustrato de TMB, por lo tanto un cambio de color de azul a amarillo se produce.
11. Medir la extinción con 450/620 nm en un periodo de 30 min después de añadir la solución de Parada.

8.1. Medición

Ajustar el fotómetro de Placa de Microtitulación ELISA al cero utilizando el Blanco.

Si por razones técnicas el fotómetro de Placa de Microtitulación de ELISA no se puede ajustar a cero utilizando el Blanco, el valor de la absorbancia de este debe ser sustraído de los demás valores de absorbancia medidos con el fin de obtener resultados fiables!

Medir la **extinción** de todos los pocillos con **450 nm** y anotar los resultados de los estándares/controles y de las muestras en el esquema de la placa.

Es aconsejable realizar la medición **bicromática** a una longitud de onda de referencia de 620 nm.

Si se efectuaron análisis en duplicado o múltiples, hay que calcular **el promedio de los valores de extinción** de los pocillos correspondientes.

9. CÁLCULO DE LOS RESULTADOS

9.1. Criterios de validez del ensayo

Para que un ensayo se considere válido, deben seguirse estrictamente las presentes instrucciones de uso y deben cumplirse los siguientes criterios:

- **Blanco:** valor de la extinción **< 0,100**
- **Control Negativo:** valor de la extinción **< 0,200 y < Cut-off**
- **Control Cut-off:** valor de la extinción **0,150 – 1,300**
- **Control Positivo:** valor de la extinción **> Cut-off**

Si estos criterios no se cumplen, la prueba no es váida y deberá repetirse.

9.2. Cálculo del valor de la medición

El Cut-off se obtiene de los valores de la extinción de lo Control Cut-off.

Ejemplo: 0,42 OD Control Cut-off + 0,44 OD Control Cut-off = 0,86: 2 = 0,43

Cut-off = 0,43

9.2.1. Resultados en unidades [NTU]

$$\frac{\text{Promedio valor de la extinción de la muestra x 10}}{\text{Cut-off}} = \text{[NovaTec-unidades = NTU]}$$

Ejemplo: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretación de los resultados

Cut-off	10 NTU	-
Positivo	> 11 NTU	Los anticuerpos contra el patógeno están presentes. Ha producido un contacto con el antígeno (patógeno resp. vacuna).
Zona intermedia	9 – 11 NTU	Los anticuerpos contra el patógeno no se pudieron detectar claramente. Se recomienda repetir la prueba con una muestra fresca en 2 a 4 semanas. Si el resultado es de nuevo en la zona intermedia, la muestra se considera como **negativa**.
Negativo	< 9 NTU	La muestra no contiene anticuerpos contra el patógeno. Un contacto previo con el antígeno (patógeno resp. vacuna) es poco probable.
El diagnóstico de una infección no solamente se debe basar en el resultado del ensayo. Es necesario considerar la anamnésis y la sintomatología del paciente junto al resultado serológico. Estos resultados sólo tienen valor restringido en pacientes inmunodeprimidos o en neonatos.		

10. CARACTERÍSTICAS DEL ENSAYO

Los resultados están basados en el grupo de pruebas investigado; no se trata de especificaciones garantizadas.

Para obtener más información sobre las características del ensayo, por favor, entre en contacto NovaTec Immundiagnostica GmbH.

10.1. Precisión

Intra ensayo	**n**	**Promedio (E)**	**CV (%)**
#1	24	0,460	4,89
#2	24	0,782	6,40
#3	24	0,790	8,29
Inter ensayo	**n**	**Promedio (NTU)**	**CV (%)**
#1	12	17,20	5,23
#2	12	20,32	7,84
#3	12	3,70	13,87

10.2. Especificad diagnóstica

La especificidad del ensayo se define como la probabilidad que tiene el ensayo de dar un resultado negativo en ausencia del analítico específico. Es 100% (95% Intervalo de confianza: 96,67% - 100%).

10.3. Sensibilidad de diagnóstico

La sensibilidad del ensayo se define como la probabilidad que tiene el ensayo de dar un resultado positivo en presencia del analítico específico. Es 100% (95% Intervalo de confianza: 78,2% - 100%).

10.4. Interferencias

Las muestras lipémicas, ictéricas e hemolíticas no mostraron interferencias con este equipo ELISA hasta una concentración de 5 mg/mL para triglicéridos, de 0,5 mg/mL para bilirrubina y de 10 mg/mL hemoglobina.

10.5. Reactividad cruzada

Reaccíon cruzada de los antígenos con anticuerpos contra Echinococcus y Entamoeba es posible.

11. LIMITACIONES DEL ENSAYO

Una contaminación de las muestras con bacterias, o una congelación y descongelación repetida pueden producir cambios en los valores de la extinción.

12. PRECAUCIONES Y ADVERTENCIAS

- El procedimiento, la información, las precauciones y los avisos de las instrucciones de uso han de ser seguidas estrictamente. La utilización de equipos con analizadores y equipamiento similar tiene que ser validada. No se autorizan cambios en el diseño, composición y procedimiento, así como cualquier utilización en combinación con otros productos no aprobados por el fabricante; el usuario debe hacerse responsable de estos cambios. El fabricante no responderá ante falsos resultados e incidentes debidos a estas razones. El fabricante no responderá ante cualquier resultado por análisis visual de las muestras de los pacientes.
- Solo para diagnostico in vitro.
- Todos los materiales de origen humano o animal deberán ser considerados y tratados como potencialmente infecciosos.
- Todos los componentes de origen humano han sido examinados y resultaron no reactivos a anticuerpos contra el VIH, VHC y HbsAG.
- No intercambiar reactivos y Placa de Microtitulación de cargas diferentes.
- No usar reactivos de otro fabricante para este ensayo.
- No usar después de la fecha de caducidad.
- Sólo usar recambios de pipetas, dispensadores y materiales de laboratorio limpios.
- No intercambiar las tapas de los diferentes reactivos, para evitar la contaminación cruzada.
- Para evitar la evaporación y una contaminación microbiana, cierre inmediatamente las botellas después de usarlas.
- Después de abrirlas y posterior almacenaje, asegurarse de que no existe contaminación microbiana antes de seguir usándolas.
- Para evitar contaminaciones cruzadas y resultados erróneamente aumentados, Pipetear cuidadosamente las muestras y los reactivos en los pocillos sin salpicar.
- El ELISA sólo está diseñado para personal cualificado siguiendo las normas de buenas prácticas de laboratorio (Good Laboratory Practice,GLP).
- Para un mayor control de calidad interno, cada laboratorio deberá utilizar además muestras conocidas.

12.1. Nota de seguridad para los reactivos que contienen sustancias peligrosas

Los reactivos pueden contener CMIT/MIT (3:1) o MIT (consulte el cap. 4.1)
Por lo tanto, se aplican las indicaciones de peligro y consejos de prudencia.

Atención

H317	Puede provocar una reacción alérgica en la piel.
P261	Evitar respirar el aerosol.
P280	Llevar guantes/ prendas de protección.
P302+P352	EN CASO DE CONTACTO CON LA PIEL: Lavar con abundante jabón agua.
P333+P313	En caso de irritación o erupción cutánea: Consultar a un médico.
P362+P364	Quitar las prendas contaminadas y lavarlas antes de volver a usarlas.

Se puede encontrar más información en la ficha de datos de seguridad.

12.2. Indicaciones para la eliminación de residuos

Por regla general, los productos químicos y las preparaciones son residuos peligrosos. Su eliminación esta sometida a las leyes y los decretos nacionales sobre la eliminación de residuos. Las autoridades informan sobre la eliminación de residuos peligroso.

13. INFORMACIONES PARA PEDIDOS

N° del producto: TAEG0420 Taenia solium IgG ELISA (96 determinaciones)

PORTUGUÊS

1. INTRODUÇÃO

Taenia solium é uma ténia de 2-7 metros de comprimento, que se encontra no intestino delgado dos humanos, mas também noutras espécies animais (macacos, hamsters). As ténias produzem proglotes (menos de 1.000, e cada um com 50 mil ovos) que depois de maduras, ficam grávidas, separaram-se da ténia e migram para o ânus ou são transferidas para as fezes. Os ovos contidos nas proglotes grávidas e que passaram para as fezes podem sobreviver durante meses ou anos no ambiente. Após a ingestão por um hospedeiro intermediário adequado (porcos e outros animais, incluindo os seres humanos), os ovos libertam a oncosfera, invadem a parede intestinal e migram para os músculos estriados, no cérebro, fígado e outros tecidos do hospedeiro, onde se desenvolvem formando cisticercos. No intestino humano, um cisticerco desenvolve-se ao longo de dois meses numa ténia adulta, e pode sobreviver até 25 anos. A infeção parasítica mais importante causada pela Taenia solium é cisticercose e pode envolver o olho e o sistema nervoso central. A ocorrência da ténia Taenia solium suína é mundial. A prevalência é maior em comunidades mais pobres, onde os seres humanos vivem em estreito contato com porcos e ingerem carne de porco mal passada, sendo muito rara em países muçulmanos. O principal sintoma da teníase (apenas leve) é muitas vezes a passagem (passiva) de proglotes.

A característica mais importante da Teníase solium é o risco de desenvolvimento da Cisticercose.

Espécies	**Doença**	**Sintomas (p.ex.)**	**Via de transmissão**
Taenia solium	Teníase	Dor abdominal; Náusea; Fraqueza e fadiga; Perda de peso; Flatulência (gases); Diarréia ou constipação; Mudanças de apetite (fome demais ou perda de apetite)	Ingestão de carne de porco mal passada contendo cisticercos ou ingestão de ovos de Taenia solium através de alimentos ou água contaminados com fezes
	Cisticercose (Neurocisticercose)	Cisticercos no cérebro podem causar aumento da pressão intracraniana, convulsões e estados mentais alterados	

Infecção ou presença de patógeno pode ser identificada por:

- Histologia
- Microscopia
- PCR
- Serologia: Deteção de anticorpos por ELISA

2. UTILIZAÇÃO PRETENDIDA

O kit Taenia solium IgG ELISA destina-se à determinação qualitativa de anticorpos da classe IgG contra Taenia solium no soro ou plasma (citrato, heparina) humanos.

3. PRINCÍPIO DO ENSAIO

A determinação imunoenzimática qualitativa de anticorpos específicos é baseado na técnica de ELISA (do inglês Enzyme-linked Immunosorbent Assay).
As placas de microtitulação são revestidas com antigénios específicos que se ligam os anticorpos correspondentes da amostra. Após lavagem dos poços, para remover todo o material de amostra não ligado, um conjugado de peroxidase de rábano (HRP) é adicionado. Este conjugado se liga aos anticorpos capturados. Num segundo passo de lavagem o conjugado não ligado é removido. O complexo imune formado pelo conjugado ligado é visualizado por adição de substrato de tetrametilbenzidina (TMB), o que dá um produto de reacção azul.
A intensidade deste produto é proporcional à quantidade de anticorpos específicos da amostra. O ácido sulfúrico é adicionado para parar a reacção. Isso produz uma mudança de cor de azul para amarelo. Absorvância a 450/620 nm é lida utilizando um fotômetro de placa de microtitulação ELISA.

4. MATERIAIS

4.1. Reagentes fornecidos

- **Placa de Microtitulação:** 12 tiras de 8 poços, destacáveis e quebráveis, revestidas com antigénio de Taenia solium, em bolsas de folha de alumínio com fecho.
- **Tampão de Diluição de Amostra IgG:** 1 frasco contendo 100 mL de tampão fosfato (10 mM) para diluição da amostra, pH 7,2 ± 0,2; de cor amarela; pronto a usar; tampa branca; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).
- **Solução de Bloqueio:** 1 frasco contendo 15 mL ácido sulfúrico; 0,2 mol/L; pronto a usar; tampa vermelha.
- **Tampão de Lavagem (conc. 20x):** 1 frasco contendo 50 mL de um tampão fosfato (0,2 M); concentrado 20 vezes (pH 7,2 ± 0,2) para a lavagem dos poços; tampa branca.
- **Conjugado:** 1 frasco contendo 20 mL de Proteína A marcados com peroxidase no tampão fosfato (10 mM); de cor azul, pronto a usar; tampa preta.
- **Solução Substrato TMB:** 1 frasco contendo 15 mL de 3,3',5,5'-tetrametilbenzidina (TMB), < 0,1 %; pronto a usar; tampa amarela.
- **Controle Positivo:** 1 frasco contendo 2 mL controle; de cor amarela; pronto a usar; tampa vermelha; ≤ 0,02% (v/v) MIT.
- **Controle Cut-off:** 1 frasco contendo 3 mL controle; de cor amarela; pronto a usar; tampa verde; ≤ 0,02% (v/v) MIT.
- **Controle Negativo:** 1 frasco contendo 2 mL controle; de cor amarela; pronto a usar; tampa azul; ≤ 0,0015% (v/v) CMIT/ MIT (3:1).

Para advertências de perigo e recomendaçaões de prudência ver capitulo 12.1

Para substâncias potencialmente perigosas verifique a ficha de dados de segurança.

4.2. Materiais fornecidos

- 1 Película de cobertura
- 1 Instruções de uso
- 1 Layout da placa

4.3. Materiais e Equipamento necessários

- Fotômetro de Placa de Microtitulação ELISA, equipado para a medição da absorvância a 450/620 nm
- Incubadora 37 C
- Equipamento manual ou automático para a lavagem de Placa de Microtitulação
- Pipetas para dispensar volumes entre 10 e 1000 µL
- Agitador de tubos tipo Vortex
- Água destilada
- Tubos descartáveis

5. ESTABILIDADE E ARMAZENAMENTO

Armazene o kit a 2...8 °C. Os reagentes abertos são estáveis até o prazo de validade impresso no rótulo quando armazenado a 2...8 °C.

6. PREPARAÇÃO DOS REAGENTES

É muito importante deixar todos os reagentes e amostras estabilizar à temperatura ambiente (20...25 °C) misturá-los antes de iniciar o teste!

6.1. Placa de Microtitulação

As tiras quebraveis são revestidas com antigénio Taenia solium. Imediatamente após a remoção das tiras necessarias, as tiras restantes devem ser lacradas de novo na folha de alumínio juntamente com o saquinho de silicio fornecido e armazenadar a 2...8 °C.

6.2. Tampão de Lavagem (conc. 20x)

Diluir o Tampão de Lavagem 1+19; por exemplo: 10 mL do Tampão de Lavagem + 190 mL de água destilada. O Tampão de Lavagem diluído é estavel durante 5 dias à temperatura ambiente (20...25 °C). Caso apareça cristais no concentrado, aquecer a solução a 37 °C por exemplo, em banho Maria. Misture bem antes da diluição.

6.3. Solução Substrato TMB

A solução está pronta para uso e tem de ser armazenada à 2...8 °C, protegida da luz. A solução deve ser incolor ou poderia ter uma ligeira coloração azul claro. Se o substrato se transforma em azul, pode ter sido contaminado e não pode ser usado no teste.

7. COLHEITA E PREPARAÇÃO DAS AMOSTRAS

Usar com este ensaio amostras de soro ou plasma (citrato, heparina) humanos. Se o ensaio for realizado dentro de 5 dias após colheita da amostra, o espécime deve ser mantido a 2…8 °C; caso contrário devem ser alicotadas e armazenadas congeladas (-70...-20 °C). Se as amostras forem armazenadas congeladas, misturar bem as amostras descongeladas antes de testar. Evitar congelar e descongelar repetidamente.
Não é recomendada a inactivação por calor das amostras.

7.1. Diluição das amostras

Antes de testar todas as amostras devem ser diluídas 1 + 100 com Tampão de Diluição de Amostra IgG. Dispensar 10 µL de amostra e 1 mL de Tampão de Diluição de Amostra IgG em tubos para obter uma diluição 1 + 100 e misturar meticulosamente com um vortex.

8. PROCEDIMENTO DO ENSAIO

Por favor, ler atentamente as instruções de uso **antes** de realizar o teste. A fiabilidade dos resultados depende da adesão estrita ao as instruções de uso, conforme descritas. O procedimento de ensaio a seguir está validado apenas para o procedimento manual. Se o teste for realizado em sistemas automáticos para teste ELISA é recomendável aumentar os passos de lavagem de três até cinco e o volume da Tampão de Lavagem de 300 µL para 350 µL para evitar efeitos de lavagem. Preste atenção ao capítulo 12. Antes de iniciar o teste, o plano de distribuição e identificação de todas as amostras e calibradores/controles (é recomendado determinar em duplicidade) deve ser cuidadosamente estabelecido no Layout da placa fornecida no kit. Seleccionar o número necessário de tiras ou poços e inserir os mesmos no suporte.

Realizar todas as etapas do teste na ordem indicada e sem atrasos significativos.

Na pipetagem deve ser utilizada uma ponta limpa e descartável para dispensar cada controle e amostra.

Ajustar a incubadora para 37 ± 1 °C.

1. Dispensar 100 µL dos calibradores/controles e das amostras diluídas nos poços respectivos. Deixar o poço A1 vazio para o branco substrato.
2. Cobrir os poços com a película fornecida no kit.
3. **Incubar durante 1 hora ± 5 min a 37 ± 1 °C.**
4. Quando terminar a incubação, remover a película, aspirar o conteúdo dos poços e lavar cada poço três vezes com 300 µL de Tampão de Lavagem. Evitar que os poços de reacção transbordem. O intervalo entre a lavagem e a aspiração deve ser > 5 seg. No final, retirar cuidadosamente o fluido restante batendo delicadamente as tiras sobre papel absorvente, antes da próxima etapa!

   Nota: A lavagem é muito importante! Lavagem insuficiente resulta em baixa precisão e falsos resultados.
5. Dispensar 100 µL de Conjugado em todos os poços, excepto no poço do Branco substrato A1.
6. **Incubar durante 30 min à temperatura ambiente (20...25°C).** Não expor diretamente à luz solar.
7. Repetir a etapa 4.
8. Dispensar 100 µL de Solução Substrato TMB em todos os poços.
9. **Incubar durante exactamente 15 min à temperatura ambiente (20...25°C) e no escuro.** A cor azul devido a uma reacção enzimática.
10. Dispensar 100 µL de Solução de Bloqueio em todos os poços, pela mesma ordem e com a mesma velocidade a que foi dispensada a Solução Substrato TMB,desse modo uma mudança de cor de azul para amarelo ocorre.
11. Medir a absorvância a 450/620 nm dentro de 30 min após a adição da Solução de Bloqueio.

8.1. Medição

Ajustar o fotômetro para Placa de Microtitulação ELISA **a zero** usando o **Branco substrato .**

Se - devido à razões técnicas – o fotômetro para Placa de Microtitulação ELISA não puder ser ajustado a zero usando o Branco substrato, valor da absorvância deste deve ser subtraido de todos os outros valores de absorvância medidos de forma a obter resultados fiáveis!

Medir a absorvância de todos os poços a **450 nm** e registar os valores da absorvância para cada calibrador/controle e amostra no Layout da placa.

É recomendado fazer a medição **dicromática** usando como referência um comprimento de onda de 620 nm.

Se determinações duplas foram realizadas, calcular **os valores médios de absorvância**.

9. RESULTADOS

9.1. Critérios de validação do ensaio

Para que um ensaio seja considerado válido, estas Instruções de Uso devem ser rigorosamente seguidas, e os seguintes critérios devem ser cumpridos:

- **Branco substrato**: Valor de Absorvância **< 0,100**
- **Controle Negativo**: Valor de Absorvância **< 0,200 e < Cut-off**
- **Controle Cut-off**: Valor de Absorvância **0,150 – 1,300**
- **Controle Positivo**: Valor de Absorvância **> Cut-off**

Se estes critérios não forem cumpridos, o teste não é válido e deve ser repetido.

9.2. Cálculo dos Resultados

O Cut-off é o valor médio da absorvância das determinações do Controle Cut-off.

Exemplo: Valor da absorvância do Controle Cut-off 0,42 + valor da absorvância do Controle Cut-off 0,44 = 0,86: 2 = 0,43
Cut-off = 0,43

9.2.1. Resultados em Unidades [NTU]

$$\frac{\text{Valor da absorvância (média) da amostra} \times 10}{\text{Cut-off}} = \text{[Unidades NovaTec = NTU]}$$

Exemplo: $\frac{1{,}591 \times 10}{0{,}43} = 37$ NTU

9.3. Interpretação dos Resultados

Cut-off	10 NTU	-
Positivo	> 11 NTU	Os anticorpos contra o agente patogênico estão presente. Houve um contacto com o antigénio (patógeno resp vacina).
Zona cinzenta	9 – 11 NTU	Os anticorpos contra o agente patogênico não puderam ser claramente detectados. Recomenda-se a repetir o teste com uma amostra fresca em 2 a 4 semanas. Se o resultado estiver novamente dentro da zona cinzenta, a amostra é julgada como **negativa**.
Negativo	< 9 NTU	A amostra não contém os anticorpos contra o agente patogênico. Um contato prévio com o antígeno (patógeno resp. vacina) é improvável.
O diagnóstico de uma doença infecciosa não deve ser estabelecido com base num único resultado do teste. Um diagnóstico preciso deve ter em consideração a história clínica, a sintomatologia bem como dados serológicos. Em pacientes imunossuprimidos e recém-nascidos os dados serológicos têm apenas valor restrito.		

10. CARACTERÍSTICAS DE DESEMPENHO ESPECÍFICAS

Os resultados referem-se aos grupos de amostras investigados; estas não são especificações garantidas.

Para mais informações sobre as características de desempenho específicas, por favor, entre em contato NovaTec Immundiagnostica GmbH.

10.1. Precisão

Intra ensaio	**n**	**Média (E)**	**CV (%)**
#1	24	0,460	4,89
#2	24	0,782	6,40
#3	24	0,790	8,29
Inter ensaio	**n**	**Média (NTU)**	**CV (%)**
#1	12	17,20	5,23
#2	12	20,32	7,84
#3	12	3,70	13,87

10.2. Especificidade Diagnóstica

A especificidade diagnóstica é definida como a probabilidade do ensaio ser negativo na ausência do analito específico.
É de 100% (95% Intervalo de confiança: 96,67% - 100%).

10.3. Sensibilidade Diagnóstica

A sensibilidade diagnóstica é definida como a probabilidade do ensaio ser positivo na presença do analito específico.
É de 100% (95% Intervalo de confiança: 78,2% - 100%).

10.4. Interferências

Não são observadas interferências com amostras hemolisadas, lipémicas ou ictéricas até uma concentração de hemoglobina de 10 mg/mL, de triglicerídeos de 5 mg/mL e de bilirrubina de 0,5 mg/mL.

10.5. Reacção cruzada

A reacção cruzada dos antigénios com os anticorpos contra Equinococus e Entamoeba é possível.

11. LIMITAÇÕES DO PROCEDIMENTO

Contaminação bacteriana ou a repetição de ciclos de congelação-descongelação do espécime podem afectar os valores da absorvância.

12. PRECAUÇÕES E AVISOS

- O procedimento do teste, as informações, as precauções e avisos nas instruções para utilização têm de ser rigorosamente seguidas. O uso de kits de teste com analisadores e equipamento similar tem de ser validado. Qualquer alteração no desenho, composição e procedimento do teste bem como qualquer utilização em combinação com outros produtos não aprovados pelo fabricante não estão autorizados; o próprio utilizador é responsável por tais alterações. O fabricante não é legalmente responsável por resultados falsos e incidentes originados por estes motivos. O fabricante não é legalmente responsável por quaisquer resultados obtidos por análise visual das amostras dos pacientes.
- Apenas para uso no diagnóstico in-vitro.
- Todos os materiais de origem humana ou animal devem ser considerados e tratados como potencialmente infectantes.
- Todos os componentes de origem humana usados para a produção destes reagentes foram testados para anticorpos anti-HIV, anticorpos anti-HCV e HBsAg e foram considerados não-reactivos.
- Não trocar e/ou juntar reagentes ou Placa de Microtitulação de lotes de produção diferentes.
- Nenhuns reagentes de outros fabricantes devem ser usados juntamente com reagentes deste kit de teste.
- Não usar reagentes após a data de validade indicada no rótulo.
- Usar apenas pontas de pipeta, dispensadores e material de laboratório limpos.
- Não trocar as tampas dos frascos dos reagentes para evitar contaminação cruzada.
- Fechar firmemente os frascos dos reagentes imediatamente após a utilização para evitar evaporação e contaminação microbiana.
- Após a primeira abertura e armazenamento subsequente verificar se existe contaminação microbiana dos frascos do conjugado e dos calibradores/controles antes de utiliza-los novamente.
- Para evitar contaminação-cruzada e resultados falsamente elevados, pipetar as amostras dos pacientes e dispensar o reagentes precisamente nos poços sem salpicar.
- O ELISA é projetado apenas para pessoal qualificado seguindo os padrões de boas práticas de laboratório (Good Laboratory Practice, GLP).
- Para um controle de qualidade interno adicional cada laboratório deve utilizar amostras conhecidas.

12.1. Nota de segurança para reagentes que contenham substâncias perigosas

Os reagentes podem conter CMIT/MIT (3:1) ou MIT (ver capitulo 4.1)
Portanto, as seguintes advertências de perigo e recomendações de prudência aplicam-se.

Atenção

H317	Pode provocar uma reacção alérgica cutânea.
P261	Evitar respirar os aerossóis.
P280	Usar luvas de protecção/ vestuário de protecção.
P302+P352	SE ENTRAR EM CONTACTO COM A PELE: lavar abundantemente com sabão água.
P333+P313	Em caso de irritação ou erupção cutânea: consulte um médico.
P362+P364	Retirar a roupa contaminada e lavá-la antes de a voltar a usar.

Mais informações podem ser encontradas na ficha de dados de segurança.

12.2. Considerações de Eliminação

Resíduos de químicos e preparações são geralmente considerados como resíduos perigosos. A eliminação deste tipo de resíduos está regulada por leis e normativas nacionais e regionais. Contactar as autoridades locais ou empresas de gestão de resíduos as quais podem aconselhar sobre como eliminar resíduos perigosos.

13. INFORMAÇÃO DE PEDIDO

Prod. No.: TAEG0420 Taenia solium IgG ELISA (96 Determinações)

BIBLIOGRAPHY / LITERATUR / BIBLIOGRAPHIE / BIBLIOGRAFIA / BIBLIOGRAFÍA / BIBLIOGRAFIA

Del Brutto, Oscar H.; Sotelo, Julio (1988): Neurocysticercosis: an update. In *Reviews of infectious diseases* 10 (6), pp. 1075–1087.

Evans, Carlton; Garcia, Hector H.; Gilman, Robert H.; Friedland, Jon S. (1997): Controversies in the management of cysticercosis. In *Emerging infectious diseases* 3 (3), pp. 403–405. DOI: 10.3201/eid0303.970324.

Flisser, A.; Larralde, C. (1986-): Cysticercosis. In Kenneth Walls, Peter M. Schantz (Eds.): Immunodiagnosis of parasitic diseases. Orlando: Academic Press, pp. 109–140.

Larralde, Carlos; Laclette, Juan Pedro; Owen, Charles S.; Madrazo, Ignacio; Sandoval, Miguel; Bojalil, Rafael et al. (1986): Reliable serology of Taenia solium cysticercosis with antigens from cyst vesicular fluid: ELISA and hemagglutination tests. In *The American journal of tropical medicine and hygiene* 35 (5), pp. 965–973.

Rhoads, Marcia L.; Murrell, K. Darwin (1988): Taeniasis and Cysticercosis. In A. Balows, W. J. Hausler, M. Ohashi, A. Turano, E. H. Lennete (Eds.): Laboratory Diagnosis of Infectious Diseases. Principles and Practice. New York, NY: Springer New York, pp. 987–992.

Wittner, Murray; Tanowitz, Herbert B. (2006): Taenia and Other Tapeworms. In Richard L. Guerrant, David H. Walker, Peter F. Weller (Eds.): Tropical infectious diseases. Principles, pathogens & practice. 2nd ed. Philadelphia: Churchill Livingstone, pp. 1327–1340.

ABBREVIATIONS / ABKÜRZUNGEN / ABRÉVIATIONS / ABBREVIAZIONI / ABREVIACIÓNES / ABREVIATURAS

CMIT	5-chloro-2-methyl-4-isothiazolin-3-one
MIT	2-methyl-2H-isothiazol-3-one

SYMBOLS KEY / SYMBOLSCHLÜSSEL / EXPLICATION DES SYMBOLES / LEGENDA / SIMBOLOS / TABELA DE SIMBOLOS

	Manufactured by / Hergestellt von / Fabriqué par / Prodotto da / Fabricado por / Fabricado por
IVD	In Vitro Diagnostic Medical Device / In Vitro Diagnosticum / Dispositif médical de diagnostic in vitro / Diagnostico in vitro / Producto para diagnóstico In vitro / Dispositivo Médico para Diagnóstico In Vitro
LOT	Lot Number / Chargenbezeichnung / Numéro de lot / Lotto / Número de lote / Número de lote
	Expiration Date / Verfallsdatum / Date de péremption / Scadenza / Fecha de caducidad / Data de Validade
	Storage Temperature / Lagertemperatur / Température de conservation / Temperatura di conservazione / Temperatura de almacenamiento / Temperatura de Armazenamento
CE	CE Mark / CE-Zeichen / Marquage CE / Marchio CE / Marca CE / Marca CE
REF	Catalogue Number / Katalog Nummer / Référence du catalogue / Numero di codice / Número de Catálogo / Número de Catálogo
	Consult Instructions for Use / Arbeitsanleitung beachten / Consulter la notice d'utilisation / Consultare le istruzioni per l'uso/ Consulte las Instrucciones de Uso / Consultar as Instruções de Utilização
MTP	Microtiterplate / Mikrotiterplatte / Plaque de Microtitrages / Piastre di Microtitolazione / Placa de Microtitulación / Placa de Microtitulação
CONJ	Conjugate / Konjugat / Conjugué / Coniugato / Conjugado / Conjugado
CONTROL | -	Negative Control / Negativkontrolle / Contrôle négatif / Controllo Negativo / Control Negativo / Controle Negativo
CONTROL | +	Positive Control / Positivkontrolle / Contrôle positif / Controllo Positivo / Control Positivo / Controle Positivo
CUT OFF	Cut-off Control / Cut-off Kontrolle / Contrôle Cut-off / Controllo Cut-off / Control Cut-off / Controle Cut-off
DIL | G	IgG Sample Dilution Buffer / IgG-Probenverdünnungspuffer / Tampon de Dilution d'Échantillon IgG / Tampone di Diluizione del Campione IgG / Tampón de dilución de Muestras IgG / Tampão de Diluição de Amostra IgG
SOLN | STOP	Stop Solution / Stopplösung / Solution d'Arrêt/ Soluzione Bloccante / Solución de Parada/ Solução de Bloqueio
SUB | TMB	TMB Substrate Solution / TMB-Substratlösung / Solution de Substrat TMB / Soluzione Substrato TMB / Solución de Sustrato de TMB / Solução Substrato TMB
WASH | BUF | 20x	Washing Buffer 20x concentrated / Waschpuffer 20x konzentriert / Tampon de Lavage concentré 20 x / Tampone di Lavaggio concentrazione x20 / Tampón de Lavado concentrado x20 / Tampão de Lavagem concentrada 20x
	Contains sufficient for "n" tests / Ausreichend für "n" Tests / Contenu suffisant pour "n" tests / Contenuto sufficiente per "n" saggi / Contenido suficiente para "n" tests / Conteúdo suficiente para "n" testes

SUMMARY OF TEST PROCEDURE / KURZANLEITUNG TESTDURCHFÜHRUNG / RÉSUMÉ DE LA PROCEDURE DE TEST / SCHEMA DELLA PROCEDURA / RESUMEN DE LA TÉCNICA / RESUMO DO PROCEDIMENTO DE TESTE

SCHEME OF THE ASSAY

Taenia solium IgG ELISA

Test Preparation

Prepare reagents and samples as described. Establish the distribution and identification plan for all samples and standards/controls on the plate layout supplied in the kit. Select the required number of microtiter strips or wells and insert them into the holder.

Assay Procedure

	Substrate Blank (A1)	Negative Control	Cut-off Control	Positive Control	Sample (diluted 1+100)
Negative Control	-	100 µL	-	-	-
Cut-off Control	-	-	100 µL	-	-
Positive Control	-	-	-	100 µL	-
Sample (diluted 1+100)	-	-	-	-	100 µL
Cover wells with foil supplied in the kit **Incubate for 1 h at 37 ± 1 °C** Wash each well three times with 300 µL of Washing Buffer					
Conjugate	-	100 µL	100 µL	100 µL	100 µL
Incubate for 30 min at room temperature (20…25°C) Do not expose to direct sunlight Wash each well three times with 300 µL of Washing Buffer					
TMB Substrate Solution	100 µL	100 µL	100 µL	100 µL	100 µL
Incubate for exactly 15 min at room temperature (20…25°C) in the dark					
Stop Solution	100 µL	100 µL	100 µL	100 µL	100 µL
Photometric measurement at 450 nm (reference wavelength: 620 nm)					

NovaTec Immundiagnostica GmbH

Waldstraße 23 A6
63128 Dietzenbach, Germany

Tel.: +49 (0) 6074-48760 Fax: +49 (0) 6074-487629
Email: info@NovaTec-ID.com
Internet: www.NovaTec-ID.com

TAEG0420_2020-07-13_Ka ab Lot 069

HCV Ab

Confirmation

Enzyme Immunoassay for the confirmation of HCV Ab positivity in human sera or plasma

- for “in vitro” diagnostic use only -

DIA.PRO
Diagnostic Bioprobes Srl
Via G. Carducci n° 27
20099 Sesto San Giovanni
(Milano) - Italy
Phone +39 02 27007161
Fax +39 02 44386771
e-mail: info@diapro.it

Code CCONF.CE
12 Tests

HCV Ab
Confirmation

A. INTRODUCTION
Hepatitis C Virus or HCV is an enveloped RNA virus recently classified in the family of Flaviviridae.
The genome encodes for structural components, a nucleocapsid protein and two envelope glycoproteins, and functional constituents involved in the virus replication and protein processing. The nucleocapsid-encoding region seems to be the most conservative among the isolates obtained all over the world.
HCV accounts for about 95% of hepatitis infections in recipients of blood transfusion and 50% of cases of sporadic NANB hepatitis. HCV commonly gives origin to asymptomatic hepatitis and chronicity develops in a high number of cases, sometime evolving in severe forms of illness, as hepato-carcinoma.
The determination of antibody to HCV has become mandatory in the screening of blood units to prevent post-transfusion hepatitis. It is also currently used to follow-up risk individuals and patients under treatment with interferon.
Confirmation of any positive result is strongly recommended in the clinical laboratory practice before considering the patient truly positive for anti HCV antibodies.

B. PRINCIPLE OF THE ASSAY
Microplates are coated by strips with HCV-specific synthetic antigens derived from “core”, “ns” and “env” regions encoding for conservative immunodominant antigenic determinants (Core, NS3, NS4, NS5 & Env).
Antigens are adsorbed to the wells composing the strips as follows:

Position	Antigen	Composition
A	None	Well for blanking operations
B	Casein	Negative internal control
C	Core	Specific synthetic antigen
D	NS3	Specific synthetic antigen
E	NS4	Specific synthetic antigens
F	NS5	Specific synthetic antigen
G	Env	Specific synthetic antigens
H	hIgG	Positive Internal Control

The strip is first treated with the sample turned out to be positive in the screening assay. Anti HCV antibodies are captured, if present, by the specific antigens.
After washing out all the other components of the sample, in the 2nd incubation bound HCV Ab are detected by the addition of anti hIgG&M antibody, labeled with peroxidase (HRP).
The enzyme captured on the solid phase, acting on the substrate/chromogen mixture, generates an optical signal that is proportional to the amount of anti HCV antibodies present in the sample.
Controls are included to provide an internal check of the analytical system.
The sample is confirmed positive if at least two specific reactivities are present.

C. TEST CONDITIONS AND NOTICES
1. All the reagents contained in the kit are for “in vitro” diagnostic use only.
2. Do not use the kit or reagents after the expiry date stated on labels. Do not mix reagents of different lots.
3. Procedures should be performed carefully in order to obtain reliable results and clinical interpretations.
4. Bring all the reagents to room temperature for at least 60 min, before the test is started.
5. Avoid any contamination of reagents when taking them out of vials. We recommend to use automatic pipettes and disposable tips. When dispensing reagents, do not touch the wall of microplate wells with tips, in order to avoid any cross-contamination.
6. In the washing procedure, use only the Washing Solution provided with the kit and follow carefully the indications reported in the “WASHING INSTRUCTIONS” section of this insert.
7. Ensure that the Substrate/Chromogen mixture does not come in contact with oxidizing agents or metallic surfaces; avoid any intense light exposure during the incubation step or the reagent preparation.
When preparing the Substrate/Chromogen mixture for the analysis use only plastic, disposable, clean or sterile containers.
8. Samples and materials potentially infective have to be handled with care as they could transmit infection.
All objects come in direct contact with samples and all residuals of the assay should be treated or wasted as potentially infective. Best procedures for inactivation are treatments with autoclave at 121°C for 30 min or with sodium hypochlorite at a final concentration of 2.5% for 24 hr. This last method can be used for the treatment of the liquid waste after that it has been neutralized with NaOH.
9. Avoid any contact of liquids with skin and mucosas.
Use always protective talk-free gloves, glasses and laboratory coats, according to the safety regulations.

D. CONTENT OF THE KIT
a – Microplate MICROPLATE
n° 1. 12 strips x 8 wells coated by strip with synthetic HCV antigens. Strips are contained in a sealed bag with a desiccant and a frame. Bring the strips necessary to the test to room temperature before use, and close firmly the bag to prevent any moisture formation inside.

b – Enzyme Conjugate CONJ
n° 1x16ml. Proteic buffer solution containing a specific anti-hIgG&M antibody, labeled with HRP, ready to use.
It contains proteic stabilizers, 0.2 mg/ml gentamicine sulphate and 0.045% ProClin 300.

c – Washing Solution WASHBUF 20X
n° 1x60ml. 20x concentrated solution to be diluted up to 1200 ml with EIA grade water. It contains phosphate buffer, Tween 20 and 0.045% ProClin 300 as preservative.
Once diluted, the wash solution is stable for 1 week at 2-8°C.

d – Chromogen/Substrate SUBS TMB
1x16ml. The solution contains tetramethyl-benzidine (TMB) and hydrogen peroxide (H2O2) with activators and stabilizers, diluted in a phosphate/citrate buffer. The solution is ready to use.
***Warning** : Store protected from light.*

e – Stop Solution H_2SO_4 O.3 M
n° 1x15ml It contains a solution of 0.3 M H2SO4
Attention: Irritant (H315, H319; P280, P302+P352, P332+P313, P305+P351+P338, P337+P313, P362+P363).

f – Negative Control CONTROL -
n° 1x3ml Human serum base not reactive for anti-HCV antibodies. It contains 0.09% sodium azide and 0.045% ProClin 300 as preservatives.
The Negative Control is pale yellow color coded.

g – Positive Control CONTROL +
n° 1x3ml Human serum base highly reactive for HCV Ab. It contains 0.09% sodium azide and 0.045% ProClin 300 as preservatives. The Positive Control is green color coded.

h – Sample Diluent DILSPE
n° 1x20ml. Proteic solution for the preparation of samples. It contains a detergent, proteic stabilizers, 0.1% sodium azide and 0.045% ProClin 300 as preservatives.

***Note**: All human serum derived materials have been tested as negative for HBsAg, and HIV antibodies with FDA approved kits. The Positive Control has been inactivated for HCV. Anyway, handle these components as potentially infective.*

E. MATERIALS REQUIRED BUT NOT PROVIDED
1. Calibrated Micropipettes of variable volume and disposable plastic tips.
2. EIA grade water (bidistilled or deionised, charcoal treated to remove oxidizing chemicals used as disinfectants).
3. Timer with 60 minute range or higher.
4. Absorbent paper tissues.
5. Calibrated ELISA microplate thermostatic incubator capable to provide a temperature of +37°C.
6. Calibrated ELISA microwell reader with 450nm (reading) and with 620-630nm (blanking) filters.
7. Calibrated ELISA microplate washer.
8. Vortex or similar mixing tools.

F. WARNINGS AND PRECAUTIONS
1. The kit has to be used by skilled and properly trained technical personnel only, under the supervision of a medical doctor responsible of the laboratory.
2. When the kit is used for the confirmation of positive results obtained from screening blood units and blood components, it has to be used in a laboratory certified and qualified by the national authority in that field (Ministry of Health or similar entity) to carry out this type of analysis.
3. All the personnel involved in performing the assay have to wear protective laboratory clothes, talc-free gloves and glasses. The use of any sharp (needles) or cutting (blades) devices should be avoided. All the personnel involved should be trained in biosafety procedures, as recommended by the Center for Disease Control, Atlanta, U.S. and reported in the National Institute of Health's publication: "Biosafety in Microbiological and Biomedical Laboratories", ed. 1984.
4. All the personnel involved in sample handling should be vaccinated for HBV and HAV, for which vaccines are available, safe and effective.
5. The laboratory environment should be controlled so as to avoid contaminants such as dust or air-born microbial agents, when opening kit vials and microplates and when performing the test. Protect the Chromogen/Substrate from strong light and avoid vibration of the bench surface where the test is undertaken.
6. Upon receipt, store the kit at 2..8°C into a temperature controlled refrigerator or cold room.
7. Do not interchange components between different lots of the kits. It is recommended that components between two kits of the same lot should not be interchanged.
8. Check that the reagents are clear and do not contain visible heavy particles or aggregates. If not, advise the laboratory supervisor to initiate the necessary procedures for kit replacement.
9. Avoid cross-contamination between serum/plasma samples by using disposable tips and changing them after each sample. Do not reuse disposable tips.
10. Avoid cross-contamination between kit reagents by using disposable tips and changing them between the use of each one. Do not reuse disposable tips.
11. Do not use the kit after the expiration date stated on the external container and internal (vials) labels.
12. Treat all specimens as potentially infective. All human serum specimens should be handled at Biosafety Level 2, as recommended by the Center for Disease Control, Atlanta, U.S. in compliance with what reported in the Institutes of Health's publication: "Biosafety in Microbiological and Biomedical Laboratories", ed. 1984.
13. The use of disposable plastic-ware is recommended in the preparation of the liquid components or in transferring components into automated workstations, in order to avoid cross contamination.
14. Waste produced during the use of the kit has to be discarded in compliance with national directives and laws concerning laboratory waste of chemical and biological substances. In particular, liquid waste generated from the washing procedure, from residuals of controls and from samples has to be treated as potentially infective material and inactivated before waste. Suggested procedures of inactivation are treatment with a 10% final concentration of household bleach for 16-18 hrs or heat inactivation by autoclave at 121°C for 20 min..
15. Accidental spills from samples and operations have to be adsorbed with paper tissues soaked with household bleach and then with water. Tissues should then be discarded in proper containers designated for laboratory/hospital waste.
16. The Sulphuric Acid is an irritant. In case of spills, wash the surface with plenty of water
17. Other waste materials generated from the use of the kit (example: tips used for samples and controls, used microplates) should be handled as potentially infective and disposed according to national directives and laws concerning laboratory wastes.

G.SPECIMEN: PREPARATION AND RECOMMANDATIONS
1. Blood is drawn aseptically by venepuncture and plasma or serum is prepared using standard techniques of preparation of samples for clinical laboratory analysis. No influence has been observed in the preparation of the sample with citrate, EDTA and heparin.
2. Avoid any addition of preservatives to samples; especially sodium azide as this chemical would affect the enzymatic activity of the conjugate, generating false negative results.
3. Samples have to be clearly identified with codes or names in order to avoid misinterpretation of results. When the kit is used for the screening of blood units, bar code labelling and electronic reading is strongly recommended.
4. Haemolysed (red) and visibly hyperlipemic ("milky") samples have to be discarded as they could generate false results. Samples containing residues of fibrin or heavy particles or microbial filaments and bodies should be discarded as they could give rise to false results.
5. Sera and plasma can be stored at +2°…+8°C in primary collection tubes for up to five days after collection. Do not freeze primary tubes of collection. For longer storage periods, sera and plasma samples, carefully removed from the primary collection tube, can be stored frozen at –20°C for at least 12 months. Any frozen samples should not be frozen/thawed more than once as this may generate particles that could affect the test result.

6 If particles are present, centrifuge at 2.000 rpm for 20 min or filter using 0.2-0.8u filters to clean up the sample for testing.

H. PREPARATION OF COMPONENTS AND WARNINGS
A study conducted on an opened kit has not pointed out any relevant loss of activity up to 6 re-use of the device and up to 6 months.

Microplates:
Allow the microplate to reach room temperature (about 1 hr) before opening the container. Check that the desiccant is not turned to dark green, indicating a defect of storage.
In this case call Dia.Pro's customer service.
Unused strips have to be placed back into the aluminium pouch, in presence of desiccant supplied, firmly zipped and stored at +2°..8°C. When opened the first time, residual strips are stable till the indicator of humidity inside the desiccant bag turns from yellow to green.

Negative Control:
Ready to use. Mix well on vortex before use.

Positive Control:
Ready to use. Mix well on vortex before use. Handle this component as potentially infective, even if HCV, if present in the control, has been chemically inactivated.

Wash buffer concentrate:
The 20x concentrated solution has to be diluted with EIA grade water up to 1200 ml and mixed gently end-over-end before use. As some salt crystals may be present into the vial, take care to dissolve all the content when preparing the solution.
In the preparation avoid foaming as the presence of bubbles could give origin to a bad washing efficiency.
Note: *Once diluted, the wash solution is stable for 1 week at +2..8° C.*

Enzyme conjugate:
Ready to use. Mix well on vortex before use.
Be careful not to contaminate the liquid with oxidizing chemicals, air-driven dust or microbes.
If this component has to be transferred use only plastic, possibly sterile disposable containers.

Chromogen/Substrate:
Ready to use. Mix well on vortex before use.
Be careful not to contaminate the liquid with oxidizing chemicals, air-driven dust or microbes.
Do not expose to strong illumination, oxidizing agents and metallic surfaces.
If this component has to be transferred use only plastic, possible sterile disposable container.

Sulphuric Acid:
Ready to use. Mix well on vortex before use.
Attention: Irritant (H315, H319; P280, P302+P352, P332+P313, P305+P351+P338, P337+P313, P362+P363).

Legenda:

Warning **H statements:**
H315 – Causes skin irritation.
H319 – Causes serious eye irritation.

Precautionary **P statements:**
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P302 + P352 – IF ON SKIN: Wash with plenty of soap and water.
P332 + P313 – If skin irritation occurs: Get medical advice/attention.
P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 – If eye irritation persists: Get medical advice/attention.
P362 + P363 – Take off contaminated clothing and wash it before reuse.

Sample Diluent:
Ready to use. Mix well on vortex before use.

I. INSTRUMENTS AND TOOLS USED IN COMBINATION WITH THE KIT

1. Micropipettes have to be calibrated to deliver the correct volume required by the assay and must be submitted to regular decontamination (household alcohol, 10% solution of bleach, hospital grade disinfectants) of those parts that could accidentally come in contact with the sample. They should also be regularly maintained in order to show a precision of 1% and a trueness of +/-2%. Decontamination of spills or residues of kit components should also be carried out regularly.
2. The ELISA incubator has to be set at +37°C (tolerance of +/-0.5°C) and regularly checked to ensure the correct temperature is maintained. Both dry incubators and water baths are suitable for the incubations, provided that the instrument is validated for the incubation of ELISA tests.
3. The **ELISA washer** is extremely important to the overall performances of the assay. The washer must be carefully validated in advance, checked for the delivery of the right dispensation volume and regularly submitted to maintenance according to the manufacturer's instructions for use. In particular the washer, at the end of the daily workload, has to be extensively cleaned out of salts with deionized water. Before use, the washer has to be extensively primed with the diluted Washing Solution.
   The instrument weekly has to be submitted to decontamination according to its manual (NaOH 0.1 M decontamination suggested).
   5 washing cycles (aspiration + dispensation of 350ul/well of washing solution + 20 sec soaking = 1 cycle) are sufficient to ensure the assay with the declared performances. If soaking is not possible add one more cycle of washing.
   An incorrect washing cycle or salt-blocked needles are the major cause of false positive reactions.
4. Incubation times have a tolerance of $\pm$5%.
5. The ELISA microplate reader has to be equipped with a reading filter of 450nm and with a second filter of 620-630nm, mandatory for blanking purposes. Its standard performances should be (a) bandwidth $\leq$ 10 nm; (b) absorbance range from 0 to $\geq$ 2.0; (c) linearity to $\geq$ 2.0; repeatability $\geq$ 1%. Blanking is carried out on the well identified in the section "Assay Procedure". The optical system of the reader has to be calibrated regularly to ensure that the correct optical density is measured. It should be regularly maintained according to the manufacturer 's instructions.
6. Dia.Pro's customer service offers support to the user in the setting and checking of instruments used in combination with the kit, in order to assure compliance with the requirements described. Support is also provided for the installation of new instruments to be used with the kit.

L. PRE ASSAY CONTROLS AND OPERATIONS

1. Check the expiration date of the kit printed on the external label of the kit box. Do not use if expired.
2. Check that the liquid components are not contaminated by naked-eye visible particles or aggregates. Check that the Chromogen/Substrate is colorless or pale blue by aspirating a small volume of it with a sterile transparent plastic pipette. Check that no breakage occurred in transportation and no spillage of liquid is present inside the box. Check that the aluminum pouch, containing the microplate, is not punctured or damaged.
3. Dilute all the content of the 20x concentrated Wash Solution as described above.
4. Allow all the other components to reach room temperature (about 1 hr) and then mix as described.
5. Set the ELISA incubator at +37°C and prepare the ELISA washer by priming with the diluted washing solution, according to the manufacturers instructions. Set the right number of washing cycles as reported in the specific section.
6. Check that the ELISA reader has been turned on at least 20 minutes before reading.
7. Check that the micropipettes are set to the required volume.
8. Check that all the other equipment is available and ready to use.
9. In case of problems, do not proceed further with the test and advise the supervisor.

M. ASSAY PROCEDURE

The assay has to be carried out according to what reported below, taking care to maintain the same incubation time for all the samples in testing.

1 – Leave the A1 well empty for blanking operations. Dilute 20 ul sample to confirm with 1 ml diluent (1:50 dilution).

Do not dilute controls (if tested) as they are prediluted and ready-to-use.
Then dispense the controls and/or the diluted sample to confirm, each one into one strip module according to the following table:

position	sample
A	blanking well
B	**100 ul** control or diluted sample to confirm
C	**100 ul** control or diluted sample to confirm
D	**100 ul** control or diluted sample to confirm
E	**100 ul** control or diluted sample to confirm
F	**100 ul** control or diluted sample to confirm
G	**100 ul** control or diluted sample to confirm
H	**100 ul** control or diluted sample to confirm

Cover the strip with the sealer and incubate the strip module for **60 min at +37°C**.

2 – Peel out the plate sealer and wash the strip module according to instructions.

3 – Add 100 ul of Conjugate to all the wells, except A1. Incubate the module sealed for **60 min at +37°C**.

4 – Peel out the plate sealer and wash the strip according to the instructions. Then add 100 ul of the Chromogen/Substrate mixture to all the wells, A1 included.

5- Incubate the strip module for **20 min at room temperature**, protected from light.

6 – Stop the enzymatic reaction by adding 100 ul of the Stop Solution to all the wells, A1 included.
Read the strip module at 450nm and 620-630nm (mandatory) blanking the instrument on A1 well.

Important notes:
1. *Ensure that no finger prints are present on the bottom of the microwell before reading. Finger prints could generate false positive results on reading.*
2. *Reading has to be carried out just after the addition of the Stop Solution and anyway not any longer than 20 minutes after its addition. Some self oxidation of the chromogen can occur leading to high background.*

N. ASSAY SCHEME

Method	Operations
Controls Samples diluted 1:50	100 ul 100 ul
1st incubation	**60 min**
Temperature	+37°C
Wash step	n° 5 cycles with 20'' of soaking OR n° 6 cycles without soaking
Enzyme conjugate	100 ul
2nd incubation	**60 min**
Temperature	+37°C
Wash step	n° 5 cycles with 20'' of soaking OR n° 6 cycles without soaking
TMB/H2O2	100 ul
3rd incubation	**20 min**
Temperature	r.t.
Sulphuric Acid	100 ul
Reading OD	450nm / 620-630nm

O. INTERNAL QUALITY CONTROL

A check is carried out on the controls any time the kit is used in order to verify whether their OD450nm/620-630nm values are as expected and reported in the table below.

Check	Requirements
Blank well	< 0.100 OD450nm value
H well	>0.750 OD450nm value after blanking
Negative Control (NC)	<0.200 OD450nm value in wells from B to G After blanking
Positive Control (PC)	<0.200 OD450nm value in well B after blanking >B+0.350 OD450nm in all wells from C to G after blanking

If the results of the test match the requirements stated above, proceed to the next section.
In case data above do not match the correct values, before repeating the test check carefully the expiration date of the kit, the performances of the instruments used for the assay , the procedure of distribution of controls and samples and operate as follows:

Problem	Check
Blank well > 0.100 OD450nm	1. that the Chromogen/Sustrate solution has not got contaminated during the assay
Negative Control (NC) >0.200 OD450nm value in wells from B to G After blanking	1. that the washing procedure and the washer settings are as validated in the pre qualification study; 2. that the proper washing solution has been used and the washer has been primed with it before use; 3. that no mistake has been done in the assay procedure (dispensation of positive control instead of negative control; 4. that no contamination of the negative control or of their wells has occurred due to positive samples, to spills or to the enzyme conjugate; 5. that micropipettes haven't got contaminated with positive samples or with the enzyme conjugate 6. that the washer needles are not blocked or partially obstructed.
Positive Control >0.200 OD450nm value in well B after blanking <B+0.350 OD450nm in any of the wells from C to G after blanking	1. that the procedure has been correctly executed; 2. that no mistake has been done in the distribution of controls (dispensation of negative control instead of positive control. 3. that the washing procedure and the washer settings are as validated in the pre qualification study; 4. that no external contamination of the positive control has occurred.
H well < 0.750	1. that the procedure has been correctly executed; 2. that no mistake has been done in the distribution of the Enzyme Conjugate 3. that the washing procedure and the washer settings are as validated in the pre qualification study; 4. that no external contamination of the Enzyme Conjugate has occurred.

Should these problems happen, after checking, report any residual problem to the supervisor for further actions.

Important note:
The analysis must be done proceeding as the reading step described in the section M, point 6.

P. INTERPRETATION OF RESULTS

If the validity of the assay is confirmed, examine the following table for the interpretation of results.

Classification	Results
Negative	Wells from C to G with OD450nm/620-630nm < B + 0.350
False Positive	B well with OD450nm/620-630nm > 0.350
Indeterminate	One well from C to G with OD450nm/620-630nm > B + 0.350. B well must have OD450nm/620-630nm < 0.350
Positive	At least 2 wells from C to G with OD450nm/620-630nm > B + 0.350. B well must have OD450nm/620-630nm < 0.350

Important notes:

1. *Interpretation of results should be done under the supervision of the responsible of the laboratory to reduce the risk of judgment errors and misinterpretations.*
2. *When test results are transmitted from the laboratory to an informatics centre, attention has to be done to avoid erroneous data transfer.*
3. *Diagnosis of HCV infection has to be done and released to the patient only by a qualified medical doctor.*

Q. PERFORMANCES

Evaluation of Performances has been conducted in accordance to what reported in the Common Technical Specifications or CTS (art. 5, Chapter 3 of IVD Directive 98/79/EC) for Confirmatory/Supplementary assays for anti HCV determination.

1. LIMIT OF DETECTION

In absence of a defined international standard (none is indicated in the product-specific CTS) Dia.Pro Diagnostic BioProbes s.r.l. has used working standard supplied by NIBSC, UK.

The S/Co ratio obtained on the British Working Standard, NIBSC, code 99/588-003-WI, for three lots of CCONF.CE, are reported in the following table:

NIBSC working standard

CCONF.CE Lot ID	S / Co				
	Core	NS3	NS4	NS5	Env
0904	**2.6**	**2.8**	0.8	0.3	0.1
1104	**2.9**	**2.6**	0.6	0.2	0.1
0105	**3.1**	**2.7**	0.7	0.4	0.2

2. DIAGNOSTIC SPECIFICITY AND SENSITIVITY

The diagnostic sensitivity and specificity of the device was evaluated in the clinical trials conducted at the Hospital Universitario "La Fè" – Servicio de Microbiologia, Valencia, Spain, and internally.

2.1 Diagnostic specificity:

It is defined as the probability of the assay of scoring negative in the absence of specific analyte.

200 negative random blood donors, including 1st donations, and 200 patients hospitalized for non HCV pathologies, including pregnant women, were tested; a specificity of 100% was found. In addition, 65 potentially interfering specimens coming from related pathologies or infections, were examined and a specificity of 100% was observed.

No interferences were seen with different methods of sample preparation (plasma & sera).

2.2 Diagnostic Sensitivity

It is defined as the probability of the assay of scoring positive in the presence of specific analyte.

The diagnostic sensitivity has been assessed in the external Performance Evaluation on a total number of 300 specimens reflecting different stages of antibody pattern and genotypes.

298 samples were detected positive and 2 samples were detected indeterminate.

The device showed correct identification of samples as positive or indeterminate; none turned out to be negative, matching in full what required by CTS.

In addition, 106 samples of the most common genotypes of HCV were examined internally with a result of 100% sensitivity.

The low titer panel provided by EFS, France, code Ac HCV lot # 01/08.03.22C/01/A, was tested. The following results were obtained:

Sample	Result	Expected
HCV 1	positive	positive
HCV 2	positive	positive
HCV 3	positive	positive
HCV 4	positive	positive
HCV 5	positive	positive
HCV 6 (matrix)	negative	negative

Seroconversion panels provided by BBI, USA, were studied internally and externally as well with reference to a licensed device produced in US (whose data are extracted from BBI's data sheets). The results are reported in the following table:

	DiaPro Kit		RIBA 3	
Panel	**Ind**	**Pos**	**Ind**	**Pos**
PHV 920	04/10	05/10	04/10	05/10
PHV 901	///	03/11	03/11	04/11
PHV 904	05/07	///	05/07	///
PHV 905	04/09	07/09	04/09	07/09
PHV 906	01/07	04/07	01/07	03/07
PHV 907	04/07	06/07	04/07	06/07
PHV 908	07/13	///	08/13	///
PHV 909	02/03	///	02/03	///
PHV 910	///	03/05	///	03/05
PHV 911	///	03/05	///	03/05
PHV 912	03/03	///	03/03	///
PHV 913	03/04	///	03/04	///
PHV 914	05/09	08/09	05/09	08/09
PHV 915	03/04	///	02/04	///
PHV 916	///	07/08	///	07/08
PHV 917	///	05/10	///	05/10
PHV 918	07/08	///	07/08	08/08
PHV 919	///	05/07	///	05/07
PHV 920	04/10	05/10	04/10	05/10

Note: Results are expressed as the number of first reactive sample out of the total number of specimens.

Ten additional seroconversion panels were tested and compared with Ortho 3.0.

Results are reported in the table below:

	DiaPro	Kit	Ref.
Panel	**Ind**	**Pos**	**Pos**
MR1	///	02/05	02/05
MR2	///	02/05	02/05
MR3	///	02/05	02/05
MR4	///	02/05	04/05
MRext1	///	05/07	05/07
MRext2	///	04/04	04/04
MRext3	///	06/07	06/07
MRext4	///	04/05	04/05
MRext5	///	03/04	03/04
MRext6	///	03/04	03/04

Note: Results are expressed as the number of first reactive sample out of the total number of specimens.

In order to further evaluate the diagnostic sensitivity of the Product, the performance panel code WWHV 301 supplied by BBI, USA, has been tested. The following table reports the results obtained for the confirmation assay and the S/Co values of two reference ELISA kits for the determination of HCV Ab (Dia.Pro srl and Ortho), comparing to Riba 3 for HCV confirmation.

BBI Panel WWHV 301

Member N°	CCONF.CE result	CVAB.CE S/Co	HCV 3 S/Co	RIBA 3.0 result
1	**pos**	**> 10.8**	**> 5.0**	**pos**
2	**pos**	**> 10.8**	**> 5.0**	**pos**
3	**pos**	**> 10.8**	**> 5.0**	**pos**
4	**pos**	**10.3**	**> 5.0**	**pos**
5	neg	0.2	0.0	neg
6	**pos**	**11.2**	**> 5.0**	**pos**
7	**pos**	**4.2**	**> 5.0**	**pos**
8	neg	0.3	0.1	neg
9	**pos**	**8.1**	**> 5.0**	**pos**
10	**pos**	**10.8**	**> 5.0**	**pos**
11	**pos**	**3.1**	**> 5.0**	**pos**
12	**pos**	**10.8**	**> 5.0**	**pos**
13	**pos**	**10.8**	**> 5.0**	**pos**
14	**pos**	**10.8**	**> 5.0**	**pos**
15	**pos**	**8.3**	**> 5.0**	**pos**
16	**pos**	**5.8**	**> 5.0**	**pos**
17	ind	**9.5**	**> 5.0**	ind
18	**pos**	**10.8**	**> 5.0**	**pos**
19	**pos**	**1.6**	**> 5.0**	**pos**
20	**pos**	**10.5**	**> 5.0**	**pos**

In addition, CCONF.CE lot # 1104 has been used on the HCV Panel supplied by SFTS, France, to verify whether the device is capable to detect antibodies to all the known HCV genotypes.

Sample ID	Geno type	Reactivity	CCONF.CE result
01	2a/2c	2	**POS**
02	1b	3	**POS**
03	2a/2c	3	**POS**
04	2a/2c	2	**POS**
05	1b	2	**POS**
06	1	2	**POS**
07	-	2/PCR -	***IND***
08	1b	2	**POS**
09	3	2	**POS**
10	3a	2	**POS**
11	-	Core/PCR -	***IND***
12	1a/1b	NS3/PCR +	***IND***
13	-	Core/PCR -	***IND***
14	3a	Core/PCR +	**POS**
15	-	2/PCR -	**POS**
16	-	2/PCR -	**POS**
17	1b	2	**POS**
18	-	NS5/PCR -	NEG
19	5a	3	**POS**
20	3a	Core/PCR +	***IND***
21	1a	2	**POS**
22	-	NS3/PCR -	NEG
23	1b	3	**POS**
24	2a	3	**POS**
25	1a	NS3/PCR +	***IND***
26	1b	3	**POS**
27	-	2/PCR -	**POS**
28	1°	3	**POS**
29	2a/2c	3	**POS**
30	3	Core/PCR +	**POS**
31	-	Neg	NEG
32	1b	3	**POS**
33	-	Neg	NEG
34	-	Neg	NEG
35	1a	NS3/PCR +	***IND***
36	+	# 1 at 1:200	***IND***
37	+	# 2 at 1:400	***IND***
38	1b	3	**POS**
39	1b	2	**POS**
40	-	Core/PCR -	***IND***
41	-	NS3/PCR -	***IND***
42	-	NS3/PCR -	NEG
43	4	3	**POS**
44	-	2/PCR -	**POS**
45	-	2/PCR -	NEG
46	-	2/PCR -	***IND***
47	-	2/PCR -	***IND***
48	-	3/PCR -	**POS**
49	-	Core/PCR-	**POS**
50	-	2/PCR -	***IND***

2.3 Precision

The negative control and the positive control were used to verify this parameter, by testing 12 replicates of the same sample on three lots of product.
Results of one lot are reported below.

Negative control

Values	O.D mean	CV%
blank well)	0,001	0,0
Casein	0,012	15,7
CORE	0,031	18,8
NS3	0,036	16,3
NS4	0,146	11,3
NS5	0,039	11,8
ENV	0,039	12,4

Positive control

Values	O.D mean	CV%
blank well)	0,001	0,0
Casein	0,041	11,4
CORE	3,973	0,6
NS3	3,981	0,0
NS4	3,981	0,0
NS5	2,646	3,6
ENV	1,067	8,0

R. LIMITATIONS

No limitation has been observed from the Performance Evaluation.
Please refer anyway to the Section G for samples and sampling methods.

Important note:
The performance data have been obtained proceeding as the reading step described in the section M, point 6.

REFERENCES

1. CDC. Public Health Service inter-agency guidelines for screening donors of blood, plasma, organs, tissues, and semen for evidence of hepatitis B and hepatitis C. MMWR 1991;40(No. RR-4):1-17.
2. Alter MJ. Epidemiology of hepatitis C. Hepatology 1997;26:62S-5S.
3. McQuillan GM, Alter MJ, Moyer LA, Lambert SB, Margolis HS. A population based serologic study of hepatitis C virus infection in the United States. In Rizzetto M, Purcell RH, Gerin JL, Verme G, eds. Viral Hepatitis and Liver Disease, Edizioni Minerva Medica, Turin, 1997, 267-70.
4. Dufour MC. Chronic liver disease and cirrhosis. In Everhart JE, ed. Digestive diseases in the United States: epidemiology and impact. US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Washington, DC: US Government Printing Office, 1994; NIH publication no. 94-1447, 615-45.
5. Alter MJ, Hadler SC, Judson FN, et al. Risk factors for acute non-A, non-B hepatitis in the United States and association with hepatitis C virus infection. JAMA 1990;264:2231-35.
6. Alter HJ, Holland PV, Purcell RH, et al. Posttransfusion hepatitis after exclusion of commercial and hepatitis-B antigen-positive donors. Ann Intern Med 1972;77:691-9.
7. Alter HJ, Purcell RH, Holland PV, Feinstone SM, Morrow AG, Moritsugu Y. Clinical and serological analysis of transfusion-associated hepatitis. Lancet 1975;2:838-41.
8. Seeff LB, Wright EC, Zimmerman HJ, McCollum RW, VA Cooperative Studies Group. VA cooperative study of post-transfusion hepatitis and responsible risk factors. Am J Med Sci 1975;270:355-62.
9. Feinstone SM, Kapikian AZ, Purcell RH, Alter HJ, Holland PV. Transfusion-associated hepatitis not due to viral hepatitis type A or B. N Engl J Med 1975;292:767-70.
10. Choo QL, Kuo G, Weiner AJ, Overby LR, Bradley DW. Isolation of a cDNA clone derived from a blood-borne non-A, non-B viral hepatitis genome. Science 1989;244:359-62.

11. Kuo G, Choo QL, Alter HJ, et al. An assay for circulating antibodies to a major etiologic virus of human non-A, non-B hepatitis. Science 1989;244:362-4.
12. Alter HJ, Purcell RH, Shih JW, et al. Detection of antibody to hepatitis C virus in prospectively followed transfusion recipients with acute and chronic non-A, non-B hepatitis. N Engl J Med 1989;321:1494-1500.
13. Aach RD, Stevens CE, Hollinger FB, et al. Hepatitis C virus infection in post-transfusion hepatitis. An analysis with first- and second-generation assays. N Engl J Med 1991;325:1325-9.
14. Alter MJ, Margolis HS, Krawczynski K, Judson, FN, Mares A, Alexander WJ, et al. The natural history of community-acquired hepatitis C in the United States. N Engl J Med 1992;327:1899-1905.
15. Alter, MJ. Epidemiology of hepatitis C in the west. Semin Liver Dis 1995;15:5-14.
16. Donahue JG, Nelson KE, Muåoz A, et al. Antibody to hepatitis C virus among cardiac surgery patients, homosexual men, and intravenous drug users in Baltimore, Maryland. Am J Epidemiol 1991;134:1206-11.
17. Zeldis JB, Jain S, Kuramoto IK, et al. Seroepidemiology of viral infections among intravenous drug users in northern California. West J Med 1992;156:30-5.
18. Fingerhood MI, Jasinski DR, Sullivan JT. Prevalence of hepatitis C in a chemically dependent population. Arch Intern Med 1993;153:2025-30.
19. Garfein RS, Vlahov D, Galai N, Doherty, MC, Nelson, KE. Viral infections in short-term injection drug users: the prevalence of the hepatitis C, hepatitis B, human immunodeficiency, and human T-lymphotropic viruses. Am J Pub Health 1996;86:655-61.
20. Brettler DB, Alter HJ, Deinstag JL, Forsberg AD, Levine PH. Prevalence of hepatitis C virus antibody in a cohort of hemophilia patients. Blood 1990;76:254-6.
21. Troisi CL, Hollinger FB, Hoots WK, et al. A multicenter study of viral hepatitis in a United States hemophilic population. Blood 1993;81:412-8.
22. Kumar A, Kulkarni R, Murray DL, et al. Serologic markers of viral hepatitis A, B, C, and D in patients with hemophilia. J Med Virology 1993;41:205-9.
23. Tokars JI, Miller ER, Alter MJ, Arduino MJ. National surveillance of dialysis associated diseases in the United States, 1995. ASAIO Journal 1998;44:98-107.
24. Osmond DH, Charlebois E, Sheppard HW, et al. Comparison of risk factors for hepatitis C and hepatitis B virus infection in homosexual men. J Infect Dis 1993;167:66-71.
25. Weinstock HS, Bolan G, Reingold AL, Polish LB: Hepatitis C virus infection among patients attending a clinic for sexually transmitted diseases. JAMA 1993;269:392-4.
26. Thomas DL, Cannon RO, Shapiro CN, Hook EW III, Alter MJ. Hepatitis C, hepatitis B, and human immunodeficiency virus infections among non-intravenous drug-using patients attending clinics for sexually transmitted diseases. J Infect Dis 1994;169:990-5.
27. Buchbinder SP, Katz MH, Hessol NA, Liu J, O'Malley PM, Alter, MJ. Hepatitis C virus infection in sexually active homosexual men. J Infect 1994;29:263-9.
28. Thomas DL, Zenilman JM, Alter HJ, et al. Sexual transmission of hepatitis C virus among patients attending sexually transmitted diseases clinics in Baltimore--an analysis of 309 sex partnerships. J Infect Dis 1995;171:768-75.

All the IVD Products manufactured by the company are under the control of a certified Quality Management System approved by an EC Notified Body. Each lot is submitted to a quality control and released into the market only if conforming with the EC technical specifications and acceptance criteria.

Manufacturer:
Dia.Pro Diagnostic Bioprobes S.r.l.
Via G. Carducci n° 27 – Sesto San Giovanni (MI) – Italy

CE
0318

HCV Ab

Confirmation

Ensayo immunoenzimático para la confirmación de Ac. HCV positivos en suero o plasma humano

- solo para uso diagnóstico “in vitro”-

DIA.PRO
Diagnostic Bioprobes Srl
Via G. Carducci n° 27
20099 Sesto San Giovanni
(Milano) - Italy
Phone +39 02 27007161
Fax +39 02 44386771
e-mail: info@diapro.it

Código CCONF.CE
12 pruebas

HCV Ab
Confirmation

A. INTRODUCCIÓN

El virus de la Hepatitis C o VHC es un virus RNA encapsulado, recientemente clasificado dentro de la familia de los Flaviviridae.

El genoma codifica componentes estructurales, una proteína de la nucleocápside y dos glicoproteínas de la envoltura, así como constituyentes funcionales involucrados en la replicación del virus y en la síntesis de las proteínas. La región que codifica para la nucleocápside parece estar altamente conservada entre los aislamientos obtenidos en todo el mundo.

El VHC aparece en el 95% de los infectados de hepatitis por transfusión de sangre y en el 50% de las hepatitis esporádicas NANB. El VHC comúnmente origina hepatitis asintomática, en la mayoría de los casos se vuelve crónica y a veces desarrolla formas graves de enfermedad, como hepatocarcinomas.

La determinación de anticuerpos frente al VHC se ha convertido en un método imprescindible de cribado de sangre para prevenir una hepatitis post-transfusional. Este método también se utiliza para controlar a personas de riesgo y a pacientes que siguen un tratamiento con interferón.

La confirmación de los resultados positivos es muy recomendable en los protocolos de los laboratorios antes de considerar al paciente verdaderamente positivo para los anticuerpos del VHC.

B. PRINCIPIOS DEL ENSAYO

Las microplacas están recubiertas de tiras con antígenos sintéticos específicos del VHC correspondientes a las regiones "*core"* y "*ns"* y "env" que codifican para determinantes antigénicos inmunodominantes y conservados (Core, NS3, NS4, NS5 y Env).

Los antígenos que recubren los pocillos que componen las tiras de la microplaca son los siguientes:

Posición	Antígeno	Composición
A	Ninguno	Pocillo para el blanco
B	Caseína	Control negativo interno
C	Core	Antígeno sintético específico
D	NS3	Antígeno sintético específico
E	NS4	Antígenos sintéticos específicos
F	NS5	Antígeno sintético específico
G	Env	Antígenos sintéticos específicos
H	hIgG	Control positivo interno

La tira se trata en primer lugar con la muestra que resulta ser positiva en el ensayo de cribado. Los anticuerpos anti VHC si están presentes son capturados por los antígenos específicos.

Después del lavado, que elimina el resto de los componentes de la muestra, en la 2da incubación se detectan los anticuerpos anti VHC unidos, mediante la adición de anticuerpos anti-IgG/IgM humanos, marcados con peroxidasa (HPR).

El enzima capturado en la fase sólida, combinado con la mezcla substrato/cromógeno, genera una señal óptica proporcional a la cantidad de anticuerpos anti-VHC presentes en la muestra.

Se incluyen controles para proporcionar una comprobación interna del sistema analítico.

La muestra se confirma positiva si al menos hay dos reactividades específicas.

C. CONDICIONES DE LA PRUEBA Y AVISOS

1. Todos los reactivos incluidos en el equipo son exclusivamente para diagnóstico "in vitro".

2. No usar el equipo o sus reactivos después de la fecha de caducidad. No mezclar reactivos de diferentes lotes.

3. Los procedimientos deben realizarse cuidadosamente para obtener resultados e interpretaciones clínicas fiables.

4. Dejar que todos los reactivos estén a temperatura ambiente al menos 60 min antes de comenzar la prueba.

5. Evitar la contaminación de los reactivos al extraerlos de los viales. Recomendamos usar pipetas automáticas y con puntas desechables. Cuando se dispensan los reactivos, no tocar las paredes de los pocillos de las microplacas con las puntas, para evitar cualquier tipo de contaminación cruzada.

6. En el procedimiento de lavado, usar solamente la solución de lavado incluida en el equipo y seguir las indicaciones descritas en la sección "INSTRUCCIONES DE LAVADO" de este manual.

7. Asegurarse de que la solución substrato/cromógeno no entre en contacto con agentes oxidantes o superficies metálicas; evitar la exposición a la luz intensa durante la fase de incubación o durante la preparación del reactivo.

Cuando se prepara la mezcla substrato/cromógeno para la prueba, usar solamente envases plásticos desechables limpios o estériles.

8. Las muestras y materiales potencialmente infecciosos deben ser manipulados con atención ya que podrían transmitir infecciones.

Todos los objetos que entran en contacto directo con las muestras y todos los residuos del ensayo deben ser tratados o eliminados como potencialmente infecciosos. Los mejores procedimientos de inactivación son los tratamientos con autoclave a 121°C durante 30 minutos o con hipoclorito de sodio a una concentración final del 2.5% durante 24 horas. Este último método puede utilizarse para tratar los desechos líquidos tras neutralizarlos con NaOH.

9. Evitar que los líquidos entren en contacto con la piel y las mucosas. Usar siempre guantes protectores sin talco, gafas de protección y bata de laboratorio, de acuerdo con las normas de seguridad.

D. CONTENIDO DEL EQUIPO

a – Microplaca MICROPLATE

n° 1. 12 tiras x 8 pocillos recubiertos con antígenos VHC sintéticos. Las tiras están contenidas en una bolsa con cierre hermético y un desecante en su interior. Poner las tiras necesarias para la prueba a temperatura ambiente antes del uso, y cerrar bien la bolsa para evitar que se forme humedad en su interior.

b – Conjugado CONJ

n° 1x16ml. Solución tamponada proteica que contiene un anticuerpo específico anti-hIgG y M, marcado con HRP, listo para su uso.

Contiene estabilizantes proteicos, 0.2 mg/ml de sulfato de gentamicina y ProClin 300 0.045%.

c –Solución de Lavado WASHBUF 20X

n° 1x60ml. Solución concentrada 20x para diluir hasta 1200 ml con agua de calidad EIA. Contiene tampón fosfato, Tween 20 y ProClin 300 0.045% como conservantes.

Una vez diluida, la solución de lavado es estable durante una semana a 2-8°C.

d – Cromógeno/substrato SUBS TMB

1x16ml. La solución contiene tetrametil-benzidina (TMB) y peróxido de hidrógeno (H2O2) con activadores y estabilizantes, diluidos en un tampón fosfato/citrato. La solución está lista para su uso.

Advertencia*: Proteger de la luz.*

e – Solución de parada H_2SO_4 O.3 M

n° 1x15ml. Contiene una solución de H2SO4 0.3 M

Atención: Irritante (H315, H319; P280, P302+P352, P332+P313, P305+P351+P338, P337+P313, P362+P363).

f –Control negativo CONTROL -
n° 1x3ml Suero humano no reactivo para anticuerpos anti-VHC. Contiene azida sódica 0.09% y ProClin 300 0.045% como conservantes.
El control negativo está codificado con el color amarillo.

g –Control Positivo CONTROL +
n° 1x3ml Suero humano altamente reactivo para los anticuerpos anti-VHC. Contiene azida sódica 0.09% y ProClin 300 0.045% como conservantes. El control positivo está codificado con el color verde.

h –Diluente de muestras DILSPE
n° 1x20ml. Solución proteica para la preparación de muestras. Contiene un detergente, estabilizantes proteicos, azida sódica 0.1% y ProClin 300 0.045%mcomo conservantes.

Nota*: todos los materiales derivados de suero humano han sido probados con resultados negativos para HBsAg y para los anticuerpos anti VIH con equipos aprobados por la FDA . El control positivo se ha inactivado para el VHC. En todo caso, manipular estos componentes como potencialmente infecciosos.*

E. MATERIALES NECESARIOS NO SUMINISTRADOS
1. Micropipetas calibradas de volumen variable y puntas de plástico desechables.
2. Agua de calidad EIA (bidestilada o desionizada, tratada con carbón para eliminar oxidantes químicos usados como desinfectantes).
3. *Timer* con un rango de 60 minutos como mínimo.
4. Papel absorbente.
5. Incubador termostático de microplacas ELISA, calibrado capaz de proporcionar una temperatura de 37ºC.
6. Lector calibrado de micropocillos ELISA con filtros de 450nm (lectura) y de 620-630 nm (blanco).
7. Lavador calibrado de microplacas ELISA.
8. Vórtex o similar.

F. ADVERTENCIAS Y PRECAUCIONES
1.El equipo debe ser usado por personal técnico adecuadamente entrenado, bajo la supervisión de un doctor responsable del laboratorio.
2.Cuando el equipo se utiliza para la confirmación de resultados positivos obtenidos del cribado en unidades de sangre y componentes sanguíneos, debe utilizarse en un laboratorio certificado y homologado por la autoridad nacional competente (Ministerio de Sanidad o entidad similar) para realizar dicho tipo de análisis.
3.Todas las personas encargadas de la realización de las pruebas deben llevar los indumentos protectores adecuados de laboratorio, guantes y gafas. Evitar el uso de objetos cortantes (cuchillas) o punzantes (agujas). El personal debe ser adiestrado en procedimientos de bioseguridad, según ha sido recomendado por el Centro de Control de Enfermedades de Atlanta, Estados Unidos, y publicado por el Instituto Nacional de Salud: "Biosafety in Microbiological and Biomedical Laboratories", ed.1984.
4.Todo el personal involucrado en el manejo de muestras debe estar vacunado contra HBV y HAV, para lo cual existen vacunas disponibles, seguras y eficaces.
5.Se debe controlar el ambiente del laboratorio para evitar la contaminación de los componentes con polvo o agentes microbicos cuando se abran los equipos, así como durante la realización del ensayo. Evitar la exposición del cromógeno/substrato a la luz y las vibraciones de la mesa de trabajo durante el ensayo.
6.Conservar el equipo a temperaturas entre 2-8 ºC, en un refrigerador con temperatura regulada o en cámara fría.
7.No intercambiar componentes de diferentes lotes ni tampoco de diferentes equipos del mismo lote.
8. Comprobar que los reactivos no contengan precipitados ni agregados en el momento del uso. De darse el caso, informar al responsable para realizar el procedimiento pertinente y reemplazar el equipo.
1. Evitar contaminación cruzada entre muestras de suero/ plasma usando puntas desechables y cambiándolas después de cada uso. No reutilizar puntas desechables.
2. Evitar contaminación cruzada entre los reactivos del equipo usando puntas desechables y cambiándolas depués de cada uso. No reutilizar puntas desechables.
9. No usar el producto después de la fecha de caducidad indicada en la etiqueta externa y en las etiquetas internas (viales).
10. Tratar todas las muestras como potencialmente infectivas. Las muestras de suero humano deben ser manipuladas al nivel 2 de bioseguridad, según ha sido recomendado por el Centro de Control de Enfermedades de Atlanta, Estados Unidos y publicado por el Instituto Nacional de Salud: "Biosafety in Microbiological and Biomedical Laboratories", ed.1984.
11. Se recomienda el uso de material plástico desechable para la preparación de las soluciones de lavado y para la transferencia de los reactivos a los diferentes equipos automatizados a fin de evitar contaminaciones cruzadas.
12. Los desechos producidos durante el uso del equipo deben ser eliminados según lo establecido por las directivas nacionales y las leyes relacionadas con el tratamiento de los residuos químicos y biológicos de laboratorio. En particular, los desechos líquidos procedentes del procedimiento de lavado, de restos de controles y muestras deben ser tratados como material potencialmente infeccioso e inactivarse antes de su eliminación. Se recomienda la inactivación con una concentración final de lejía al 10% durante 16 a 18 horas o la inactivación con calor mediante autoclave a 121 ºC durante 20 minutos.
13. En caso de derrame accidental de algún producto, se debe utilizar papel absorbente embebido en lejía y posteriormente en agua. El papel debe eliminarse en contenedores designados para este fin en hospitales y laboratorios.
14. El ácido sulfúrico es irritante. En caso de derrame, se debe lavar la superficie con abundante agua.
15. Otros materiales de desecho generados durante la utilización del equipo (por ejemplo: puntas usadas en la manipulación de las muestras y controles, microplacas usadas) deben ser manipuladas como fuentes potenciales de infección de acuerdo a las directivas nacionales y leyes para el tratamiento de residuos de laboratorio.

G. MUESTRA: PREPARACIÓN Y RECOMENDACIONES
1. Extraer la sangre asépticamente por punción venosa y preparar el suero o plasma según la técnica estándar de los laboratorios de análisis clínico. No se ha detectado que el tratamiento con citrato, EDTA o heparina afecte las muestras.
2. Evitar el uso de conservantes, en particular azida sódica, ya que puede afectar la actividad enzimática del conjugado, generando resultados falsos negativos.
3. Las muestras deben ser identificadas claramente mediante código de barras o nombres, a fin de evitar errores en los resultados. Cuando el equipo se emplea para el cribado de unidades de sangre, se recomienda el uso del código de barras y la lectura electrónica.
4. Las muestras hemolizadas (color rojo) o hiperlipémicas (aspecto lechoso) deben ser descartadas para evitar falsos resultados, al igual que aquellas donde se observe la presencia de precipitados, restos de fibrina o filamentos microbianos.
5. El suero y el plasma pueden conservarse a una temperatura entre +2° y +8°C en tubos de recolección principales hasta cinco días después de la extracción. No congelar tubos de recolección principales. Para periodos de almacenamiento más prolongados, las muestras de plasma o suero, retiradas cuidadosamente del tubo de extracción principal, pueden almacenarse congeladas a –20°C durante al menos 12 meses. Evitar

congelar/descongelar cada muestra más de una vez, ya que pueden generarse partículas que podrían afectar al resultado de la prueba.

6. Si hay presencia de agregados, la muestra se puede aclarar mediante centrifugación a 2000 rpm durante 20 minutos o por filtración con un filtro de 0.2-0.8 micras.

H. PREPARACIÓN DE LOS COMPONENTES Y PRECAUCIONES

En un estudio realizado con un equipo abierto no se ha detectado pérdida de actividad relevante utilizándolo hasta 6 veces y durante un período de hasta 6 meses.

Microplacas:
Dejar la microplaca a temperatura ambiente (aprox. 1 hora) antes de abrir el envase. Compruebe que el desecante no esté de color verde oscuro, lo que indicaría un defecto de almacenamiento.
De ser así, llame al servicio de atención al cliente de Dia.Pro.
Las tiras no utilizadas deben guardarse herméticamente cerradas en la bolsa de aluminio con el desecante a 2-8ºC. Cuando se abre por primera vez, las tiras sobrantes se mantienen estables hasta que el indicador de humedad dentro de la bolsa del desecante cambia de amarillo a verde.

Control negativo:
Listo para el uso. Mezclar bien con un vórtex antes de usar.

Control positivo:
Listo para el uso. Mezclar bien con un vórtex antes de usar. Manipule este componente como potencialmente infeccioso, aunque el VHC, si está presente en el control, haya sido inactivado químicamente.

Solución de lavado concentrada:
Todo el contenido de la solución concentrada 20x debe diluirse con agua de calidad EIA hasta 1200 ml y mezclarse suavemente antes de usarse.
Ya que pueden existir algunos cristales de sal en el vial, debe prestarse atención a que todo el contenido quede disuelto al preparar la solución.
Durante la preparación hay que evitar la formación de espuma y burbujas, que podrían reducir la eficiencia de lavado.
Nota: *Una vez diluida, la solución es estable por una semana a temperaturas entre +2 y 8ºC.*

Conjugado:
Listo para el uso. Mezclar bien con un vórtex antes de usar. Evitar posible contaminación del líquido con oxidantes químicos, polvo o microbios. En caso de que deba transferirse el reactivo, usar contenedores de plástico, estériles y desechables, siempre que sea posible.

Cromógeno/substrato:
Listo para el uso. Mezclar bien con un vórtex antes de usar. Evitar posible contaminación del líquido con oxidantes químicos, polvo o microbios.
Evitar la exposición a la luz, agentes oxidantes y superficies metálicas.
En caso de que deba transferirse el reactivo, usar contenedores de plástico, estériles y desechables, siempre que sea posible.

Ácido sulfúrico:
Listo para el uso. Mezclar bien con un vórtex antes de usar.
Atención: Irritante (H315, H319; P280, P302+P352, P332+P313, P305+P351+P338, P337+P313, P362+P363).

Leyenda:

Indicación de peligro, **Frases H**
H315 – Provoca irritación cutánea.
H319 – Provoca irritación ocular grave.

Consejo de prudencia, **Frases P**
P280 – Llevar guantes/prendas/gafas/máscara de protección.
P302 + P352 – EN CASO DE CONTACTO CON LA PIEL: Lavar con agua y jabón abundantes.
P332 + P313 – En caso de irritación cutánea: Consultar a un médico.
P305 + P351 + P338 – EN CASO DE CONTACTO CON LOS OJOS: Aclarar cuidadosamente con agua durante varios minutos. Quitar las lentes de contacto, si lleva y resulta fácil. Seguir aclarando.

P337 + P313 – Si persiste la irritación ocular: Consultar a un médico.
P362 + P363 – Quitarse las prendas contaminadas y lavarlas antes de volver a usarlas.

Diluente de muestras:
Listo para el uso. Mezclar bien con un vórtex antes de usar.

I. INSTRUMENTOS Y EQUIPAMIENTO UTILIZADOS EN COMBINACIÓN CON EL EQUIPO

1. Las micropipetas deben estar calibradas para dispensar correctamente el volumen requerido en el ensayo y sometidas a una descontaminación periódica de las partes que pudieran entrar accidentalmente en contacto con la muestra (alcohol 70%, lejía 10%, desinfectantes de calidad hospitalaria). Deben además, ser regularmente revisadas para mantener una precisión del 1% y una fiabilidad de +/- 2%. Deben descontaminarse periódicamente los residuos de los componentes del equipo.
2. La incubadora ELISA debe ser ajustada a 37ºC (+/- 0.5ºC de tolerancia) y controlada periódicamente para mantener la temperatura correcta. Pueden emplearse incubadoras secas o baños de agua siempre que estén validados para la incubación de pruebas de ELISA.
3. El **lavador ELISA** es extremadamente importante para el rendimiento global del ensayo. El lavador debe ser validado de forma minuciosa previamente, revisado para comprobar que suministra el volumen de dispensación correcto y enviado regularmente a mantenimiento de acuerdo con las instrucciones de uso del fabricante. En particular, deben lavarse minuciosamente las sales con agua desionizada del lavador al final de la carga de trabajo diaria. Antes del uso, debe suministrarse extensivamente solución de lavado diluida al lavador. Debe enviarse el instrumento semanalmente a descontaminación según se indica en su manual (se recomienda descontaminación con NaOH 0.1 M). Para asegurar que el ensayo se realiza conforme a los rendimientos declarados, basta con 5 ciclos de lavado (aspiración + dispensado de 350 µl/pocillo de solución de lavado + 20 segundos de remojo = 1 ciclo). Si no es posible remojar, añadir un ciclo de lavado adicional. Un ciclo de lavado incorrecto o agujas obstruidas con sal son las principales causas de falsas reacciones positivas.
4. Los tiempos de incubación deben tener un margen de $\pm$5%.
5. El lector de microplaca ELISA debe estar provisto de un filtro de lectura de 450nm y de un segundo filtro de 620-630 nm, obligatorio para reducir interferencias en la lectura. El procedimiento estándar debe contemplar: a) Ancho de banda $\leq$10nm b) Rango de absorbancia de 0 a $\geq$2.0, c) Linealidad $\geq$2.0, reproducibilidad $\geq$1%. El blanco se prueba en el pocillo indicado en la sección "Procedimiento del ensayo". El sistema óptico del lector debe ser calibrado periódicamente para garantizar que se mide la densidad óptica correcta. Periódicamente debe procederse al mantenimiento según las instrucciones del fabricante.
6. El servicio de atención al cliente en Dia.Pro, ofrece apoyo al usuario para calibrar, ajustar e instalar los equipos a usar en combinación con el equipo, con el propósito de asegurar el cumplimiento de los requerimientos descritos. También se ofrece apoyo para la instalación de nuevos instrumentos a usar con el equipo.

L. OPERACIONES Y CONTROLES PREVIOS AL ENSAYO

1. Comprobar la fecha de caducidad indicada en la etiqueta externa del equipo. No usar si ha caducado.
2. Comprobar que los componentes líquidos no están contaminados con partículas ni agregados visibles. Comprobar que el cromógeno/substrato es incoloro o azul pálido, aspirando un pequeño volumen con una pipeta estéril de plástico transparente. Comprobar que no han ocurrido roturas ni derrames de líquido dentro de la caja durante el transporte. Comprobar que la bolsa de aluminio que contiene la microplaca no está perforada ni dañada
3. Diluir totalmente la solución de lavado concentrada 20X, como se ha descrito anteriormente.
4. Dejar los componentes restantes hasta alcanzar la temperatura ambiente (aprox. 1 hora), mezclar luego suavemente en el vórtex todos los reactivos líquidos.
5. Ajustar la incubadora de ELISA a 37ºC y alimentar el lavador de ELISA utilizando la solución de lavado, según las instrucciones del fabricante. Fijar el número de ciclos de lavado de acuerdo según se indica en la sección específica.
6. Comprobar que el lector de ELISA esté encendido al menos 20 minutos antes de realizar la lectura.
7. Comprobar que las micropipetas estén fijadas en el volumen requerido.
8. Asegurarse de que el equipamiento a usar esté en perfecto estado, disponible y listo para el uso.
9. En caso de surgir algún problema, se debe detener el ensayo y avisar al responsable.

M. PROCEDIMIENTO DEL ENSAYO

El ensayo debe realizarse según las instrucciones que siguen a continuación; es importante mantener en todas las muestras el mismo tiempo de incubación.

1 – Dejar el pocillo A1 vacío para el blanco. Diluir 20 µl de muestra que debe ser confirmada con 1 ml de diluente (dilución 1:50).
No diluir los controles (si han sido ya probados) porque ya están prediluidos y listos para el uso.
Después dispensar los controles y/o la muestra diluida para confirmar, cada una en un módulo de tiras según la siguiente tabla:

posición	muestra
A	pocillo blanco
B	**100 µl** control o muestra diluida para confirmar
C	**100 µl** control o muestra diluida para confirmar
D	**100 µl** control o muestra diluida para confirmar
E	**100 µl** control o muestra diluida para confirmar
F	**100 µl** control o muestra diluida para confirmar
G	**100 µl** control o muestra diluida para confirmar
H	**100 µl** control o muestra diluida para confirmar

Cubrir la tira con el sellador e incubar el módulo de tira durante **60 min a +37°C**.

2 – Retirar el sellador adhesivo y lavar el módulo de tira según las instrucciones.

3 – Añadir 100 µl de conjugado en todos los pocillos, excepto el pocillo A1. Incubar durante **60 min a +37°C**.

4- Retirar el sellador adhesivo y lavar la tira según las instrucciones. Añadir 100 µl de la mezcla cromógeno/substrato en todos los pocillos, incluso el A1.

5-Incubar el módulo de tira durante **20 min a temperatura ambiente**, protegido de la luz.
.
6 –Detener la reacción enzimática añadiendo 100 µl de la solución de parada en todos los pocillos, incluso el A1.
Leer el módulo de tira a 450nm y 620-630nm (obligatorio) calibrando el instrumento con el pocillo A1 (blanco).

Notas importantes:

1. *Asegurarse de que no hay impresiones digitales en el fondo de los pocillos antes de leer. Podrían generarse falsos positivos en la lectura.*
2. *La lectura debería hacerse inmediatamente después de añadir la solución de parada y, en cualquier caso, nunca transcurridos más de 20 minutos de su adición. Se podría producir auto oxidación del cromógeno causando un elevado fondo.*

N. ESQUEMA DEL ENSAYO

Método	**Operaciones**
Controles Muestras diluidas 1:50	100 µl 100 µl
1ra incubación	**60 min**
Temperatura	+37°C
Paso de lavado	5 ciclos con 20''de remojo o 6 ciclos sin remojo
Conjugado	100 µl
2da incubación	**60 min**
Temperatura	+37°C
Paso de lavado	5 ciclos con 20''de remojo o 6 ciclos sin remojo
TMB/H2O2	100 µl
3ra incubación	**20 min**
Temperatura	t.a.
Ácido sulfúrico	100 µl
Lectura D.O.	450 nm / 620-630 nm

O. CONTROL DE CALIDAD INTERNO

Se realiza una comprobación en los controles cada vez que se usa el equipo para verificar si los valores de DO450nm/ 620-630nm son los esperados e indicados en la siguiente tabla:

Comprobación	**Requerimientos**
Pocillo blanco	Valor < 0.100 DO450nm
Pocillo H	Valor >0.750 DO450nm después de leer el blanco
Control negativo (CN)	Valor medio <0.200 DO450nm en pocillos de B a G después de leer el blanco
Control positivo (CP)	Valor del pocillo B <0.200 DO450nm después de leer el blanco >B+0.350 DO450nm en todos los pocillos de C a G después de leer el blanco.

Si los resultados del ensayo coinciden con los requerimientos establecidos anteriormente, pase a la siguiente sección.
Si los resultados del ensayo no coinciden con los valores correctos, antes de repetir la prueba compruebe cuidadosamente la fecha de caducidad del equipo, el rendimiento de los instrumentos usados para el ensayo, el procedimiento de distribución de controles y muestras, y haga lo siguiente:

Problema	**Comprobar que**
Pocillo blanco > 0.100 DO450nm	1. la solución cromógeno/substrato no se ha contaminado durante el ensayo
Control negativo (CN) Valor >0.200 DO450nm en pocillos de B a G después de leer el blanco	1. el proceso de lavado y los parámetros del lavador estén validados según los estudios previos de calificación. 2. se ha usado la solución de lavado apropiada y que el lavador ha sido alimentado con la misma antes del uso. 3. no se han cometido errores en el procedimiento (dispensar el control positivo en lugar del negativo). 4. no ha existido contaminación del control negativo o de sus pocillos debido a muestras positivas, a derrames o al

	conjugado. 5. las micropipetas no se han contaminado con muestras positivas ni con el conjugado. 6. las agujas del lavador no estén parcial o totalmente obstruidas.
Control Positivo Valor >0.200 DO450nm en el pocillo B después de leer el blanco <B+0.350 DO450nm en los otros pocillos desde el C al G después de leer el blanco	1. el procedimiento ha sido ejecutado correctamente. 2. no se han cometido errores durante la distribución del control (dispensar el control negativo en lugar del positivo). 3. el proceso de lavado y los parámetros del lavador estén validados según los estudios previos de calificación. 4. no se ha producido contaminación externa del control positivo.
Pocillo H < 0.750	1. el procedimiento ha sido ejecutado correctamente 2. no se han cometido errores en la distribución del conjugado enzimático 3. el proceso de lavado y los parámetros del lavador estén validados según los estudios previos de calificación. 4. no se ha producido contaminación externa del conjugado enzimático.

Si ocurre alguno de los problemas anteriores, después de comprobar, informe al responsable para tomar las medidas pertinentes.

Nota importante:
El análisis debe seguir el paso de lectura descrito en la sección M, punto 6.

P. INTERPRETACIÓN DE LOS RESULTADOS
Si la validez del ensayo se confirma, examinar la siguiente tabla para la interpretación de los resultados .

Clasificación	Resultados
Negativo	Pocillos desde C a G con DO450nm/620-630nm < B + 0.350
Falso positivo	Pocillo B con DO450nm/620-630nm > 0.350
Indeterminado	Uno de los pocillos desde C a la G con DO450nm/620-630nm > B + 0.350. Pocillo B debe tener DO450nm/620-630nm < 0.350
Positivo	Al menos dos pocillos desde C al G con DO450nm/620-630nm > B + 0.350. Pocillo B debe tener DO450nm/620-630nm < 0.350

Notas importantes:
1. *La interpretación de los resultados debe hacerse bajo la supervisión del responsable del laboratorio para reducir el riesgo de errores de juicio y de interpretación.*
2. *Cuando se transmiten los resultados de la prueba, del laboratorio a un centro informático, debe prestarse mucha atención para evitar la transferencia de datos erróneos.*
3. *El diagnóstico de infección con un virus VHC debe ser realizado y comunicado al paciente por un médico cualificado.*

Q. RENDIMIENTO
La evaluación del rendimiento ha sido realizada según lo establecido en las Especificaciones Técnicas Comunes (ETC) (Art. 5, Capítulo 3 de la Directiva IVD 98/79/CE) para ensayos de confirmación/complementarios para la determinación anti-VHC.

1. LIMITE DE DETECCION
En ausencia de un estándar internacional definitivo (ninguno indicado en las ETC específico del producto) Dia.Pro Diagnostic BioProbes s.r.l. ha usado un estándar de trabajo suministrado por NIBSC, REINO UNIDO.
La relación M/Co obtenida en los estándares de trabajo británicos, NIBSC, código 99/588-003-WI, para tres lotes de CCONF.CE, se indican en la siguiente tabla:

NIBSC estándar de trabajo

CCONF.CE ID de lote	M / Co Core	NS3	NS4	NS5	Env
0904	**2.6**	**2.8**	0.8	0.3	0.1
1104	**2.9**	**2.6**	0.6	0.2	0.1
0105	**3.1**	**2.7**	0.7	0.4	0.2

2. ESPECIFICIDAD Y SENSIBILIDAD DIAGNÓSTICA

La sensibilidad y especificidad diagnóstica del equipo ha sido evaluada en los ensayos clínicos llevados a cabo en el Hospital Universitario "La Fe" – Servicio de Microbiología, Valencia, España, e internamente.

2.1 Especificidad diagnóstica:
Se define como la probabilidad del ensayo de detectar negativos en presencia del analito específico.
Se examinaron 200 donantes de sangre negativos aleatorios, incluyendo primeras donaciones y 200 pacientes hospitalizados por patologías no VHC, incluyendo mujeres embarazadas; se encontró una especificidad del 100%. Además, se examinaron 65 muestras que podían interferir potencialmente procedentes de patologías o infecciones relacionadas y se observó una especificidad del 100%.
No se detectaron interferencias con distintos métodos de preparación de muestras (plasma y suero).

2.2 Sensibilidad diagnóstica
Se define como la probabilidad del ensayo de detectar positivos en presencia del analito específico.
La sensibilidad diagnóstica ha sido estimada en la evaluación de rendimiento externa sobre un numero total de 300 muestras que reflejan diferentes fases de patrón de anticuerpos y genotipos. 298 muestras fueron detectadas positivas y 2 muestras indeterminadas.
El sistema demuestra una correcta identificación de las muestras que son positivas o indeterminadas; ninguno ha resultado negativo, respetando así lo exigido por las ETC.
Además, se examinaron internamente 106 muestras de los genotipos más comunes de VHC con un resultado de sensibilidad del 100%.

Se probó el panel de título bajo proporcionado por EFS, Francia, código Ac HCV (Ac VHC), lote n.º 01/08.03.22C/01/A. Se obtuvieron los resultados siguientes:

Muestra	Resultado	Esperado
VHC 1	positivo	positivo
VHC 2	positivo	positivo
VHC 3	positivo	positivo
VHC 4	positivo	positivo
VHC 5	positivo	positivo
VHC 6 (matriz)	negativo	negativo

Se estudiaron internamente y externamente paneles de seroconversión suministrados por BBI, EE.UU., con referencia a un sistema bajo licencia producido en Estados Unidos (cuyos datos están extraídos de las hojas de datos de BBI). Los resultados se indican en la tabla siguiente:

	DiaPro	Equipo	RIBA	3
Panel	**Ind**	**Pos**	**Ind**	**Pos**
PHV 920	04/10	05/10	04/10	05/10
PHV 901	///	03/11	03/11	04/11
PHV 904	05/07	///	05/07	///
PHV 905	04/09	07/09	04/09	07/09
PHV 906	01/07	04/07	01/07	03/07
PHV 907	04/07	06/07	04/07	06/07
PHV 908	07/13	///	08/13	///
PHV 909	02/03	///	02/03	///
PHV 910	///	03/05	///	03/05
PHV 911	///	03/05	///	03/05
PHV 912	03/03	///	03/03	///
PHV 913	03/04	///	03/04	///
PHV 914	05/09	08/09	05/09	08/09
PHV 915	03/04	///	02/04	///
PHV 916	///	07/08	///	07/08
PHV 917	///	05/10	///	05/10
PHV 918	07/08	///	07/08	08/08
PHV 919	///	05/07	///	05/07
PHV 920	04/10	05/10	04/10	05/10

Nota: Los resultados están expresados como el número de la primera muestra reactiva entre el número total de muestras.

Se probaron diez paneles de seroconversión adicionales y se compararon con Ortho 3.0.
Los resultados se indican en la siguiente tabla:

	DiaPro	Equipo	Ref.
Panel	**Ind**	**Pos**	**Pos**
MR1	///	02/05	02/05
MR2	///	02/05	02/05
MR3	///	02/05	02/05
MR4	///	02/05	04/05
MRext1	///	05/07	05/07
MRext2	///	04/04	04/04
MRext3	///	06/07	06/07
MRext4	///	04/05	04/05
MRext5	///	03/04	03/04
MRext6	///	03/04	03/04

Nota: Los resultados están expresados como el número de la primera muestra reactiva entre el número total de muestras.

Para evaluar adicionalmente la sensibilidad diagnóstica del producto, se ha probado el panel de rendimiento con código WWHV 301 suministrado por BBI, EE.UU. En la siguiente tabla se indican los resultados obtenidos para el ensayo de confirmación y los valores M/Co de dos equipos ELISA de referencia para la determinación de anticuerpos de VHC (Dia.Pro srl y Ortho), en comparación con Riba 3 para confirmación de VHC.

BBI Panel WWHV 301

Miembro N°	CCONF.CE resultado	CVAB.CE M/Co	HCV 3 M/Co	RIBA 3.0 resultado
1	**pos**	**> 10.8**	**> 5.0**	**pos**
2	**pos**	**> 10.8**	**> 5.0**	**pos**
3	**pos**	**> 10.8**	**> 5.0**	**pos**
4	**pos**	**10.3**	**> 5.0**	**pos**
5	neg	0.2	0.0	neg
6	**pos**	**11.2**	**> 5.0**	**pos**
7	**pos**	**4.2**	**> 5.0**	**pos**
8	neg	0.3	0.1	neg
9	**pos**	**8.1**	**> 5.0**	**pos**
10	**pos**	**10.8**	**> 5.0**	**pos**
11	**pos**	**3.1**	**> 5.0**	**pos**
12	**pos**	**10.8**	**> 5.0**	**pos**
13	**pos**	**10.8**	**> 5.0**	**pos**
14	**pos**	**10.8**	**> 5.0**	**pos**
15	**pos**	**8.3**	**> 5.0**	**pos**
16	**pos**	**5.8**	**> 5.0**	**pos**
17	ind	**9.5**	**> 5.0**	ind
18	**pos**	**10.8**	**> 5.0**	**pos**
19	**pos**	**1.6**	**> 5.0**	**pos**
20	**pos**	**10.5**	**> 5.0**	**pos**

Además, CCONF.CE lote n. º 1104 se ha utilizado en el panel VHC suministrado por SFTS, Francia, para verificar si el sistema es capaz de detectar anticuerpos frente a todos los genotipos VHC conocidos.

Muestra ID	Genotipo	Reactividad	CCONF.CE resultado
01	2a/2c	2	**POS**
02	1b	3	**POS**
03	2a/2c	3	**POS**
04	2a/2c	2	**POS**
05	1b	2	**POS**
06	1	2	**POS**
07	-	2/PCR -	***IND***
08	1b	2	**POS**
09	3	2	**POS**
10	3a	2	**POS**
11	-	Core/PCR -	***IND***
12	1a/1b	NS3/PCR +	***IND***
13	-	Core/PCR -	***IND***
14	3a	Core/PCR +	**POS**
15	-	2/PCR -	**POS**
16	-	2/PCR -	**POS**
17	1b	2	**POS**
18	-	NS5/PCR -	NEG
19	5a	3	**POS**
20	3a	Core/PCR +	***IND***
21	1a	2	**POS**
22	-	NS3/PCR -	NEG
23	1b	3	**POS**
24	2a	3	**POS**
25	1a	NS3/PCR +	***IND***
26	1b	3	**POS**
27	-	2/PCR -	**POS**
28	1°	3	**POS**
29	2a/2c	3	**POS**
30	3	Core/PCR +	**POS**
31	-	Neg	NEG
32	1b	3	**POS**
33	-	Neg	NEG
34	-	Neg	NEG
35	1a	NS3/PCR +	***IND***
36	+	# 1 at 1:200	***IND***
37	+	# 2 at 1:400	***IND***
38	1b	3	**POS**
39	1b	2	**POS**
40	-	Core/PCR -	***IND***
41	-	NS3/PCR -	***IND***
42	-	NS3/PCR -	NEG
43	4	3	**POS**
44	-	2/PCR -	**POS**
45	-	2/PCR -	NEG
46	-	2/PCR -	***IND***
47	-	2/PCR -	***IND***
48	-	3/PCR -	**POS**
49	-	Core/PCR-	**POS**
50	-	2/PCR -	***IND***

2.3 Precisión

El control negativo y el control positivo se utilizaron para verificar este parámetro, probando 12 réplicas de la misma muestra en tres lotes de producto.
A continuación se indican los resultados de un lote.

Control negativo

Valores	D.O. media	CV%
Pocillo blanco	0,001	0,0
Caseína	0,012	15,7
CORE	0,031	18,8
NS3	0,036	16,3
NS4	0,146	11,3
NS5	0,039	11,8
ENV	0,039	12,4

Control positivo

Valores	D.O. media	CV%
Pocillo blanco	0,001	0,0
Caseína	0,041	11,4
CORE	3,973	0,6
NS3	3,981	0,0
NS4	3,981	0,0
NS5	2,646	3,6
ENV	1,067	8,0

Nota importante:
Los datos de rendimiento se obtuvieron siguiendo el paso de lectura descrito en la sección M, punto 6.

R. LIMITACIONES
No se ha observado ninguna limitación de la evaluación de rendimiento.
Consulte la sección G para información de muestras y métodos de muestreo.

BIBLIOGRAFIA

1. CDC. Public Health Service inter-agency guidelines for screening donors of blood, plasma, organs, tissues, and semen for evidence of hepatitis B and hepatitis C. MMWR 1991;40(No. RR-4):1-17.
2. Alter MJ. Epidemiology of hepatitis C. Hepatology 1997;26:62S-5S.
3. McQuillan GM, Alter MJ, Moyer LA, Lambert SB, Margolis HS. A population based serologic study of hepatitis C virus infection in the United States. In Rizzetto M, Purcell RH, Gerin JL, Verme G, eds. Viral Hepatitis and Liver Disease, Edizioni Minerva Medica, Turin, 1997, 267-70.
4. Dufour MC. Chronic liver disease and cirrhosis. In Everhart JE, ed. Digestive diseases in the United States: epidemiology and impact. US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Washington, DC: US Government Printing Office, 1994; NIH publication no. 94-1447, 615-45.
5. Alter MJ, Hadler SC, Judson FN, et al. Risk factors for acute non-A, non-B hepatitis in the United States and association with hepatitis C virus infection. JAMA 1990;264:2231-35.
6. Alter HJ, Holland PV, Purcell RH, et al. Posttransfusion hepatitis after exclusion of commercial and hepatitis-B antigen-positivo donors. Ann Intern Med 1972;77:691-9.
7. Alter HJ, Purcell RH, Holland PV, Feinstone SM, Morrow AG, Moritsugu Y. Clinical and serological analysis of transfusion-associated hepatitis. Lancet 1975;2:838-41.
8. Seeff LB, Wright EC, Zimmerman HJ, McCollum RW, VA Cooperative Studies Group. VA cooperative study of post-transfusion hepatitis and responsible risk factors. Am J Med Sci 1975;270:355-62.
9. Feinstone SM, Kapikian AZ, Purcell RH, Alter HJ, Holland PV. Transfusion-associated hepatitis not due to viral hepatitis type A or B. N Engl J Med 1975;292:767-70.
10. Choo QL, Kuo G, Weiner AJ, Overby LR, Bradley DW. Isolation of a cDNA clone derived from a blood-borne non-A, non-B viral hepatitis genome. Science 1989;244:359-62.
11. Kuo G, Choo QL, Alter HJ, et al. An assay for circulating antibodies to a major etiologic virus of human non-A, non-B hepatitis. Science 1989;244:362-4.
12. Alter HJ, Purcell RH, Shih JW, et al. Detection of antibody to hepatitis C virus in prospectively followed transfusion recipients with acute and chronic non-A, non-B hepatitis. N Engl J Med 1989;321:1494-1500.
13. Aach RD, Stevens CE, Hollinger FB, et al. Hepatitis C virus infection in post-transfusion hepatitis. An analysis with first- and second-generation assays. N Engl J Med 1991;325:1325-9.
14. Alter MJ, Margolis HS, Krawczynski K, Judson, FN, Mares A, Alexander WJ, et al. The natural history of community-acquired hepatitis C in the United States. N Engl J Med 1992;327:1899-1905.
15. Alter, MJ. Epidemiology of hepatitis C in the west. Semin Liver Dis 1995;15:5-14.
16. Donahue JG, Nelson KE, Muåoz A, et al. Antibody to hepatitis C virus among cardiac surgery patients, homosexual men, and intravenous drug users in Baltimore, Maryland. Am J Epidemiol 1991;134:1206-11.
17. Zeldis JB, Jain S, Kuramoto IK, et al. Seroepidemiology of viral infections among intravenous drug users in northern California. West J Med 1992;156:30-5.
18. Fingerhood MI, Jasinski DR, Sullivan JT. Prevalence of hepatitis C in a chemically dependent population. Arch Intern Med 1993;153:2025-30.
19. Garfein RS, Vlahov D, Galai N, Doherty, MC, Nelson, KE. Viral infections in short-term injection drug users: the prevalence of the hepatitis C, hepatitis B, human immunodeficiency, and human T-lymphotropic viruses. Am J Pub Health 1996;86:655-61.
20. Brettler DB, Alter HJ, Deinstag JL, Forsberg AD, Levine PH. Prevalence of hepatitis C virus antibody in a cohort of hemophilia patients. Blood 1990;76:254-6.
21. Troisi CL, Hollinger FB, Hoots WK, et al. A multicenter study of viral hepatitis in a United States hemophilic population. Blood 1993;81:412-8.
22. Kumar A, Kulkarni R, Murray DL, et al. Serologic markers of viral hepatitis A, B, C, and D in patients with hemophilia. J Med Virology 1993;41:205-9.
23. Tokars JI, Miller ER, Alter MJ, Arduino MJ. National surveillance of dialysis associated diseases in the United States, 1995. ASAIO Journal 1998;44:98-107.
24. Osmond DH, Charlebois E, Sheppard HW, et al. Comparison of risk factors for hepatitis C and hepatitis B virus infection in homosexual men. J Infect Dis 1993;167:66-71.
25. Weinstock HS, Bolan G, Reingold AL, Polish LB: Hepatitis C virus infection among patients attending a clinic for sexually transmitted diseases. JAMA 1993;269:392-4.
26. Thomas DL, Cannon RO, Shapiro CN, Hook EW III, Alter MJ. Hepatitis C, hepatitis B, and human immunodeficiency virus infections among non-intravenous drug-using patients attending clinics for sexually transmitted diseases. J Infect Dis 1994;169:990-5.
27. Buchbinder SP, Katz MH, Hessol NA, Liu J, O'Malley PM, Alter, MJ. Hepatitis C virus infection in sexually active homosexual men. J Infect 1994;29:263-9.
28. Thomas DL, Zenilman JM, Alter HJ, et al. Sexual transmission of hepatitis C virus among patients attending sexually transmitted diseases clinics in Baltimore--an analysis of 309 sex partnerships. J Infect Dis 1995;171:768-75.

Todos los productos de diagnóstico in vitro fabricados por la empresa son controlados por un sistema certificado de control de calidad aprobado por un organismo notificado para el marcado CE. Cada lote se somete a un control de calidad y se libera al mercado únicamente si se ajusta a las especificaciones técnicas y criterios de aceptación de la CE.

Fabricante:
Dia.Pro Diagnostic Bioprobes S.r.l.
Via G. Carducci n° 27 – Sesto San Giovanni (Milán) – Italia

CE
0318

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Testosterone Test System
Product Code: 3725-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Total Testosterone Concentration in Human Serum or Plasma by a Microplate Enzyme Immunoassay, Colorimetric

2.0 SUMMARY AND EXPLANATION OF THE TEST

Testosterone, (17β-Hydroxy-4-androstene-3-one), a C_{19} steroid, is the most potent naturally secreted androgen.[1] In normal post pubertal males, testosterone is secreted primarily by the testes with only a small amount derived from peripheral conversion of 4-Androstene-3, 17-dione (ASD).[2] In adult women, it has been estimated that over 50% of serum testosterone is derived from peripheral conversion of ASD secreted by the adrenal and ovary, with the remainder from direct secretion of testosterone by these glands.

In the male, testosterone is mainly synthesized in the interstitial Leydig cells and the testis, and is regulated by the interstitial cell stimulating hormone (ICSH), or luteinizing hormone (LH) of the anterior pituitary (the female equivalent of ICSH).[3] Testosterone is responsible for the development of secondary sex characteristics, such as the accessory sex organs, the prostate, seminal vesicles and the growth of facial, pubic and auxiliary hair. Testosterone measurements have been very helpful in evaluating hypogonadal states. Increased testosterone levels in males can be found in complete androgen resistance (testicular feminization). Common causes of decreased testosterone levels in males include: hypogonadism, orchidectomy, estrogen therapy, Klinefelter's syndrome, hypopituitarism, and hepatic cirrhosis.[2-4]

In the female, testosterone levels are normally found to be much lower than those encountered in the healthy male. Testosterone in the female comes from three sources. It is secreted in small quantities by both the adrenal glands and the ovaries, and in healthy women 50–60% of the daily testosterone production arises from peripheral metabolism of prohormone, chiefly androstenedione. Common causes of increased serum testosterone levels in females include polycystic ovaries (Stein-Leventhal syndrome), ovarian tumors, adrenal tumors and adrenal hyperplasia. Virilization in women is associated with the administration of androgens and endogenous overproduction of testosterone. There appears to be a correlation between serum testosterone levels and the degree of virilization in women, although approximately 25% of women with varying degrees of virilism have serum testosterone levels that fall within the female reference range.

3.0 PRINCIPLE

Competitive Enzyme Immunoassay (TYPE 7):
The essential reagents required for an enzyme immunoassay include antibody, enzyme-antigen conjugate and native antigen.

Upon mixing biotinylated antibody, enzyme-antigen conjugate and a serum containing the native antigen, a competition reaction results between the native antigen and the enzyme-antigen conjugate for a limited number of antibody binding sites. The interaction is illustrated by the followed equation:

$$^{Enz}Ag + Ag + Ab_{Btn} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} AgAb_{Btn} + {}^{Enz}AgAb_{Btn}$$

Ab_{Btn} = Biotinylated Antibody (Constant Quantity)
Ag = Native Antigen (Variable Quantity)
^{Enz}Ag = Enzyme-antigen Conjugate (Constant Quantity)
$AgAb_{Btn}$ = Antigen-Antibody Complex
$^{Enz}AgAb_{Btn}$ = Enzyme-antigen Conjugate -Antibody Complex
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Disassociation
$K = k_a / k_{-a}$ = Equilibrium Constant

A simultaneous reaction between the biotin attached to the antibody and the streptavidin immobilized on the microwell occurs. This effects the separation of the antibody bound fraction after decantation or aspiration.
$AgAb_{Btn} + {}^{Enz}AgAb_{Btn} + \underline{Streptavidin}_{CW} \Rightarrow \underline{immobilized\ complex}$
$\underline{Streptavidin}_{CW}$ = Streptavidin immobilized on well
Immobilized complex = sandwich complex bound to the solid surface

The enzyme activity in the antibody bound fraction is inversely proportional to the native antigen concentration. By utilizing several different serum references of known antigen concentration, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

Materials Provided:

A. Testosterone Calibrators – 1ml/vial – Icons A-G
Seven (7) vials of serum reference for Testosterone at concentrations of 0 (**A**), 0.1 (**B**), 0.5 (**C**), 1.0 (**D**), 2.5 (**E**), 5.0 (**F**) and 12.0 (**G**) in ng/ml Store at 2-8°C. A preservative has been added. The calibrators can be expressed in molar concentrations (nM/L) by multiplying by 3.47.
For example: 1ng/ml x 3.47 = 3.47 nM/L

B. Testosterone Enzyme Reagent – 6.0 ml/vial – Icon ℰ
One (1) ready to use vial of Testosterone (Analog)-horseradish peroxides (HRP) conjugate in a protein stabilizing matrix with buffer, red dye, preservative, and binding protein inhibitors. Store 2-8°C.

C. Testosterone Biotin Reagent – 6.0 ml – Icon ∇
One (1) vial containing anti-Testosterone biotinylated purified rabbit IgG conjugate in buffer, dye and preservative. Store at 2-8°C.

D. Streptavidin Coated Plate – 96 wells – Icon ⇓
One 96-well microplate coated with 1.0 µg/ml streptavidin and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

E. Wash Solution Concentrate – 20ml/vial – Icon
One (1) vial containing a surfactant in buffered saline. A preservative has been added. Store at 2-8°C.

F. Substrate A – 7ml/vial – Icon S^A
One (1) vial containing tetramethylbenzidine (TMB) in buffer. Store at 2-8°C.

G. Substrate B – 7ml/vial – Icon S^B
One (1) vial containing hydrogen peroxide (H_2O_2) in buffer. Store at 2-8°C.

H. Stop Solution – 8ml/vial – Icon STOP
One (1) vial containing a strong acid (1N HCl). Store at 2-8°C.

I. Product Instructions.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Avoid extended exposure to heat and light. **Opened reagents are stable for sixty (60) days when stored at 2-8ºC. Kit and component stability are identified on the label.**
Note 3: Above reagents are for a single 96-well microplate.

4.1 Required But Not Provided:
1. Pipette capable of delivering 0.010ml (10µl), 0.050ml(50µl), 0.100ml (100µl) volumes with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.50ml (50µl) .0.100ml (100 µl) and 0.350ml (350µl) volumes with a precision of better than 1.5%.
3. Microplate washer or a squeeze bottle (optional).
4. Microplate Reader with 450nm and 620nm wavelength absorbance capability.
5. Absorbent Paper for blotting the microplate wells.
6. Plastic wrap or microplate covers for incubation steps.
7. Vacuum aspirator (optional) for wash steps.
8. Timer.
9. Quality control materials.

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA required tests. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.

Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood; serum or plasma in type and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube or (for plasma) in evacuated tube(s) containing heparin. Allow the blood to clot for serum samples. Centrifuge the specimen to separate the serum or plasma from the cells.

In patients receiving therapy with high biotin doses (i.e. >5mg/day), no sample should be taken until at least 8 hours after the last biotin administration, preferably overnight to ensure fasting sample.

Samples may be refrigerated at 2-8°C for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20°C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, 0.020ml (20µl) of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the low, normal and high range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. The individual laboratory should set acceptable assay performance limits. In addition, maximum absorbance should be consistent with past experience. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION

1. **Wash Buffer**
Dilute contents of wash solution concentrate to 1000ml with distilled or deionized water in a suitable storage container. Diluted buffer can be stored at 2-30°C for up to 60 days.
3. **Working Substrate Solution -** Stable for 1 year.
Pour the contents of the amber vial labeled Solution 'A' into the clear vial labeled Solution 'B'. Place the yellow cap on the clear vial for easy identification. Mix and label accordingly. Store at 2 - 8°C.

Note 1: Do not use the working substrate if it looks blue.
Note 2: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum calibrators and controls to room temperature (20 - 27°C).
*****Test Procedure should be performed by a skilled individual or trained professional*****

1. Format the microplates' wells for each serum reference, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8°C.**
2. Pipette 0.010 ml (10µL) of the appropriate serum reference, control or specimen into the assigned well.
3. Add 0.050 ml (50µl) of the ready to use Testosterone Enzyme Reagent to all wells.
4. Swirl the microplate gently for 20-30 seconds to mix.
5. Add 0.050 ml (50µl) of Testosterone Biotin Reagent to all wells.
6. Swirl the microplate gently for 20-30 seconds to mix.
7. Cover and incubate for 60 minutes at room temperature.
8. Discard the contents of the microplate by decantation or aspiration. If decanting, blot the plate dry with absorbent paper.
9. Add 0.350ml (350µl) of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
10. Add 0.100 ml (100µl) of working substrate solution to all wells (see Reagent Preparation Section). **Always add reagents in the same order to minimize reaction time differences between wells.**
DO NOT SHAKE THE PLATE AFTER SUBSTRATE ADDITION
11. Incubate at room temperature for fifteen (15) minutes.
12. Add 0.050ml (50µl) of stop solution to each well and gently mix for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
13. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader. **The results should be read within thirty (30) minutes of adding the stop solution.**

Note: Dilute the samples suspected of concentrations higher than 12 ng/ml 1:5 and 1:10 with Testosterone '0' ng/ml calibrator or female patient sera with a known low value for testosterone.

10.0 CALCULATION OF RESULTS

A dose response curve is used to ascertain the concentration of Testosterone in unknown specimens.
1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1.
2. Plot the absorbance for each duplicate serum reference versus the corresponding Testosterone concentration in ng/ml on linear graph paper (do not average the duplicates of the serum references before plotting).
3. Connect the points with a best-fit curve.
4. To determine the concentration of Testosterone for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in ng/ml) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (1.764) intersects the dose response curve at (0.57ng/ml) Testosterone concentration (See Figure 1).

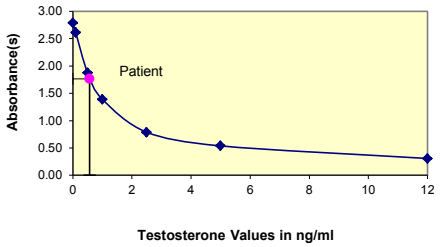
Note: Computer data reduction software designed for ELISA assays may also be used for the data reduction. If such software is utilized, the validation of the software should be ascertained.

EXAMPLE 1

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value (ng/ml)
Cal A	A1	2.780	2.787	0
	B1	2.794		
Cal B	C1	2.576	2.611	0.1
	D1	2.646		
Cal C	E1	1.789	1.877	0.5
	F1	1.965		
Cal D	G1	1.391	1.392	1.0
	H1	1.393		
Cal E	A2	0.780	0.788	2.5
	B2	0.796		
Cal F	C2	0.530	0.538	5.0
	D2	0.547		
Cal G	E2	0.301	0.308	12.0
	F2	0.314		
Ctrl 1	G2	1.040	0.760	**1.61**
	H2	1.045		
Patient	A3	1.751	1.764	**0.57**
	B3	1.778		

*The data presented in Example 1 and Figure 1 is for illustration only and **should not** be used in lieu of a standard curve prepared with each assay.

Figure 1



11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. The absorbance (OD) of calibrator 0 ng/ml should be ≥ 1.3
2. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product are available on request from Monobind Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind's IFU may yield inaccurate results.
10. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
11. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
12. Risk Analysis- as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurements and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. The reagents for the procedure have been formulated to eliminate maximal interference; however, potential interaction between rare serum specimens and test reagents can cause erroneous results. Heterophilic antibodies often cause these interactions and have been known to be problems for all kinds of immunoassays. *(Boscato LM Stuart MC.'Heterophilic antibodies: a problem for all immunoassays' Clin. Chem 1988:3427-33).* For diagnostic purposes the results from this assay should be used in combination with clinical examination, patient's history and, all other clinical findings.
4. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
5. If test kits are altered, such as by mixing parts of different kits, which could producefalse test results, or if results are incorrectly interpreted, Monobind shall have no liability.
6. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.

13.0 EXPECTED RANGES OF VALUES

In agreement with established reference intervals[5] for a "normal" adult population, the expected ranges for the Testosterone AccuBind® ELISA Test System are detailed in Table 1.

TABLE I
Expected Values for Testosterone EIA Test System (ng/ml)

Boys Before Puberty	0.1 – 3.7
Male	2.5 – 10.0
Female	0.2 – 0.95

It is important to keep in mind that establishment of a range of values, which can be expected to be found by a given method for a population of "normal" persons, is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons, each laboratory should depend upon the range of expected values established by the Manufacturer only until an in-house range can be determined by the analysts using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The within and between assay precision of the Testosterone AccuBind® ELISA Test System were determined by analyses on three different levels of pool control sera. The number, mean values, standard deviation and coefficient of variation for each of these control sera are presented in Table 2 and Table 3.

TABLE 2
Within Assay Precision (Values in ng/ml)

Sample	N	X	σ	C.V.
Low	22	1.63	0.16	9.8%
Normal	22	9.14	0.44	4.8%
High	22	14.22	0.79	5.6%

TABLE 3
Between Assay Precision (Values in ng/ml)

Sample	N	X	σ	C.V.
Low	24	1.72	0.16	9.1%
Normal	24	7.06	0.69	9.7%
High	24	13.08	1.03	7.9%

*As measured in several experiments in duplicate over a ten day period.

14.2 Sensitivity

The Testosterone AccuBind® ELISA Test System has a sensitivity of 0.576 pg. This is equivalent to a sample containing a concentration of 0.0576 ng/ml. The sensitivity was ascertained by determining the variability of the 0 ng/ml serum calibrator and using the 2σ (95% certainty) statistic to calculate the minimum dose.

14.3 Accuracy

The Testosterone AccuBind® ELISA Test System was compared with a chemiluminescence immunoassay method. Biological specimens from low, normal and high Testosterone level populations were used. The values ranged from 0.29 ng/ml – 21.9ng/ml. The total number of such specimens was 58. The least square regression equation and the correlation coefficient were computed for this Testosterone EIA in comparison with the reference method. The data obtained is displayed in Table 4.

TABLE 4

Method	Mean (x)	Least Square Regression Analysis	Correlation Coefficient
Monobind (y)	3.12	y= -0.265+0.944(x)	0.985
Reference (X)	3.02		

Only slight amounts of bias between this method and the reference method are indicated by the closeness of the mean values. The least square regression equation and correlation coefficient indicates excellent method agreement.

14.4 Specificity

The % cross reactivity of the testosterone antibody to selected substances was evaluated by adding the interfering substance to a serum matrix at various concentrations. The cross-reactivity was calculated by deriving a ratio between dose of interfering substance to dose of Testosterone needed to displace the same amount of labeled analog.

Substance	Cross Reactivity
Testosterone	1.0000
Androstenedione	0.0009
Dihydotestosterone	0.0178
Cortisone	<0.0001
Corticosterone	<0.0001
Cortisol	<0.0001
Spirolactone	<0.0001
Progesterone	<0.0001
17α-OH Progesterone	<0.0001
DHEA sulfate	<0.0001
Estradiol	<0.0001
Estrone	<0.0001
Estriol	<0.0001
Hemolysis	<0.0001
Rubella	<0.0001
Lipemia	<0.0001

15.0 REFERENCES

1. Dorfman, RI and Shipley, RA, ED: Androgens, New York,: John Wiley and Sons, 1956.
2. Horton R, Tait JF: Androstenedione production and interconversion rates measured in peripheral blood and studies on the possible site of conversion to testosterone. J.Clin Invest 45: 301-303, 1966.
3. Faiman C and Winter, JSD, Reyes, FI, Clin *Obstet Gynaecol,* 3, 467 (1976).
4. Sizonenka, PC, *Pediatrician,* 14, 191 (1987).
5. Cummings DC, Wall SR: Non sex hormone binding globulin bound testosterone as a marker for hyperandrogenism. J. Clin Endocrinol Metab. 61:873-876, 1985.
6. Lashansky, G, et. al., *J Clin Endocrinol Metab*,58, 674 (1991)
7. Tietz, NW, ED: Clinical Guide to Laboratory Tests, 3rd ed. Philadelphia, WA Saunders Co, 1995.

Effective Date: 2019-Jul-16 Rev. 5 **DCO: 1353**
MP3725 **Product Code: 3725-300**

Size		96(A)	192(B)
Reagent (fill)	A)	1ml set	1ml set
	B)	1 (6ml)	2 (6ml)
	C)	1 (6ml)	2 (6ml)
	D)	1 plate	2 plates
	E)	1 (20ml)	1 (20ml)
	F)	1 (7ml)	2 (7ml)
	G)	1 (7ml)	2 (7ml)
	H)	1 (8ml)	2 (8ml)

For Orders and Inquires, please contact

Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA

Tel: +1 949.951.2665 Mail: info@monobind.com
Fax: +1 949.951.3539 Fax: www.monobind.com

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Glossary of Symbols
(EN 980/ISO 15223)

IVD — In Vitro - Diagnostic Medical Device
2° 8° — Temperature Limitation Storage Condition (2-8° C)
Consult Instructions for Use
REF — Catalogue Number
Σ — Contains Sufficient Test for Σ
LOT — Batch Code
Used By (Expiration Day)
Date of Manufacturer
Manufacturer
EC REP — Authorized Rep in European Country
CE — European Conformity

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Thyroglobulin (Tg) Test System
Product Code: 2225-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Thyroglobulin (Tg) Concentration in Human Serum by a Microplate Enzyme immunoassay, Colorimetric

2.0 SUMMARY AND EXPLANATION OF THE TEST

Human thyroglobulin (Tg) is a large glycoprotein (660 kD) that is stored in the follicular colloid of the thyroid gland. It functions as a prohormone in the intrathyroid synthesis of primary thyroid hormones like *Triiodothyronine (T3) and Thyroxine (T4).*

Tg is elevated in thyroid follicular and papillary carcinoma, thyroid adenoma, subacute thyroiditis, Hashimoto's thyroiditis and Graves Disease. Tg levels are found to be normal in patients with medullary thyroid carcinoma. Serial measurements of Tg is most useful in detecting recurrence of differentiated thyroid carcinoma following surgical resection or radioactive iodine ablation. Tg determination is used as an adjunct to iodine scanning but not as a replacement for it. Assessment of Tg levels aids in management of infants with congenital hypothyroidism.

Tg determination has been done with various methods using direct competitive binding RIA and double antibody sandwich IRMA or ELISA, of which latter is more useful. All these methods suffer from interference by endogenous autoantibodies to Tg. It is useful to determine the effect of autoantibodies before screening such patients for levels of Tg. *Monobind* provides Tg autoantibody ELISA to rule out such interference. ***(Please see Monobind Anti-Tg AccuBind® ELISA Test System, Product Code: 1025-300).***

3.0 PRINCIPLE

Immunoenzymometric sequential assay (TYPE 4):
The essential reagents required for an immunoenzymometric assay include high affinity and specificity antibodies (enzyme and immobilized), with different and distinct epitope recognition, **in excess,** and native antigen. In this procedure, the immobilization takes place during the assay at the surface of a microplate well through the interaction of streptavidin coated on the well and exogenously added biotinylated monoclonal Thyroglobulin antibody.

When monoclonal biotinylated antibody is mixed with a serum containing the Tg antigen, a reaction results between the Tg antigen and the antibody, to form an antibody-antigen complex. Simultaneously the biotin attached to the antibody binds to the streptavidin coated on the microwells resulting in immobilization of the complex. The interaction is illustrated by the following equation:

$$Ag_{(Tg)} + {}^{Btn}Ab_{(m)} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} Ag_{(Tg)} - {}^{Btn}Ab_{(m)}$$

$^{Btn}Ab_{(m)}$ = Biotinylated Monoclonal Antibody (Excess Quantity)
$Ag_{I(Tg)}$ = Native Antigen (Variable Quantity)
$Ag_{(Tg)} - {}^{Btn}Ab_{(m)}$ = Antigen-Antibody complex (Variable Quan.)
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Disassociation

$Ag_{(Tg)} - {}^{Btn}Ab_{(m)} + \underline{Streptavidin}_{C.W.} \Rightarrow \underline{immobilized\ complex}$ (IC)
$\underline{Streptavidin}_{C.W.}$ = Streptavidin immobilized on well
$\underline{Immobilized\ complex\ (IC)}$ = Ag-Ab bound to the well

After a suitable incubation period, the antibody-antigen bound fraction is separated from unbound antigen by decantation or aspiration. Another antibody (directed at a different epitope) labeled with an enzyme is added. Another interaction occurs to form an enzyme labeled antibody-antigen-biotinylated-antibody complex on the surface of the wells. Excess enzyme is washed off via a wash step. A suitable substrate is added to produce color measurable with the use of a microplate spectrophotometer. The enzyme activity on the well is directly proportional to the native antigen concentration. By utilizing several different serum references of known antigen concentration, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

$$(IC) + {}^{Enz}Ab_{(Tg)} \underset{k_{-b}}{\overset{k_b}{\rightleftharpoons}} {}^{Enz}Ab_{(Tg)} - IC$$

$^{Enz}Ab_{(Tg)}$ = Enzyme labeled Antibody (Excess Quantity)
$^{Enz}Ab_{(Tg)}$ - IC = Antigen-Antibodies Complex
k_b = Rate Constant of Association
k_{-b} = Rate Constant of Dissociation

4.0 REAGENTS

Materials Provided:

A. Thyroglobulin Calibrators – 1.0 ml/vial – Icons A - F
Six (6) vials of references for Thyroglobulin antigen (Tg) at levels of **0(A), 2.0 (B), 10.0(C), 40(D), 100(E), and 250(F) ng/ml**. A preservative has been added.
Note: There is no known, internationally accepted thyroglobulin standard available. The Tg used in the serum based calibrators is a highly purified (98+% pure) human Tg preparation that is calibrated gravimetrically against the reference material obtained from Community Bureau of Reference # CRM 457.

B. x-Tg Biotin Reagent – 13ml/vial – Icon ∇
One (1) vial contains biotinylated anti-Tg monoclonal mouse IgG in buffer, dye, and preservative. Store at 2-8°C.

C. Tg Enzyme Reagent – 13 ml/vial - Icon
One (1) vial contains anti-thyroglobulin IgG labeled with horseradish peroxidase (HRP) in buffer, dye, and preservative. Store at 2-8°C.

D. Streptavidin Coated Plate – 96 wells – Icon ⇓
One 96-well (break well modules) microplate coated with streptavidin and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

E. Wash Solution Concentrate – 20 ml/vial – Icon
One (1) vial contains surfactant in buffered saline. A preservative has been added. Store at 2-8°C.

F. Substrate Reagent – 12ml/vial – Icon S^N
One (1) vial contains tetramethylbenzidine (TMB) and hydrogen peroxide (H_2O_2) in buffer. Store at 2-8°C.

G. Stop Solution – 8ml/vial – Icon
One (1) vial contains a strong acid (0.5M H_2SO_4). Store at 2-8°C.

H. Product Instructions.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Avoid extended exposure to heat and light. **Opened reagents are stable for sixty (60) days when stored at 2-8°C. Kit and component stability are identified on the label.**
Note 3: Above reagents are for a single 96-well microplate.

4.1 Required But Not Provided:
1. Pipette(s) capable of delivering 0.050ml (50µl) and 0.100ml (100µl) volumes with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100ml (100µl) and 0.350ml (350µl) volumes with a precision of better than 1.5%
3. Microplate washer or a squeeze bottle (optional).
4. Microplate Reader with 450nm and 620nm wavelength absorbance capability
5. Absorbent Paper for blotting the microplate wells.
6. Plastic wrap or microplate cover for incubation steps.
7. Vacuum aspirator (optional) for wash steps.
8. Timer.
9. Storage container for storage of wash buffer.
10. Distilled or deionized water.
11. Quality Control Materials.

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface antigen, HIV 1&2 and HCV antibodies by FDA required tests. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS.

Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood serum in type, and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain red-top venipuncture tube without additives or gel barrier. Allow the blood to clot. Centrifuge the specimen to separate the serum from the cells.

In patients receiving therapy with high biotin doses (i.e. >5mg/day), no sample should be taken until at least 8 hours after the last biotin administration, preferably overnight to ensure fasting sample.

Samples may be refrigerated at 2-8°C for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20°C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, 0.100ml (100µl) of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the low, normal and elevated range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION

1. **Wash Buffer**
Dilute contents of wash concentrate to 1000ml with distilled or deionized water in a suitable storage container Diluted buffer can be stored at room temperature (2-30°C) for up to 60 days.

Note: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE (Time 4hr 15min)

Before proceeding with the assay, bring all reagents, serum reference calibrator and controls to room temperature (20-27°C).
*****Test Procedure should be performed by a skilled individual or trained professional*****

1. Format the microplates' wells for each calibrator, control and patient sample to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8°C.**
2. Pipette 0.050 ml (50µl) of the appropriate calibrators, controls and samples into the assigned wells.
3. Add 0.100 ml (100µl) of the x-Tg Biotin Reagent to each well. **It is very important to dispense all reagents close to the bottom of the microwell.**
4. Swirl the microplate gently for 20-30 seconds to mix. Cover with a plastic wrap or microplate cover.
5. Incubate for 2 hours at room temperature.
6. Discard the contents of the microplate by decantation or aspiration. If decanting, tap and blot the plate dry with absorbent paper.
7. Add 0.350ml (350µl) of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is used, fill each well to the top by squeezing the container (Avoiding air bubbles). Decant the wash and repeat two (2) additional times.**
8. Add 0.100 ml (100µl) of Tg Enzyme Reagent to all wells
DO NOT SHAKE THE PLATE AFTER ENZYME ADDITION
9. Cover with a plastic wrap. Incubate at room temperature for 120 minutes.
10. Discard the contents of the microplate by decantation or aspiration. If decanting, tap and blot the plate dry with absorbent paper.
11. Add 0.350ml (350µl) of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is used, fill each well to the top by squeezing the container (Avoiding air bubbles). Decant the wash and repeat two (2) additional times.**
12. Add 0.100 ml (100 µl) of substrate to all wells. **Always add reagents in the same order to minimize reaction time differences between wells.**
DO NOT SHAKE THE PLATE AFTER SUBSTRATE ADDITION
13. Cover with a plastic wrap or microplate cover. Incubate at room temperature for 15 minutes.
14. Add 0.050ml (50µl) of stop solution to each well and mix gently for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
15. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader. **The results should be read within fifteen (15) minutes of adding the stop solution.**

9.1 ALTERNATE PROCEDURE (Time 2hr 15min)
This procedure can be used with the help of a laboratory hematology shaker.
1. Format the microplates' wells for each calibrator, control and patient sample to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8°C.**
2. Pipette 0.050 ml (50µl) of the appropriate calibrators, controls and samples into the assigned wells.
3. Add 0.100 ml (100µl) of the biotin labeled monoclonal antibody to each well. **It is very important to dispense all reagents close to the bottom of the microwell and swirl to mix.**
4. Incubate at room temperature for 1 hour while shaking constantly on a hematology shaker at 150 RPM.
5. Discard the contents of the microplate by decantation or aspiration. If decanting, tap and blot the plate dry with absorbent paper.
6. Add 0.350ml (350µl) of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is used, fill each well to the top by squeezing the container (Avoiding air bubbles). Decant the wash and repeat two (2) additional times.**
7. Add 0.100 ml (100µl) of Tg Enzyme Reagent to all wells
8. Incubate at room temperature for 1 hour while shaking constantly on a hematology shaker at 150 RPM.
9. Repeat steps 5-6 as described in the 'Test Procedure' above.
10. Follow steps 11-14 to develop color and measure.

10.0 CALCULATION OF RESULTS

A dose response curve is used to ascertain the concentration of human thyroglobulin (Tg) in unknown specimens.
1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1.
2. Plot the absorbance for each duplicate serum reference versus the corresponding Tg concentration in ng/ml on linear graph

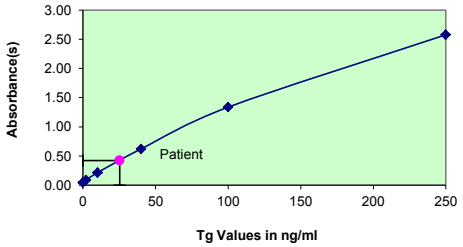
paper (do not average the duplicates of the serum references before plotting).
3. Draw the best-fit curve through the plotted points.
4. To determine the concentration of Tg for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in ng/ml) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (0424) intersects the dose response curve at 25.2 ng/ml Tg concentration (See Figure 1).

Note: Computer data reduction software designed for ELISA assays may also be used for the data reduction. **If such software is utilized, the validation of the software should be ascertained.**

EXAMPLE 1
(Data is based on 9.0 Test Procedure - time 4 hr. 15min)

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value (ng/ml)
Cal A	A1	0.047	0.047	0
	B1	0.047		
Cal B	C1	0.093	0.091	2
	D1	0.090		
Cal C	E1	0.221	0.217	10
	F1	0.214		
Cal D	G1	0.612	0.625	40
	H1	0.634		
Cal E	A2	1.343	1.339	100
	B2	1.335		
Cal F	C2	2.596	2.577	250
	D2	2.557		
Cont 1	E2	0.142	0.146	4.99
	F2	0.150		
Cont 2	G2	1.622	0.876	125.0
	H2	1.566		
Patient 1	A3	0.426	0.424	25.2
	B3	0.422		

Figure 1



*The data presented in Example 1 and Figure 1 are for illustration only and **should not** be used in lieu of a dose response curve prepared with each assay.

11.0 Q. C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met.
1. The absorbance (OD) of calibrator A should be ≤ 0.06.
2. The absorbance (OD) of calibrator F' should be ≥ 1.3.
3. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product are available on request from Monobind Inc.

12.1 Assay Performance
1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. The substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Patient samples with thyroglobulin concentrations above 250 ng/ml may be diluted with the zero calibrator and re-assayed. Multiply the value obtained by the dilution factor to obtain the corrected value.
10. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind IFU may yield inaccurate results.
11. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
12. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
13. Risk Analysis- as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation
1. Measurements and interpretation of results must be performed by a skilled individual or trained professional.
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. The reagents for the test system have been formulated to eliminate maximal interference; however, potential interaction between rare serum specimens and test reagents can cause erroneous results. Heterophilic antibodies often cause these interactions and have been known to be problems for all kinds of Immunoassays (Boscato LM, Stuart MC ''Heterophilic antibodies: a problem for all immunoassays'' *Clin. Chem* (1988:3427-33). For diagnostic purposes, the results from this assay should be in combination with clinical examination, patient history, and all other clinical findings.
4. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
5. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
6. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.

13.0 EXPECTED RANGE OF VALUES

Based on the clinical data gathered by Monobind in concordance with the published literature a normal range was established.

Table 1: Expected Values for TG

POPULATION	RANGE
Adult	3.5 – 56 ng/ml

Tg is found to be elevated in patients with thyroid follicular and papillary carcinoma, thyroid adenoma, subacute thyroiditis, Hashimoto's thyroiditis and Graves' disease. Low levels of Tg are an indication of thyrotoxicosis factitia.
It is important to keep in mind that any normal range establishment is dependent upon a multiplicity of factors like the specificity of the method, the locale, the population tested and the precision of the method in the hands of technicians. For these reasons each laboratory should depend upon the range of expected values established by the Manufacturer only until an in-house range can be determined by the technicians using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision
The within and between assay precisions of the Thyroglobulin AccuBind® ELISA test system were determined by analyses on three different levels of pool control sera. The number (N), mean value (X), standard deviation (σ) and coefficient of variation (C.V.) for each of these control sera are presented in Tables 2 and 3.

TABLE 2
Within Assay Precision (Values in ng/ml)

Sample	N	X	σ	C.V.
Pool 1	22	6.2	0.41	6.6%
Pool 2	22	64.4	2.23	3.6%
Pool 3	22	194.1	8.17	4.2%

TABLE 3
Between Assay Precision* (Values in ng/ml)

Sample	N	X	σ	C.V.
Pool 1	10	5.8	0.52	9.0%
Pool 2	10	62.2	3.82	6.1%
Pool 3	10	192.3	10.90	5.7%

*As measured in ten experiments in duplicate over seven days.

14.2 Sensitivity
The analytical sensitivity (detection limit) was ascertained by determining the variability of the 0 ng/ml serum calibrator and using the 2σ (95% certainty) statistic to calculate the minimum dose. The assay sensitivity was found to be 0.44 ng/ml.

14.3 Accuracy
The Tg AccuBind® ELISA test system was compared with a reference coated tube radioimmunoassay (IRMA) assay. Biological specimens from symptomatic and asymptomatic populations were used. The data obtained is displayed in Table 4.

TABLE 4

Method	Mean (x)	Least Square Regression Analysis	Correlation Coefficient
Monobind	13.6	y = 2.55 + 0.908 (x)	0.975
Reference	11.4		

The least square regression equation and correlation coefficient indicates excellent method agreement.

14.4 Specificity
The cross-reactivity of the Tg AccuBind® ELISA method to selected substances was evaluated by adding the interfering substance(s) to a serum matrix at the following concentration(s). The cross-reactivity was calculated by deriving a ratio between dose of interfering substance to dose of Thyroglobulin needed to produce the same absorbance.

Substance	Concentration	Cross Reactivity
Thyroglobulin	100 ng/ml	100.0%
Triiodothyronine	1000 ng/dl	N/D
Thyroxine	1000 ng/ml	N/D
TBG	100 ng/ml	N/D

14.5 High Dose Effect
Since the assay is sequential in design, high concentrations of Tg do not show the hook effect. Samples with concentrations over 50,000 ng/ml demonstrated extremely high levels of absorbance.

15.0 REFERENCES

1. Beever K, Bradbury J, Phillips D, et al, "Highly sensitive assays of autoantibodies to Thyroglobulin and Thyroid Peroxidase", *Clin Chem*, 35, 1949-1954 (1989).
2. Ladenson PW, "Optimal laboratory testing for diagnosis and monitoring of thyroid nodules, goiter, and thyroid cancer", *Clin Chem*, 42, 183-187 (1996).
3. Mayo Medical Laboratories: test Catalog, Rochester, MN (1997).
4. Spencer CA, Takeucho M, Kazarosyn M, "Current status and performance goals for serum thyroglobulin assays", *Clin Chem*, 42, 164-173 (1996).
5. Tietz N. Ed: *Clinical Guide to Laboratory Tests.* 3rd Ed. Philadelphia. Saunders (1995).
6. Surks, MI, Chopra, IJ, Mariash, CN, "American Thyroid Association guidelines for use of laboratory tests in thyroid disorders", *JAMA,* 263, 1529-1532 (1990).
7. Ng, M., Rajna, A, Khalid, B, "Enzyme immunoassay for simultaneous measurements of autoantibodies against thyroglobulin and thyroid microsomes in serum", *Clin Chem,* 33, 2286-2288 (1987).
8. Spencer, CA, Takeucho M, Kazarosyn M, Wang CC, Guttler RB, Singer PA, et al, "Serum thyroglobulin autoantibodies; prevalence, influence on serum thyroglobulin measurements, and prognostic significance in patients with differentiated thyroid carcinoma", J Clin *Endocrinol Metab,* 83, 1121-27 (1998).
9. Spencer CA, LoPresti JS, Fatemi S, Nicoloff JT, "Detection of residual and recurrent differentiated thyroid carcinoma by serum thyroglobulin measurements", *Thyroid,* 9, 435-41 (1999).
10. Schlumberger M, Baudin E, "Serum thyroglobulin determinations in the follow up of patients with differentiated thyroid carcinoma", *Eur J. Endocrinol*, **138,** 249-252 (1998).

Effective Date: 2019-Jul-16 Rev. 4 **DCO: 1353**
MP2225 **Product Code: 2225-300**

Size		96(A)	192(B)
Reagent (fill)	A)	1ml set	1ml set
	B)	1 (13ml)	2 (13ml)
	C)	1 (13ml)	2 (13ml)
	D)	1 plate	2 plates
	E)	1 (20ml)	1 (20ml)
	F)	1 (12ml)	2 (12ml)
	G)	1 (8ml)	2 (8ml)

For Orders and Inquires, please contact
Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA
Tel: +1 949.951.2665 Mail: info@monobind.com
Fax: +1 949.951.3539 Fax: www.monobind.com

IVD 2°-8° CE
EC REP **CEpartner4U,** Esdoornlaan 13 3951 DBMaarn, The Neatherlands **www.cepartner4u.eu**

Please visit our website to learn more about our products and services.

Glossary of Symbols
(EN 980/ISO 15223)

IVD — In Vitro - Diagnostic Medical Device
2°-8° — Temperature Limitation Storage Condition (2-8°C)
Consult Instructions for Use
REF — Catalogue Number
Σ — Contains Sufficient Test for Σ
LOT — Batch Code
Used By (Expiration Day)
Date of Manufacturer
Manufacturer
EC REP — Authorized Rep in European Country
CE — European Conformity

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Thyrotropin (TSH) Test System
Product Code: 325-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Thyrotropin Concentration in Human Serum by a Microplate Enzyme Immunoassay, Colorimetric

2.0 SUMMARY AND EXPLANATION OF THE TEST

Measurement of the serum concentration of thyrotropin (TSH), a glycoprotein with a molecular weight of 28,000 Daltons and secreted from the anterior pituitary, is generally regarded as the most sensitive indicator available for the diagnosis of primary and secondary (pituitary) hypothyroidism.[1,2] The structure of human TSH is similar to that of the pituitary and placental gonadotropins, consisting of an 89-amino acid α-subunit which is similar or identical between these hormones and a 115-amino acid β-subunit, which apparently confers hormonal specificity. The production of the 2 subunits is separately regulated with apparent excess production of the α-subunit. The TSH molecule has a linear structure consisting of the protein core with carbohydrate side chains; the latter accounts for 16% of the molecular weight.

TSH measurements are equally useful in differentiating secondary and tertiary (hypothalamic) hypothyroidism from the primary thyroid disease. TSH release from the pituitary is regulated by thyrotropin releasing factor (TRH), which is secreted by the hypothalamus, and by direct action of T4 and triiodothyronine (T3), the thyroid hormones, at the pituitary. Increase levels of T3 and T4 reduces the response of the pituitary to the stimulatory effects of TRH. In secondary and tertiary hypothyroidism, concentrations of T4 are usually low and TSH levels are generally low or normal. Either pituitary TSH deficiency (secondary hypothyroidism) or insufficiency of stimulation of the pituitary by TRH (tertiary hypothyroidism) causes this. The TRH stimulation test differentiates these conditions. In secondary hypothyroidism, TSH response to TRH is blunted while a normal or delayed response is obtained in tertiary hypothyroidism.

Further, the advent of immunoenzymometric assays has provided the laboratory with sufficient sensitivity to enable the differentiating of hyperthyroidism from euthyroid population and extending the usefulness of TSH measurements. This method is a second-generation assay, which provides the means for discrimination in the hyperthyroid-euthyroid range. The functional sensitivity (<20% between assay CV) of the one-hour procedure is 0.195 µIU/ml while the two-hour procedure has a functional sensitivity of 0.095µIU/ml.[3]

In this method, TSH calibrator, patient specimen or control is first added to a streptavidin coated well. Biotinylated monoclonal and enzyme labeled antibodies are added and the reactants mixed. Reaction between the various TSH antibodies and native TSH forms a sandwich complex that binds with the streptavidin coated to the well.

After the completion of the required incubation period, the antibody bound enzyme-thyrotropin conjugate is separated from the unbound enzyme-thyrotropin conjugate by aspiration or decantation. The activity of the enzyme present on the surface of the well is quantitated by reaction with a suitable substrate to produce color.

The employment of several serum references of known thyrotropin levels permits construction of a dose response curve of activity and concentration. From comparison to the dose response curve, an unknown specimen's activity can be correlated with thyrotropin concentration.

3.0 PRINCIPLE

Immunoenzymometric assay (TYPE 3):
The essential reagents required for an immunoenzymometric assay include high affinity and specificity antibodies (enzyme conjugated and immobilized), with different and distinct epitope recognition, **in excess,** and native antigen. In this procedure, the immobilization takes place during the assay at the surface of a microplate well through the interaction of streptavidin coated on the well and exogenously added biotinylated monoclonal anti-TSH antibody.

Upon mixing monoclonal biotinylated antibody, the enzyme-labeled antibody and a serum containing the native antigen, reaction results between the native antigen and the antibodies, without competition or steric hindrance, to form a soluble sandwich complex. The interaction is illustrated by the following equation:

$$^{Enz}Ab_{(p)} + Ag_{TSH} + {}^{Btn}Ab_{(m)} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} {}^{Enz}Ab_{(p)} - Ag_{TSH} - {}^{Btn}Ab_{(m)}$$

$^{Btn}Ab_{(m)}$ = Biotinylated Monoclonal Antibody (Excess Quantity)
Ag_{TSH} = Native Antigen (Variable Quantity)
$^{Enz}Ab_{(p)}$ = Enzyme -Polyclonal Antibody (Excess Quantity)
$^{Enz}Ab_{(p)} - Ag_{TSH} - {}^{Btn}Ab_{(m)}$ = Antigen-Antibodies Sandwich Complex
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Dissociation

Simultaneously, the complex is deposited to the well through the high affinity reaction of streptavidin and biotinylated antibody. This interaction is illustrated below:
$^{Enz}Ab_{(p)} - Ag_{TSH} - {}^{Btn}Ab_{(m)} + Streptavidin_{CW} \Rightarrow$ immobilized complex
$Streptavidin_{C.W.}$ = Streptavidin immobolized on well
Immobilized complex = sandwich complex bound to the well surface

After equilibrium is attained, the antibody-bound fraction is separated from unbound antigen by decantation or aspiration. The enzyme activity in the antibody-bound fraction is directly proportional to the native antigen concentration. By utilizing several different serum references of known antigen values, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

Materials Provided:

A. TSH Calibrators – 1ml/vial - Icons A-G
Seven (7) vials of references for TSH Antigen at levels of 0(**A**), 0.5(**B**), 2.5(**C**), 5.0(**D**), 10(**E**), 20(**F**) and 40(**G**) µIU/ml. Store at 2-8°C. A preservative has been added.
Note: The calibrators, human serum based, were calibrated using a reference preparation, which was assayed against the WHO 2nd IRP 80/558.

B. TSH Enzyme Reagent – 13ml/vial - Icon
One (1) vial containing enzyme labeled affinity purified polyclonal goat antibody, biotinylated monoclonal mouse IgG in buffer, dye, and preservative. Store at 2-8°C.

C. Streptavidin Coated Plate – 96 wells – Icon
One 96-well microplate coated with streptavidin and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

D. Wash Solution Concentrate – 20 ml/ml - Icon
One (1) vial containing a surfactant in buffered saline. A preservative has been added. Store at 2-8°C.

E. Substrate A – 7ml/vial - Icon S^A
One (1) vial containing tetramethylbenzidine (TMB) in buffer. Store at 2-8°C.

F. Substrate B – 7ml/vial - Icon S^B
One (1) vial containing hydrogen peroxide (H_2O_2) in buffer. Store at 2-8°C.

G. Stop Solution – 8ml/vial - Icon STOP
One (1) vial containing a strong acid (1N HCl). Store at 2-8°C.

H. Product Instructions.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Avoid extended exposure to heat and light. **Opened reagents are stable for sixty (60) days when stored at 2-8°C. Kit and component stability are identified on the label.**
Note 3: Above reagents are for a single 96-well microplate.

4.1 Required But Not Provided:
1. Pipette(s) capable of delivering 0.050ml (50µl) and 0.100ml (100µl) volumes with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100ml (100µl) and 0.350ml (350µl) volumes with a precision of better than 1.5% (optional).
3. Microplate washer or a squeeze bottle (optional).
4. Microplate Reader with 450nm and 620nm wavelength absorbance capability.
5. Absorbent Paper for blotting the microplate wells.
6. Plastic wrap or microplate cover for incubation steps.
7. Vacuum aspirator (optional) for wash steps.
8. Timer.
9. Storage container for storage of wash buffer.
10. Distilled or deionized water.
11. Quality Control Materials.

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface antigen, HIV 1&2 and HCV antibodies by FDA required tests. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS.

Safe disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood, serum in type, and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube without additives or gel barrier. Allow the blood to clot. Centrifuge the specimen to separate the serum from the cells.

In patients receiving therapy with high biotin doses (i.e. >5mg/day), no sample should be taken until at least 8 hours after the last biotin administration, preferably overnight to ensure fasting sample.

Samples may be refrigerated at 2-8°C for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20°C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, (100µl) 0.100 ml of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the low, normal, and elevated range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. The individual laboratory should set acceptable assay performance limits. Other parameters that should be monitored include the 80, 50 and 20% intercepts of the dose response curve for run-to-run reproducibility. In addition, maximum absorbance should be consistent with past experience. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION

1. **Wash Buffer**
Dilute contents of wash concentrate to 1000ml with distilled or de-ionized water in a suitable storage container. Store at 2-30°C for up to 60 days.
2. **Working Substrate Solution –** Stable for one year
Pour the contents of the amber vial labeled Solution 'A' into the clear vial labeled Solution 'B'. Place the yellow cap on the clear vial for easy identification. Mix and label accordingly. Store at 2 - 8°C.

Note1: Do not use the working substrate if it looks blue.
Note 2: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum reference calibrators and controls to room temperature (20-27°C).
*****Test Procedure should be performed by a skilled individual or trained professional*****

1. Format the microplates' wells for each serum reference calibrator, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8°C.**
2. Pipette 0.050 ml (50µl) of the appropriate serum reference, control or specimen into the assigned well.
3. Add 0.100 ml (100µl) of the TSH Enzyme Reagent to each well. **It is very important to dispense all reagents close to the bottom of the coated well.**
4. Swirl the microplate gently for 20-30 seconds to mix and cover.
5. Incubate 60 minutes at room temperature. ******
6. Discard the contents of the microplate by decantation or aspiration. If decanting, tap and blot the plate dry with absorbent paper.
7. Add 0.350ml (350µl) of wash buffer (see Reagent Preparation Section) decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
8. Add 0.100 ml (100µl) of working substrate solution to all wells (see Reagent Preparation Section). **Always add reagents in the same order to minimize reaction time differences between wells.**

DO NOT SHAKE THE PLATE AFTER SUBSTRATE ADDITION

9. Incubate at room temperature for fifteen (15) minutes.
10. Add 0.050ml (50µl) of stop solution to each well and mix gently for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
11. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader. **The results should be read within thirty (30) minutes of adding the stop solution.**

** For better low-end sensitivity (< 0.5µIU/ml), incubate 120 minutes at room temperature. The 40µIU/ml calibrator should be excluded since absorbance over 3.0 units will be experienced. Follow the remaining steps.

Note: Dilute samples reading over 40 µIU/ml by 1:5 and 1:10 with TSH '0' Calibrator. Multiply the results by the dilution factor to obtain accurate results.

10.0 CALCULATION OF RESULTS

A dose response curve is used to ascertain the concentration of thyrotropin in unknown specimens.
1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1
2. Plot the absorbance for each duplicate serum reference versus the corresponding TSH concentration in µIU/ml on linear graph paper (do not average the duplicates of the serum references before plotting).

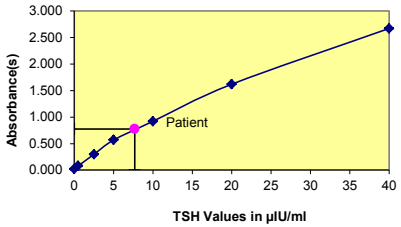
3. Draw the best-fit curve through the plotted points.
4. To determine the concentration of TSH for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in µIU/ml) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (0.775) intersects the dose response curve at (7.66 µIU/ml) TSH concentration (See Figure 1).

Note: Computer data reduction software designed for ELISA assay may also be used for the data reduction. If such software is utilized, the validation of the software should be ascertained.

EXAMPLE 1

Sample I.D.	Well Number	Abs	Mean Abs	Value (µIU/ml)
Cal A	A1	0.018	0.019	0
	B1	0.021		
Cal B	C1	0.076	0.079	0.5
	D1	0.082		
Cal C	E1	0.302	0.298	2.5
	F1	0.293		
Cal D	G1	0.556	0.567	5.0
	H1	0.577		
Cal E	A2	0.926	0.921	10
	B2	0.916		
Cal F	C2	1.610	1.619	20
	D2	1.629		
Cal G	E2	2.694	2.671	40
	F2	2.647		
Control	G2	0.800	0.775	**7.66**
	H2	0.751		
Patient	A3	1. 391	1.383	**16.65**
	B3	1.375		

Figure 1



*The data presented in Example 1 and Figure 1 are for illustration only and **should not** be used in lieu of a dose response curve prepared with each assay.

11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. The absorbance of calibrator 'G' (40 µIU/ml) should be ≥ 1.3.
2. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product is available on request from Monobind Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind IFU may yield inaccurate results.
10. Patient specimens with TSH concentrations over 40µIU/ml may be diluted (1:5 or 1:10) with the '0' calibrator and re-assayed. The sample's concentration is obtained by multiplying the result by the dilution factor.
11. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
12. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
13. Risk Analysis- as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurement and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. The reagents for the test system have been formulated to eliminate maximal interference; however, potential interaction between rare serum specimens and test reagents can cause erroneous results. Heterophilic antibodies often cause these interactions and have been known to be problems for all kinds of immunoassays (Boscato LM, Stuart MC. 'Heterophilic antibodies: a problem for all immunoassays' Clin. Chem. 1988:3427-33). For diagnostic purposes, the results from this assay should be in combination with clinical examination, patient history and all other clinical findings.For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
4. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
5. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.
6. Serum TSH concentration is dependent upon a multiplicity of factors: hypothalamus gland function, thyroid gland function, and the responsiveness of pituitary to TRH. **Thus, thyrotropin concentration alone is not sufficient to assess clinical status.**
7. Serum TSH values may be elevated by pharmacological intervention. Domperiodone, amiodazon, iodide, phenobarbital, and phenytoin have been reported to increase TSH levels.
8. A decrease in thyrotropin values has been reported with the administration of propranolol, methimazol, dopamine and d-thyroxine.[4]
9. Genetic variations or degradation of intact TSH into subunits may affect the binding characteristics of the antibodies and influence the final result. Such samples normally exhibit different results among various assay systems due to the reactivity of the antibodies involved.

"NOT INTENDED FOR NEWBORN SCREENING"

13.0 EXPECTED RANGES OF VALUES

A study of euthyroid adult population was undertaken to determine expected values for the TSH AccuBind® ELISA Test System. The number and determined range are given in Table 1. A nonparametric method (95% Percentile Estimate) was used.

TABLE I
Expected Values for the TSH ELISA Test System (in µIU/ml)

Number	139	2.5 Percentile–70% Conf Int	
Low Normal	0.39	Low Range	0.28 – 0.53
High Normal	6.16	High Range	5.60 – 6.82

It is important to keep in mind that establishment of a range of values which can be expected to be found by a given method for a population of "normal"-persons is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons each laboratory should depend upon the range of expected values established by the manufacturer only until an in-house range can be determined by the analysts using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The within and between assay precisions of the TSH AccuBind® test system were determined by analyses on three different levels of pool control sera. The number (N), mean (X) value, standard deviation (**σ**) and coefficient of variation (C.V.) for each of these control sera are presented in Table 2 and Table 3.

TABLE 2
Within Assay Precision (Values in µIU/ml)

Sample	N	X	σ	C.V.
Pool 1	24	0.37	0.03	8.1%
Pool 2	24	6.75	0.43	6.4%
Pool 3	24	29.30	1.94	6.6%

TABLE 3
Between Assay Precision* (Values in µIU/ml)

Sample	N	X	σ	C.V.
Pool 1	10	0.43	0.04	9.3%
Pool 2	10	6.80	0.54	7.9%
Pool 3	10	28.40	1.67	5.9%

*As measured in ten experiments in duplicate over seven days.

14.2 Sensitivity

The sensitivity (detection limit) was ascertained by determining the variability of the 0 µIU/ml serum calibrator and using the 2σ (95% certainty) statistic to calculate the minimum dose:

For I hr incubation = 0.078 µIU/ml
For 2 hr incubation = 0.027 µIU/ml

14.3 Accuracy

The TSH AccuBind® ELISA test system was compared with a reference immunochemiluminescence assay. Biological specimens from hypothyroid, euthyroid and hyperthyroid populations were used (The values ranged from 0.01µIU/ml – 61µIU/ml). The total number of such specimens was 241. The least square regression equation and the correlation coefficient were computed for the TSH AccuBind® ELISA method in comparison with the reference method. The data obtained is displayed in Table 4.

TABLE 4

Method	Mean (x)	Least Square Regression Analysis	Correlation Coefficient
Monobind	4.54	y = 0.47 + 0.968 (x)	0.995
Reference	4.21		

Only slight amounts of bias between the TSH AccuBind® ELISA method and the reference method are indicated by the closeness of the mean values. The least square regression equation and correlation coefficient indicates excellent method agreement.

14.4 Specificity

The cross-reactivity of the TSH AccuBind® ELISA test system to selected substances was evaluated by adding the interfering substance to a serum matrix at various concentrations. The cross-reactivity was calculated by deriving a ratio between dose of interfering substance to dose of thyrotropin needed to produce the same absorbance.

Substance	Cross Reactivity	Concentration
Thyrotropin (hTSH)	1.0000	-
Follitropin (hFSH)	< 0.0001	1000ng/ml
Lutropin Hormone (hLH)	< 0.0001	1000ng/ml
Chorionic Gonadotropin(hCG)	< 0.0001	1000ng/ml

14.5 Correlation between 1 hr and 2 hr incubation

The one- (1) hr and two (2) hr (optional) incubation procedures were compared. Thirty (30) biological specimens (ranging from 0.1 – 18.5 µIU/ml) were used The least square regression equation and the correlation coefficient were computed for the 2 hr procedure (y) in comparison with the 1 hr method (x). Excellent agreement is evidenced by the correlation coefficient, slope and intercept: Y = 0.986 (x) + 0.119 Regression Correlation =0.998

15.0 REFERENCES

1. Hopton MR, & Harrap JJ, "Immunoradiometric assay of thyrotropin as a first line thyroid function test in the routine laboratory", *Clinical Chemistry,* 32, 691 (1986).
2. Caldwell, G et al, "A new strategy for thyroid function testing", *Lancet*, I, 1117 (1985).
3. Young DS, Pestaner LC, and Gilberman U, "Effects of Drugs on Clinical Laboratory Tests", *Clinical Chemistry,* 21, 3660 (1975).
4. Spencer, CA, et al, "Interlaboratory/Intermethod differences in Functional Sensitivity of Immunometric Assays of Thyrotropin (TSH) and Impact on Reliability of Measurement of Subnormal Concentrations of TSH", *Clinical Chemistry,* 41, 367 (1995).
5. Beck-Peccoz P, Persani L, "Variable biological activity of thyroid stimulating hormone", *Eur J Endocrinol,* 131, 331-340 (1994).
6. Bravermann, LE, "Evaluation of thyroid status in patients with thyrotoxicosis", *Clin Chem*, 42, 174-181 (1996).
7. Fisher, DA, "Physiological variations in thyroid hormones. Physiological and pathophysiological considerations", *Clin Chem*, 42, 135-139 (1996).

Revision: 4 Date: 2019-Jul-16 DCO: 1353
MP325 Product Code: *325-300*

Size		96(A)	192(B)	480(D)	960(E)
Reagent (fill)	A)	1ml set	1ml set	2ml set	2ml set x2
	B)	1 (13ml)	2 (13ml)	1(60ml)	2 (60ml)
	C)	1 plate	2 plates	5 plates	10 plates
	D)	1 (20ml)	1 (20ml)	1 (60ml)	2 (60ml)
	E)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	F)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	G)	1 (8ml)	2 (8ml)	1 (30ml)	2 (30ml)

For Orders and Inquires, please contact

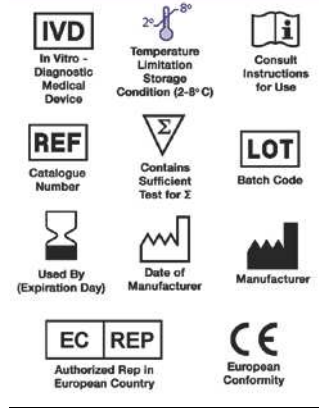
Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA

Tel: +1 949.951.2665 Mail: info@monobind.com
Fax: +1 949.951.3539 Fax: www.monobind.com

IVD 2°-8° CE
EC REP CEpartner4U, Esdoornlaan 13 3951 DB Maarn, The Neatherlands www.cepartner4u.eu

Please visit our website to learn more about our products and services.

Glossary of Symbols
(EN 980/ISO 15223)



Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Free Triiodothyronine (Free T3) Test System

Product Code: 1325-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Free Triiodothyronine Concentration in Human Serum by a Microplate Enzyme Immunoassay. Levels of Free T3 are thought to reflect the amount of T3 available to the cells and may therefore determine the clinical metabolic status of T3.

2.0 SUMMARY AND EXPLANATION OF THE TEST

Triiodothyronine, a thyroid hormone, circulates in blood bound to carrier proteins (1,2). The main transport protein is thyroxine-binding globulin (TBG). However, only the free (unbound) portion of triiodothyronine is believed to be responsible for the biological action. Further, the concentrations of the carrier proteins are altered in many clinical conditions, such as pregnancy. In normal thyroid function as the concentrations of the carrier proteins alters, the total triiodothyronine level changes so that the free triiodothyronine concentration remains constant. Thus, measurements of free triiodothyronine concentrations correlate more reliably with clinical status than total triiodothyronine levels.

For example, the increase in total triiodothyronine levels associated with pregnancy, oral contraceptives and estrogen therapy result in higher total T3 levels while the free T3 concentration remains basically unchanged.

This microplate enzyme immunoassay methodology provides the technician with optimum sensitivity while requiring few technical manipulations in a direct determination of free T3. In this method, serum reference, patient specimen, or control is first added to a microplate well. Enzyme-T3 conjugate (analog method) is added, and then the reactants are mixed. A competition reaction results between the enzyme conjugate and the free triiodothyronine for a limited number of antibody combining sites immobilized on the well.

After the completion of the required incubation period, the antibody bound enzyme-triiodothyronine conjugate is separated from the unbound enzyme-triiodothyronine conjugate by aspiration or decantation. The activity of the enzyme present on the surface of the well is quantitated by reaction with a suitable substrate to produce color.

The employment of several serum references of known free triiodothyronine concentration permits construction of a graph of activity and concentration. From comparison to the dose response curve, an unknown specimen's activity can be correlated with free triiodothyronine concentration.

3.0 PRINCIPLE

Competitive Enzyme Immunoassay TYPE 5
(Analog Method for Free T3)
The essential reagents required for a solid phase enzyme immunoassay include immobilized T3 antibody, enzyme-T3 conjugate and native free T3 antigen. The enzyme-T3 conjugate should have no measurable binding to serum proteins especially TBG and albumin. The method achieves this goal.

Upon mixing immobilized antibody, enzyme-T3 conjugate and a serum containing the native free T3 antigen, a competition reaction results between the native free T3 and the enzyme-T3 conjugate for a limited number of insolubulized binding sites. The interaction is illustrated by the following equation:

$$Enz_{Ag} + Ag + Ab_{C.W.} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} AgAb_{C.W.} + {}^{Enz}AgAb_{C.W.}$$

$Ab_{C.W.}$ = Monospecific Immobilized Antibody (Constant Quantity)

Ag = Native Antigen (Variable Quantity)

Enz$_{Ag}$ = Enzyme-antigen Conjugate (Constant Quantity)

$AgAb_{C.W.}$ = Antigen-Antibody Complex

Enz$_{Ag}$ $Ab_{C.W.}$ = Enzyme-antigen Conjugate -Antibody Complex

k_a = Rate Constant of Association

k_{-a} = Rate Constant of Disassociation

$K = k_a / k_{-a}$ = Equilibrium Constant

After equilibrium is attained, the antibody-bound fraction is separated from unbound antigen by decantation or aspiration. The enzyme activity in the antibody-bound fraction is inversely proportional to the native free antigen concentration. By utilizing several different serum references of known antigen concentration, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

Materials Provided

A. Free T3 Calibrators – 1ml/vial - Icons A-F
Six (6) vials of serum reference for free triiodothyronine at **approximate*** concentrations of 0 (**A**), 1.0 (**B**), 3.0 (**C**), 5.0 (**D**), 8.0 (**E**) and 16.0 (**F**) pg/ml. Store at 2-8°C. A preservative has been added. For SI units use the conversion factor 1.536 to convert pg/ml to pmol/L.
* Exact levels are given on the labels on a lot specific basis.

B. Free T3- Enzyme Reagent – 13ml/vial - Icon
One (1) vial of triiodothyronine -horseradish peroxidase (HRP) conjugate in a bovine albumin-stabilizing matrix. A preservative has been added. Store at 2-8°C.

C. T3 Antibody Coated Plate – 96 wells - Icon
One 96-well microplate coated with sheep anti-triiodothyronine serum and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

D. Wash Solution Concentrate – 20ml - Icon
One (1) vial containing a surfactant in buffered saline. A preservative has been added. Store at 2-8°C.

E. Substrate A – 7ml/vial - Icon S^A
One (1) bottle containing tetramethylbenzidine (TMB) in buffer. Store at 2-8°C.

F. Substrate B – 7ml/vial - Icon S^B
One (1) bottle containing hydrogen peroxide (H_2O_2) in buffer. Store at 2-8°C.

G. Stop Solution – 8ml/vial - Icon
One (1) bottle containing a strong acid (1N HCl). Store at 2-30°C.

H. Product Instructions.

4.1 Required But Not Provided:
1. Pipette capable of delivering 50µl volumes with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100ml and 0.350ml volumes with a precision of better than 1.5%.
3. Microplate washer or a squeeze bottle (optional).
4. Microplate Reader with 450nm and 620nm wavelength absorbance capability.
5. Absorbent Paper for blotting the microplate wells.
6. Plastic wrap or microplate cover for incubation steps.
7. Vacuum aspirator (optional) for wash steps.
8. Timer.
9. Quality control materials.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Opened reagents are stable for sixty (60) days when stored at 2-8°C. **Opened reagents are stable for sixty (60) days when stored at 2-8°C. Kit and component stability are identified on the label.**
Note 3: Above reagents are for a 96-well microplate. For other kit configurations, please see table at end of this IFU.

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA required tests. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.

Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood, serum in type and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube without additives or anti-coagulants. Allow the blood to clot. Centrifuge the specimen to separate the serum from the cells.

Samples may be refrigerated at 2-8^{0}C for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20^{0}C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, 0.050ml of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the hypothyroid, euthyroid and hyperthyroid range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. The individual laboratory should set acceptable assay performance limits. In addition, maximum absorbance should be consistent with past experience. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION:

1. **Wash Buffer**
Dilute contents of wash concentrate to 1000ml with distilled or deionized water in a suitable storage container. Store at 2-30°C for up to 60 days.
2. **Working Substrate Solution**
Pour the contents of the amber vial labeled Solution 'A' into the clear vial labeled Solution 'B'. Place the yellow cap on the clear vial for easy identification. Mix and label accordingly. Store at 2 - 8°C.

Note1 : Do not use the working substrate if it looks blue.

Note 2: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum references and controls to room temperature (20-27°C).
*****Test Procedure should be performed by a skilled individual or trained professional*****

1. Format the microplate wells for each serum reference, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8°C**
2. Pipette 0.050 ml (50µl) of the appropriate serum reference, control or specimen into the assigned well.
3. Add 0.100 ml (100µl) of fT3-Enzyme Reagent solution to all wells.
4. Swirl the microplate gently for 20-30 seconds to mix and cover.
5. Incubate 60 minutes at room temperature.
6. Discard the contents of the microplate by decantation or aspiration. If decanting, blot the plate dry with absorbent paper.
7. Add 350µl of wash buffer (see Reagent Preparation Section) decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
8. Add 0.100 ml (100µl) of working substrate solution to all wells (see Reagent Preparation Section). **Always add reagents in the same order to minimize reaction time differences between wells.**

DO NOT SHAKE PLATE AFTER SUBSTRATE ADDITION

9. Incubate at room temperature for fifteen (15) minutes.
10. Add 0.050ml (50µl) of stop solution to each well and gently mix for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
11. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader. **The results should be read within thirty (30) minutes of adding the stop solution.**

10.0 CALCULATION OF RESULTS

A dose response curve is used to ascertain the concentration of free triiodothyronine in unknown specimens.
1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1.
2. Plot the absorbance for each duplicate serum reference versus the corresponding Free T3 concentration in pg/ml on linear graph paper (do not average the duplicates of the serum references before plotting).
3. Draw the best-fit curve through the plotted points.
4. To determine the concentration of Free T3 for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in pg/ml) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (1.855) (intersects the standard curve at (2.1pg/ml) Free T3 concentration (See Figure 1).

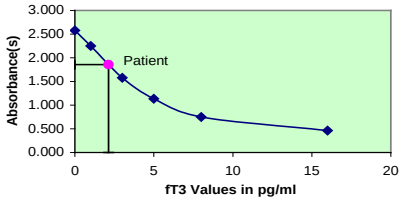
Note: Computer data reduction software designed for ELISA assays may also be used for the data reduction. If such software is utilized, the validation of the software should be ascertained.

EXAMPLE 1

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value* (pg/ml)
Cal A	A1	2.658	2.579	0.0
	B1	2.531		
Cal B	C1	2.264	2.248	1.0
	D1	2,233		
Cal C	E1	1.570	1.578	3.0
	F1	1.585		
Cal D	G1	1.124	1.135	5.0
	H1	1.145		
Cal E	A2	0.749	0.748	8.0
	B2	0.748		
Cal F	C2	0.463	0.463	16.0
	D2	0.462		
Patient	E2	1.860	1.855	***2.1***
	F2	1.849		

The data presented in Example 1 and Figure 1 is for illustration only and **should not** be used in lieu of a standard curve prepared with each assay**. Assigned values for calibrators are lot specific.**

Figure 1



11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. The absorbance (OD) of calibrator A should be ≥ 1.3.
2. Four out of six quality control pools should be within the established ranges

.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product is available on request from Monobind Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind's IFU may yield inaccurate results.
10. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
11. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
12. Risk Analysis- as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurements and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
4. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
5. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.
6. If a patient, for some reason, reads higher than the highest calibrator report as such (e.g. > 16pg/ml). ***Do not try to dilute the sample. TBG variations in different matrices will not allow Free T3 hormone to dilute serially.***
7. Several drugs are known to affect the binding of Triiodothyronine to the thyroid hormone carrier proteins or its metabolism to T3 and complicate the interpretation of free T3 results (3).
8. Circulating autoantibodies to T3 and hormone-binding inhibitors may interfere (4).
9. Heparin has been reported to have *in vivo* and *in vitro* effects on free T3 concentration (5). Therefore, do not obtain samples in which this anti-coagulant has been used.
10. In severe nonthyroidal illness (NTI), the assessment of thyroid status becomes very difficult. TSH measurements are recommended to identify thyroid dysfunction (6).
11. Familial dysalbuminemic conditions may yield erroneous results on direct free T3 assays (7).

"NOT INTENDED FOR NEWBORN SCREENING"

13.0 EXPECTED RANGES OF VALUES

A study of euthyroid adult population was undertaken to determine expected values for the fT3 AccuBind™ ELISA test system. The mean values (X), standard deviations (σ.) and expected ranges (±2σ.) are presented in Table 1.

TABLE I
Expected Values for Free T3 ELISA Test System (in pg/ml)

	Adult	Pregnancy
Number Specimens	110	75
Mean (X)	2.8	3.0
Standard Deviation (σ)	0.7	0.6
Expected Ranges (±2 σ)	1.4 – 4.2	1.8 – 4.2

It is important to keep in mind that establishment of a range of values which can be expected to be found by a given method for a population of "normal"-persons is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons each laboratory should depend upon the range of expected values established by the Manufacturer only until an in-house range can be determined by the analysts using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The within and between assay precisions of the Free T3 AccuBind™ ELISA test system were determined by analyses on three different levels of pool control sera. The number (N), mean values (X), standard deviation (σ) and coefficient of variation (C.V.) for each of these control sera are presented in Table 2 and Table 3.

TABLE 2
Within Assay Precision (Values in pg/ml)

Sample	N	X	σ	C.V.
Low	24	1.85	0.09	4.9%
Normal	24	4.49	0.16	3.6%
High	24	8.00	0.25	3.1%

TABLE 3
Between Assay Precision (Values in pg/ml)

Sample	N	X	σ	C.V.
Low	12	2.16	0.29	13.1%
Normal	12	5.09	0.40	7.9%
High	12	9.13	0.94	10.2%

*As measured in twelve experiments in duplicate.

14.2 Sensitivity

The FreeT3 AccuBind™ ELISA test system has a sensitivity of 0.410 pg/ml. The sensitivity was ascertained by determining the variability of the 0 pg/ml serum calibrator and using the 2 σ (95% certainty) statistic to calculate the minimum dose.

14.3 Accuracy

The Free T3 AccuBind™ ELISA test system was compared with a coated tube radioimmunoassay analog method. Biological specimens from hypothyroid, euthyroid and hyperthyroid populations were used (The values ranged from 0.1pg/ml – 14pg/ml). The total number of such specimens was 151. The least square regression equation and the correlation coefficient were computed for this Free T3 AccuBind™ ELISA method in comparison with the reference method. The data obtained is displayed in Table 4.

TABLE 4

Method	Mean (x)	Least Square Regression Analysis	Correlation Coefficient
This Method (Y)	3.05	y = 0.35+0.922(x)	0.902
Reference (X)	2.92		

Only slight amounts of bias between this method and the reference method are indicated by the closeness of the mean values. The least square regression equation and correlation coefficient indicates excellent method agreement.

14.4 Specificity

The cross-reactivity of the triiodothyronine antibody to selected substances was evaluated by adding the interfering substance to a serum matrix at various concentrations. The cross-reactivity was calculated by deriving a ratio between dose of interfering substance to dose of triiodothyronine needed to displace the same amount of conjugate.

SUBSTANCE	Cross Reactivity	Concentration
L-Triiodothyronine	1.0000	----
L-Thyroxine	< 0.0002	10 µg/ml
Iodothyrosine	< 0.0001	10 µg/ml
Diiodothyrosine	< 0.0001	10 µg/ml
Diiodothyronine	< 0.0001	10 µg/ml
Phenylbutazone	< 0.0001	10 µg/ml
Sodium Salicylate	< 0.0001	10 µg/ml

15.0 REFERENCES

1. Pederson KO, *Scand J Clin Lab Invest,* **34,** 247 (1974).
2. Wild D, *Immunoassay Handbook*, Stockton Press**,** 339 (1994).
3. Wenzel KW, *Metabolism,* **30,** 717 (1981).
4. Bhagat C, et al, *Clin Chem,* **29,** 1324 (1983).
5. Lundberg PR, et al, *Clin Chem,* **28,** 1241 (1982).
6. Melmed S, et al, *J Clin Endocrinol Metab***, 54,** 300 (1982).
7. Lalloz MR et al, *Clin Endocrinol*, **18,** 11 (1983).

Revision: 5 **Date: 2022-May-01** **DCO: 1557**

Cat #: *1325-300*

Size		96(A)	192(B)	480(D)	960(E)
Reagent (fill)	A)	1ml set	1ml set	2ml set	2ml set x2
	B)	1 (13ml)	2 (13ml)	1(60ml)	2 (60ml)
	C)	1 plate	2 plates	5 plates	10 plates
	D)	1 (20ml)	1 (20ml)	1 (60ml)	2 (60ml)
	E)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	F)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	G)	1 (8ml)	2 (8ml)	1 (30ml)	2 (30ml)

For Orders and Inquires, please contact

Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA

Tel: +1 949.951.2665 Mail: info@monobind.com
Fax: +1 949.951.3539 Fax: www.monobind.com

IVD 2°-8° CE
EC REP **CEpartner4U,** Esdoornlaan 13
3951 DBMaarn, The Neatherlands
www.cepartner4u.eu

Please visit our website to learn more about our products and services.

Glossary of Symbols
(EN 980/ISO 15223)

IVD — In Vitro - Diagnostic Medical Device

2°-8° — Temperature Limitation Storage Condition (2-8° C)

Consult Instructions for Use

REF — Catalogue Number

Σ — Contains Sufficient Test for Σ

LOT — Batch Code

Used By (Expiration Day)

Date of Manufacturer

Manufacturer

EC REP — Authorized Rep in European Country

CE — European Conformity

Monobind Inc.
Lake Forest, CA 92630, USA

AccuBind
ELISA Microwells

Free Thyroxine (Free T4) Test System

Product Code: 1225-300

1.0 INTRODUCTION

Intended Use: The Quantitative Determination of Free Thyroxine Concentration in Human Serum by a Microplate Enzyme Immunoassay

2.0 SUMMARY AND EXPLANATION OF THE TEST

Thyroxine, the principal thyroid hormone, circulates in blood almost completely bound to carrier proteins. The main carrier is thyroxine-binding globulin (TBG). However, only the free (unbound) portion of thyroxine is responsible for the biological action. Further, the concentrations of the carrier proteins are altered in many clinical conditions, such as pregnancy. In normal thyroid function as the concentrations of the carrier proteins alters, the total thyroxine level changes so that the free thyroxine concentration remains constant. Thus, measurements of free thyroxine concentrations correlate better with clinical status than total thyroxine levels.

The increase in total thyroxine associated with pregnancy, oral contraceptives and estrogen therapy occasionally result in total T4 levels over the limits of normal while the free thyroxine concentration remains in the normal reference range. Masking of abnormal thyroid function can also occur in both hyper and hypothyroid conditions by alterations in the TBG concentration. The total T4 can be elevated or lowered by TBG changes such that the normal reference levels result. The free thyroxine concentration can help in uncovering the patient's actual clinical status.

In this method, serum reference, patient specimen, or control is first added to a microplate well. Enzyme-T4 conjugate (analog method) is added and the reactants are mixed. A competition reaction results between the enzyme conjugate and the free thyroxine for a limited number of antibody combining sites immobilized on the well.

After the completion of the required incubation period, the antibody bound enzyme-thyroxine conjugate is separated from the unbound enzyme-thyroxine conjugate via a wash step. The activity of the enzyme present on the surface of the well is quantitated by reaction with a suitable substrate to produce color.

The employment of several serum references of known free thyroxine concentration permits construction of a graph of activity and concentration. From comparison to the dose response curve, an unknown specimen's activity can be correlated with free thyroxine concentration.

3.0 PRINCIPLE

Competitive Enzyme Immunoassay, Analog Method for Free-T4 (TYPE 5):

The essential reagents required for a solid phase enzyme immunoassay include immobilized antibody, enzyme-antigen conjugate and native antigen. Upon mixing immobilized antibody, enzyme-antigen conjugate and a serum containing the native free antigen, a competition reaction results between the native free antigen and the enzyme-antigen conjugate for a limited number of insolubilized binding sites. The interaction is illustrated by the followed equation:

$$Enz_{Ag} + Ag + Ab_{C.W.} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} AgAb_{C.W.} + {}^{Enz}AgAb_{C.W.}$$

$Ab_{C.W.}$ = Monospecific Immobilized Antibody (Constant Quantity)
Ag = Native Antigen (Variable Quantity)
^{Enz}Ag = Enzyme-antigen Conjugate (Constant Quantity)
$AgAb_{C.W.}$ = Antigen-Antibody Complex
$^{Enz}Ag\ Ab_{C.W.}$ = Enzyme-antigen Conjugate -Antibody Complex
K_a = Rate Constant of Association
k_{-a} = Rate Constant of Disassociation
$K = k_a / k_{-a}$ = Equilibrium Constant

After equilibrium is attained, the antibody-bound fraction is separated from unbound antigen by decantation or aspiration. The enzyme activity in the antibody-bound fraction is inversely proportional to the native free antigen concentration. By utilizing several different serum references of known antigen con-centration, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained.

4.0 REAGENTS

Materials Provided:

A. Free T4 Calibrators – 1 ml/vial - Icons A-F
Six (6) vials of human serum based reference calibrators for free thyroxine at **approximate*** concentrations of 0 (**A**), 0.40 (**B**), 1.25 (**C**), 2.10 (**D**), 5.00 (**E**) and 7.40 (**F**) ng/dl. Store at 2-8°C. A preservative has been added. For SI units use the conversion factor 12.9 to convert ng/dl to pmol/L.
* Exact levels are given on the labels on a lot specific basis.

B. fT4- Enzyme Reagent – 13 ml/vial - Icon E
One (1) vial of thyroxine-horseradish peroxidase (HRP) conjugate in a protein-stabilized matrix. A preservative has been added. Store at 2-8°C.

C. Free T4 Antibody Coated Plate – 96 wells - Icon
One 96-well microplate coated with anti-thyroxine serum and packaged in an aluminum bag with a drying agent. Store at 2-8°C.

D. Wash Solution Concentrate – 20ml - Icon
One (1) vial containing a surfactant in buffered saline. A preservative has been added. Store at 2-8°C.

E. Substrate A – 7 ml/vial - Icon S^A
One (1) bottle containing tetramethylbenzidine (TMB) in acetate buffer. Store at 2-8°C.

F. Substrate B – 7 ml/vial - Icon S^B
One (1) bottle containing hydrogen peroxide (H_2O_2) in acetate buffer. Store at 2-8°C.

G. Stop Solution – 8 ml/vial - Icon STOP
One (1) bottle containing a strong acid (1N HCl). Store at 2-8 °C.

H. Product Instructions.

Note 1: Do not use reagents beyond the kit expiration date.
Note 2: Opened reagents are stable for sixty (60) days when stored at 2-8°C. **Opened reagents are stable for sixty (60) days when stored at 2-8°C. Kit and component stability are identified on the label.**
Note 3: Above reagents are for a 96-well microplate. For other kit configurations, please refer to the table at the end of this IFU.

4.1 Materials Required But Not Provided:

1. Pipette capable of delivering 50µl & 100µl volumes with a precision of better than 1.5%.
2. Dispenser(s) for repetitive deliveries of 0.100ml and 0.350ml volumes with a precision of better than 1.5%.
3. Microplate washers or a squeeze bottle (optional).
4. Microplate Reader with 450nm and 620nm wavelength absorbance capability.
5. Absorbent Paper for blotting the microplate wells.
6. Plastic wrap or microplate cover for incubation steps.
7. Vacuum aspirator (optional) for wash steps.
8. Timer.
9. Quality control materials.

5.0 PRECAUTIONS

For In Vitro Diagnostic Use
Not for Internal or External Use in Humans or Animals

All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA licensed reagents. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, "Biosafety in Microbiological and Biomedical Laboratories," 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.
Safe Disposal of kit components must be according to local regulatory and statutory requirement.

6.0 SPECIMEN COLLECTION AND PREPARATION

The specimens shall be blood, serum in type and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube without additives or anti-coagulants. Allow the blood to clot. Centrifuge the specimen to separate the serum from the cells.

Samples may be refrigerated at 2-8^{0}C for a maximum period of five (5) days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20^{0}C for up to 30 days. Avoid use of contaminated devices. Avoid repetitive freezing and thawing. When assayed in duplicate, 0.100ml of the specimen is required.

7.0 QUALITY CONTROL

Each laboratory should assay controls at levels in the hypothyroid, euthyroid and hyperthyroid range for monitoring assay performance. These controls should be treated as unknowns and values determined in every test procedure performed. Quality control charts should be maintained to follow the performance of the supplied reagents. Pertinent statistical methods should be employed to ascertain trends. Significant deviation from established performance can indicate unnoticed change in experimental conditions or degradation of kit reagents. Fresh reagents should be used to determine the reason for the variations.

8.0 REAGENT PREPARATION:

1. **Wash Buffer**
   Dilute contents of wash concentrate to 1000ml with distilled or deionized water in a suitable storage container. Diluted buffer can be stored at 2-30°C for up to 60 days.
2. **Working Substrate Solution**
   Pour the contents of the plastic vial labeled Solution 'A' into the clear vial labeled Solution 'B'. Place the yellow cap on the clear vial for easy identification. Mix and label accordingly. Store at 2 - 8°C.

Note1 : Do not use the working substrate if it looks blue.
Note 2: Do not use reagents that are contaminated or have bacteria growth.

9.0 TEST PROCEDURE

Before proceeding with the assay, bring all reagents, serum references and controls to room temperature (20-27°C).
*****Test Procedure should be performed by a skilled individual or trained professional*****

1. Format the microplate wells for each serum reference, control and patient specimen to be assayed in duplicate. **Replace any unused microwell strips back into the aluminum bag, seal and store at 2-8°C**
2. Pipette 0.050 ml (50µl) of the appropriate serum reference, control or specimen into the assigned well.
3. Add 0.100 ml (100µl) of fT4 Enzyme Reagent to all wells.
4. Swirl the microplate gently for 20-30 seconds to mix and cover.
5. Incubate 60 minutes at room temperature.
6. Discard the contents of the microplate by decantation or aspiration. If decanting, blot the plate dry with absorbent paper.
7. Add 350µl of wash buffer (see Reagent Preparation Section), decant (tap and blot) or aspirate. Repeat two (2) additional times for a total of three (3) washes. **An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and repeat two (2) additional times.**
8. Add 0.100 ml (100µl) of working substrate solution to all wells (see Reagent Preparation Section). **Always add reagents in the same order to minimize reaction time differences between wells.**
   DO NOT SHAKE THE PLATE AFTER SUBSTRATE ADDITION
9. Incubate at room temperature for fifteen (15) minutes.
10. Add 0.050ml (50µl) of stop solution to each well and gently mix for 15-20 seconds. **Always add reagents in the same order to minimize reaction time differences between wells.**
11. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader. **The results should be read within thirty (30) minutes of adding the stop solution.**

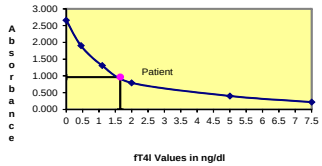
10.0 CALCULATION OF RESULTS

A dose response curve is used to ascertain the concentration of free T4 in unknown specimens.

1. Record the absorbance obtained from the printout of the microplate reader as outlined in Example 1.
2. Plot the absorbance for each duplicate serum reference versus the corresponding Free T4 concentration in ng/dl on linear graph paper (do not average the duplicates of the serum references before plotting).
3. Connect the points with a best-fit curve.
4. To determine the concentration of Free T4 for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in ng/dl) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (0.964) intersects the dose response curve at (1.65ng/dl) free T4 concentration (See Figure 1).

*The data presented in Example 1 and Figure 1 is for illustration only and **should not** be used in lieu of a standard curve prepared with each assay. **Assigned values for calibrators are lot specific.**

Figure 1



EXAMPLE 1

Sample I.D.	Well Number	Abs (A)	Mean Abs (B)	Value* (ng/dl)
Cal A	A1	2.658	2.612	0.00
	B1	2.566		
Cal B	C1	1.919	1.900	0.45
	D1	1.880		
Cal C	E1	1.339	1.306	1.10
	F1	1.273		

Cal D	G1	0.769	0.790	2.00
	H1	0.811		
Cal E	A2	0.396	0.400	5.00
	B2	0.404		
Cal F	C2	0.215	0.217	7.40
	D2	0.219		
Ctrl 1	E2	1.827	1.835	**0.50**
	F2	1.843		
Ctrl 2	G2	0.541	0.557	**2.70**
	H2	0.573		
Patient	A3	0.951	0.964	**1.65**
	B3	0.976		

Note 1: Computer data reduction software designed for ELISA assays may also be used for the data reduction. If such software is utilized, the validation of the software should be ascertained.

11.0 Q.C. PARAMETERS

In order for the assay results to be considered valid the following criteria should be met:

1. The absorbance (OD) of calibrator 0 ng/dl should be ≥ 1.3.
2. Four out of six quality control pools should be within the established ranges.

12.0 RISK ANALYSIS

The MSDS and Risk Analysis Form for this product is available on request from Monobind Inc.

12.1 Assay Performance

1. It is important that the time of reaction in each well is held constant to achieve reproducible results.
2. Pipetting of samples should not extend beyond ten (10) minutes to avoid assay drift.
3. Highly lipemic, hemolyzed or grossly contaminated specimen(s) should not be used.
4. If more than one (1) plate is used, it is recommended to repeat the dose response curve.
5. The addition of substrate solution initiates a kinetic reaction, which is terminated by the addition of the stop solution. Therefore, the substrate and stop solution should be added in the same sequence to eliminate any time-deviation during reaction.
6. Plate readers measure vertically. Do not touch the bottom of the wells.
7. Failure to remove adhering solution adequately in the aspiration or decantation wash step(s) may result in poor replication and spurious results.
8. Use components from the same lot. No intermixing of reagents from different batches.
9. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from Monobind's IFU may yield inaccurate results.
10. All applicable national standards, regulations and laws, including, but not limited to, good laboratory procedures, must be strictly followed to ensure compliance and proper device usage.
11. It is important to calibrate all the equipment e.g. Pipettes, Readers, Washers and/or the automated instruments used with this device, and to perform routine preventative maintenance.
12. Risk Analysis- as required by CE Mark IVD Directive 98/79/EC - for this and other devices, made by Monobind, can be requested via email from Monobind@monobind.com.

12.2 Interpretation

1. ***Measurements and interpretation of results must be performed by a skilled individual or trained professional.***
2. Laboratory results alone are only one aspect for determining patient care and should not be the sole basis for therapy, particularly if the results conflict with other determinants.
3. For valid test results, adequate controls and other parameters must be within the listed ranges and assay requirements.
4. If test kits are altered, such as by mixing parts of different kits, which could produce false test results, or if results are incorrectly interpreted, Monobind shall have no liability.
5. If computer controlled data reduction is used to interpret the results of the test, it is imperative that the predicted values for the calibrators fall within 10% of the assigned concentrations.
6. If a patient, for some reason, reads higher than the highest calibrator report as such (e.g. > 7.4 ng/dl). ***Do not try to dilute the sample. TBG variations in different matrices will not allow Free T4 hormone to dilute serially.***
7. Serum free-thyroxine concentration is dependent upon a multiplicity of factors: thyroid gland function and its regulation, Thyroxine binding globulin (TBG) concentration, and the binding of Thyroxine to TBG (3, 4). Thus, free-Thyroxine concentration alone is not sufficient to assess the clinical status.
8. Serum free-thyroxine values may be elevated under conditions such as pregnancy or administration of oral contraceptives.
9. A decrease in free thyroxine values is found with protein-wasting diseases, certain liver diseases and administration of testosterone, diphenylhydantoin or salicylates. A table of interfering drugs and conditions, which affect free Thyroxine values, has been compiled by the Journal of the American Association of Clinical Chemists.
10. The interpretation of Free T4 is complicated by a variety of drugs that can affect the binding of T4 to the thyroid hormone carrier proteins or interfere in its metabolism to T3. In severe non-thyroidal illness (NTI) the assessment of thyroid becomes especially difficult. Since the patients in this category may suffer from concomitant primary hypothyroidism or from compensatory secondary hypothyroidism. In cases like these a sensitive TSH evaluation of the patient may be recommended. Please see Monobind Cat# 325-300.
11. In rare conditions associated with extreme variations in albumin binding capacity for T4- such as familial dysalbuminemic hyperthyroxinemia (FDH) – direct assessment of Free T4 may be misleading.
12. Circulating antibodies to T4 and hormone binding inhibitors may interfere in the performance of the assay.
13. Heparin is reported to have in vivo and in vitro effects on free T4 levels. Samples from patients undergoing heparin therapy should be collected well before the administration of the anticoagulant.

"NOT INTENDED FOR NEWBORN SCREENING"

13.0 EXPECTED RANGES OF VALUES

A study of euthyroid adult population was undertaken to determine expected values for the Free T4 AccuBind® ELISA test system. The mean (X) values, standard deviations (σ) and expected ranges (±2σ) are presented in Table 1.

TABLE 1
Expected Values for Free T4 ELISA Test System (in ng/dl)

	Adult	Pregnancy
Number of Specimens	89	31
Mean (X)	1.40	1.50
Standard Deviation (σ)	0.30	0.37
Expected Ranges (±2 σ)	0.8 – 2.0	0.76 – 2.24

It is important to keep in mind that establishment of a range of values which can be expected to be found by a given method for a population of "normal"-persons is dependent upon a multiplicity of factors: the specificity of the method, the population tested and the precision of the method in the hands of the analyst. For these reasons each laboratory should depend upon the range of expected values established by the manufacturer only until an in-house range can be determined by the analysts using the method with a population indigenous to the area in which the laboratory is located.

14.0 PERFORMANCE CHARACTERISTICS

14.1 Precision

The *inter* and *intra* assay precisions of the Free T4 AccuBind® ELISA test system were determined by analyses on three different levels of pooled patient sera. The number (n), mean values (x), standard deviation (σ) and coefficient of variation (C.V.) for each of these control sera are presented in Table 2 and Table 3.

In order to validate the *intra-assay* precision of the Free T4 AccuBind® ELISA test system, twenty replicates of each of three pooled sera (low medium and high ranges of the dose response curve) were assayed in the same assay. An intra-assay precision of 3.25 to 10.98% was obtained.

TABLE 2
Intra-Assay Precision (in ng/dl)

Sample	N	X	σ	C.V.
Low	20	0.550	0.061	10.98%
Medium	20	1.740	0.074	4.26%
High	20	3.250	0.106	3.25%

In order to validate the *inter-assay* precision of fT4 AccuBind® ELISA test system, one duplicate of each of three pooled sera (low medium and high ranges of the dose response curve) was assayed in 10 assays done over a period of six months that involved five different sets of reagents and three different technicians. An inter-assay precision of 6.01 to 10.81% was obtained.

TABLE 3
Inter-Assay Precision (in ng/dl)

Sample	N	X	σ	C.V.
Low	10	0.480	0.052	10.81%
Medium	10	1.410	0.085	6.01%
High	10	3.490	0.279	7.90%

14.2 Sensitivity

The Free T4 AccuBind® ELISA test system has a sensitivity of 0.162 ng/dl. The sensitivity was ascertained by determining the variability of the 0 ng/dl serum calibrator and using the 2σ (95% certainty) statistics to calculate the minimum dose.

14.3 Accuracy

The Free T4 AccuBind® ELISA test system was compared with a coated tube radioimmunoassay (**RIA)** method. Biological specimens from hypothyroid, euthyroid and hyperthyroid populations were used (The values ranged from 0.1ng/dl – 8ng/dl). The total number of such specimens was 197. The least square regression equation and the correlation coefficient were computed for this Free T4 AccuBind® ELISA method in comparison with the predicate method (Table 4).

TABLE 4
Linear Regression Analysis

Method	Mean (x)	Equation	Correlation Coefficient
Monobind EIA "X"	1.56	y = 0.1034 + 0.9525x	0.920
Predicate RIA "Y"	1.59		

Only slight amounts of bias between this method and the reference method are indicated by the closeness of the mean values.

14.4 Specificity:

The cross-reactivity of the thyroxine antibody used for Free T4 AccuBind® ELISA to selected substances was evaluated by adding massive amounts of the interfering substance to a serum matrix. The cross-reactivity was calculated by deriving a ratio between doses of interfering substance to dose of thyroxine needed to displace the same amount of the conjugate.

Substance	Cross Reactivity	Concentration
l–Thyroxine	1.0000	----
d-Thyroxine	0.9800	10µg/dl
d-Triiodothyronine	0.0150	100µg/dl
l–Triiodothyronine	0.0300	100µg/dl
Iodothyrosine	0.0001	100µg/ml
Diiodotyrosine	0.0001	100µg/ml
Diiodothyronine	0.0001	100µg/ml
TBG	N/D	40 µg/ml
Albumin	N/D	40 mg/ml
Phenylbutazone	N/D	10 µg/ml
Phenytoin	N/D	40 µg/ml
Salicylates	N/D	500 µg/ml

15.0 REFERENCES

1. Barker SB, "Determination of Protein Bound Iodine, *Journal Biological Chemistry,* **173,** 175 (1948).
2. Chopra IJ, Solomon DH, and Ho RS, "A Radioimmunoassay of Thyroxine", *J Clinical Endocrinol,* **33**, 865 (1971).
3. Young DS, Pestaner L, and Gilberman U, "Effects of Drugs on Clinical Laboratory Tests", *Clinical Chemistry,* **21,** 3660 (1975).
4. Sterling L, "Diagnosis and Treatment of Thyroid Disease", CRC *Press,* 19-51 (1975).
5. Halpern EP and Bordens RW, "Microencapsulated antibodies in radioimmunoassay: Determination of free Thyroxine", *Clinical Chemistry,* **25,** 1561-1563 (1979).
6. Stjernholm MR, Alsever RN and Rudolph MC, "Thyroid function tests in diphenylhydantoin-treated patients", *Clin Chem,* **21,** 1388 (1977).
7. Nelson J.C. and Wilcox, RB. "Analytical performance of Free and Total thyroxine assays". *Clin. Chem.* **Vol. 42,** 146-154 (1996).
8. Midgeley John, "Direct and Indirect Free Thyroxine Assay Methods in Theory and Practice", *Clin Chem*, **47, 1353**-1363 (2001).
9. Bayer MF and McDougall IR, "Radioimmunoassay of free thyroxine in serum: comparison with clinical findings and results of conventional thyroid-function tests", *Clin Chem*, **26,** 1186-1192 (1980).
10. Anthony GW, Jackson RA etal, "Misleading results from immunoassays of serum free thyroxine in the presence of rheumatoid factor", *Clin Chem*, **43,** 957-962 (1997).
11. Wosilait WD, "A theoretical analysis of the distribution of thyroxine among sites on the thyroxine binding globulin, thyroid binding prealbumin and serum albumin", *Res Comm Chem Pathology-Pharmacology,* **16,** 541-548 (1977).

Revision: 6 **Date: 2022-MAY-01** **DCO: 1557**
Cat #: *1225-300*

Size		96(A)	192(B)	480(D)	960(E)
Reagent (fill)	A)	1ml set	1ml set	2ml set	2ml set x2
	B)	1 (13ml)	2 (13ml)	1(60ml)	2 (60ml)
	C)	1 plate	2 plates	5 plates	10 plates
	D)	1 (20ml)	1 (20ml)	1 (60ml)	2 (60ml)
	E)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	F)	1 (7ml)	2 (7ml)	1 (30ml)	2 (30ml)
	G)	1 (8ml)	2 (8ml)	1 (30ml)	2 (30ml)

For Orders and Inquires, please contact
Monobind Inc.
100 North Pointe Drive
Lake Forest, CA 92630 USA
Tel: +1 949.951.2665 Mail: info@monobind.com
Fax: +1 949.951.3539 Fax: www.monobind.com

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