



Public Health Institute Ostrava
Center of clinical laboratories
Testing laboratory n. 1554 accredited
according to ISO/IEC 17025
Partyzánské nám.7, 702 00 Ostrava
VAT: CZ71009396
Laboratory for testing virucidal effect



TEST REPORT n. 3/2015/SVU

Virucidal quantitative suspension test for chemical disinfectants and antiseptics used in human medicine - Test method and requirements (phase 2/ step 1) – according DVV/RKI:2008

Customer:

SCHULKE CZ s.r.o.
Lidická 326
735 95 Bohumín
CZ

Order number:

50000208

Reference number:

ZU/07963/2015

Identification of disinfectant – sample:

Product name:

CHIROSAN PLUS

Lot number:

50981BMA

Expiration:

4/2016

Producer:

Schulke CZ s.r.o.

Storage conditions:

-10°C to +25°C

Diluent product recommended by the producer for use:

domestic water

Product appearance:

white powder

The active substance(s) and its (their) concentration:

peracetic acid generated in situ

Activation of solution:

15 min intensive blending

Purpose of product:

surface and instruments disinfection

Date of delivery of the product:

26.3.2015

Date of test:

2.4. – 25.5.2015

Results - for details see annex

According to DVV/RKI the test product CHIROSAN PLUS, designed for surface and instruments disinfection, diluted by water to 0,5% demonstrate virucidal activity after an exposure time 5 min, 10 min and 30 min, at temperature $20^{\circ}\text{C}\pm 1^{\circ}\text{C}$, under dirty conditions (10% fetal bovine serum)), using viral titration on monolayer cell culture on a microtitre plate by reduction of reference virus *Vaccinia virus, strain Elstree* by more than 4 lg.

According to DVV/RKI the test product CHIROSAN PLUS, designed for surface and instruments disinfection, diluted by water to 0,5% does not demonstrate virucidal activity after an exposure time 5 min and 10 min, at temperature $20^{\circ}\text{C}\pm 1^{\circ}\text{C}$, under dirty conditions (10% fetal bovine serum)), using viral titration on monolayer cell culture on a microtitre plate by reduction of reference virus *Bovine viral diarrhea virus, strain NADL* by more than 4 lg.

According to DVV/RKI the test product CHIROSAN PLUS, designed for surface and instruments disinfection, diluted by water to 0,5% demonstrate virucidal activity after an exposure time 15 min and 30 min, at temperature $20^{\circ}\text{C}\pm 1^{\circ}\text{C}$, under dirty conditions (10% fetal bovine serum)), using viral titration on monolayer cell culture on a microtitre plate by reduction of reference virus *Bovine viral diarrhea virus, strain NADL* by more than 4 lg

Conclusion:

According to DVV/RKI the test product CHIROSAN PLUS diluted by water to 0,5% demonstrate limited virucidal activity to enveloped viruses under the dirty conditions after exposure time 15 min.

In Ostrava, 26.5.2015

Zdravotní ústav se sídlem v Ostravě
Partyzánské nám. 7, 728 92 Ostrava
IČ: 71009396

Mgr. Ludmila Porubová
Guarantor of testing

Annex to the protocol n.: 3/2015/SVU

Identification of product:

Product name:	CHIROSAN PLUS
Lot number:	027A140418
Expiration:	4/2016
Producer:	Schulke CZ s.r.o.
Date of delivery of product	26.3.2015
Storage conditions:	-10°C to +25°C
Diluent:	domestic water
Product appearance:	white powder
The active compound(s) and its (their) concentration:	peracetic acid generated in situ
Activation of solution:	15 min intensive blending

Experimental conditions:

	Quantitative suspension test for the determine of virucidal effect of disinfectant according DVV/RKI (SOP n. 1901)
Date of testing:	2.4. – 25.5.2015
Diluent:	hard water
Testing concentration:	0,5%
Appearance of dilution of the product:	clear solution
Contact times:	5 min, 10 min, 30 min; 15 min only BVDV
Testing temperature:	20°C±1°C
Interfering substance:	dirty conditions – 10% FBS
Stability of mixture during testing:	stable
Incubation temperature:	37°C±1°C
Method of filtration:	MicroSpin
Test virus:	<i>Vaccinia virus, strain Elstree</i> (ATCC) 7.passage, EMEM + 2% FBS <i>Bovine viral diarrhea virus, strain NADL</i> (ATCC), 4., 6. and 7.passage, DMEM + 2% FBS
Proces to stop action of product:	virucidal activity of product is suppressed by transferring the sample into the ice cold diluent
Cell line:	Vero(ATCC), 22. to 25.pasáž, DMEM + 10% FBS KOP-R (FLI), 28. to 39. passage, EMEM + 10% FBS
Titration method:	viral titration on monolayer cell culture on the microplates
Reference substance:	Formaldehyde (Sigma-Aldrich, č.š. SZBC2290V)
Titers calculatted by:	Spaerman – Kärber's method

Test detail:

1. Preparation of tissue culture testing
2. Preparation of the test virus suspension
3. Test infectivity of the virus
4. Titration of the virus with the conditions
5. The cytotoxic effect of the product
6. Reference viral inactivation test
7. Viral inactivation test of product
8. Control of susceptibility

Table n.1 The results and validation of the test for product CHIROSAN PLUS to *Vaccinia virus*, strain *Elstree* – dirty conditions – 1.test

Product	Concentration	Interfering substance	Level of cytotoxicity	log 10 TCID50/ ml after ... min					Reduction factor (Δlog ₁₀ TCID ₅₀ / ml after ... min)				
				0,25	5	10	30	60	5	10	30	60	
CHIROSAN PLUS	0,5%	10% FBS	2,5	n.d.	2,5 ± 0,000	2,5 ± 0,000	2,5 ± 0,000	n.d.	4,6 ± 0,478	4,6 ± 0,478	4,6 ± 0,478	n.d.	
CHIROSAN PLUS+ Microspin	0,5%	10% FBS	1,5	n.d.	1,55 ± 0,000	n.d.	n.d.	n.d.	5,4 ± 0,370	n.d.	n.d.	n.d.	
Formaldehyde	0,7% (m/V)	PBS	2,5	n.d.	5,3 ± 0,151	4,1 ± 0,185	2,5 ± 0,000	2,5 ± 0,000	1,6 ± 0,478	2,8 ± 0,524	4,4 ± 0,000	4,4 ± 0,000	
Virus control	n.a.	10% FBS	n.a.	n.d.	7,1 ± 0,239	n.d.	n.d.	n.d.					
Virus control + Microspin	n.a.	10% FBS	n.a.	n.d.	6,9 ± 0,185	n.d.	n.d.	n.d.	6,9 ± 0,000				
Susceptibility of cells - PBS	n.a.	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.	7,3 ± 0,239				
Susceptibility of cells -- CHIROSAN PLUS	0,05%	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.	6,9 ± 0,185				

Table n.2 The results and validation of the test for product CHIROSAN PLUS to *Vaccinia virus*, strain *Elstree* – dirty conditions – 2.test

Product	Concentration	Interfering substance	Level of cytotoxicity	log 10 TCID50/ ml after ... min					Reduction factor (Δlog ₁₀ TCID ₅₀ / ml after ... min)			
				0,25	5	10	30	60	5	10	30	60
CHIROSAN PLUS	0,5%	10% FBS	2,5	n.d.	2,5 ± 0,000	2,5 ± 0,000	2,5 ± 0,000	n.d.	4,8 ± 0,302	4,8 ± 0,302	4,8 ± 0,302	n.d.
Formaldehyde	0,7% (m/V)	PBS	2,5	n.d.	5,3 ± 0,000	4,1 ± 0,185	2,5 ± 0,000	2,5 ± 0,000	1,0 ± 0,000	1,4 ± 0,370	4,0 ± 0,000	4,0 ± 0,000
Virus control	n.a.	10% FBS	n.a.	n.d.	7,3 ± 0,151	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Virus control + Microspin	n.a.	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.	6,5 ± 0,000	n.d.	n.d.	n.d.
Susceptibility of cells - PBS	n.a.	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.	6,9 ± 0,185	n.d.	n.d.	n.d.
Susceptibility of cells – CHIROSAN PLUS	0,05%	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	n.d.	6,7 ± 0,151	n.d.	n.d.	n.d.

Prepared by: Mgr. Ludmila Porubová

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Table n.3 The results and validation of the test for product CHIROSAN PLUS to BVDV, strain NADL – dirty conditions – 1.test

Product	Concentration	Interfering substance	Level of cytotoxicity	log 10 TCID ₅₀ / ml after ... min					Reduction factor ($\Delta \log_{10}$ TCID ₅₀ / ml after ... min)				
				5	10	15	30	60	5	10	15	30	60
CHIROSAN PLUS	0,5%	10% FBS	1,5	2,9 ± 0,214	1,7 ± 0,151	1,5 ± 0,000	1,5 ± 0,000	n.d.	2,6 ± 0,428	3,8 ± 0,305	4,0 ± 0,302	4,0 ± 0,000	n.d.
Formaldehyde	0,7% (m/V)	PBS	2,5	3,7 ± 0,151	3,5 ± 0,000	n.d.	2,5 ± 0,000	2,5 ± 0,000	1,8 ± 0,302	2,0 ± 0,000	n.d.	3,0 ± 0,000	3,0 ± 0,000
Virus control	n.a.	10% FBS	n.a.	5,5 ± 0,000	n.d.	n.d.	n.d.	n.d.					
Virus control + Microspin	n.a.	10% FBS	n.a.	5,5 ± 0,000	n.d.	n.d.	n.d.	5,5 ± 0,000					
Susceptibility of cells - PBS	n.a.	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	5,5 ± 0,000					
Susceptibility of cells – CHIROSAN PLUS	0,05%	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	5,5 ± 0,000					

Table n.4 The results and validation of the test for product CHIROSAN PLUS to BVDV, strain NADL – dirty conditions – 2.test

Product	Concentration	Interfering substance	Level of cytotoxicity	log 10 TCID ₅₀ / ml after ... min					Reduction factor ($\Delta \log_{10}$ TCID ₅₀ / ml after ... min)				
				5	10	15	30	60	5	10	15	30	60
CHIROSAN PLUS	0,5%	10% FBS	1,5	6,1 ± 0,185	2,7 ± 0,302	1,7 ± 0,151	1,5 ± 0,000	n.d.	0,4 ± 0,370	3,8 ± 0,605	4,8 ± 0,302	5,0 ± 0,000	n.d.
Formaldehyde	0,7% (m/V)	PBS	2,5	4,3 ± 0,185	3,5 ± 0,000	3,5 ± 0,000	2,5 ± 0,000	2,5 ± 0,000	2,2 ± 0,478	2,8 ± 0,302	n.d.	3,8 ± 0,370	3,8 ± 0,370
Virus control	n.a.	10% FBS	n.a.	6,5 ± 0,000	n.d.	n.d.	n.d.	n.d.					
Virus control + Microspin	n.a.	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	6,3 ± 0,151					
Susceptibility of cells - PBS	n.a.	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	6,3 ± 0,151					
Susceptibility of cells – CHIROSAN PLUS	0,05%	10% FBS	n.a.	n.d.	n.d.	n.d.	n.d.	6,5 ± 0,000					

Prepared by: Mgr. Ludmila Porubová 

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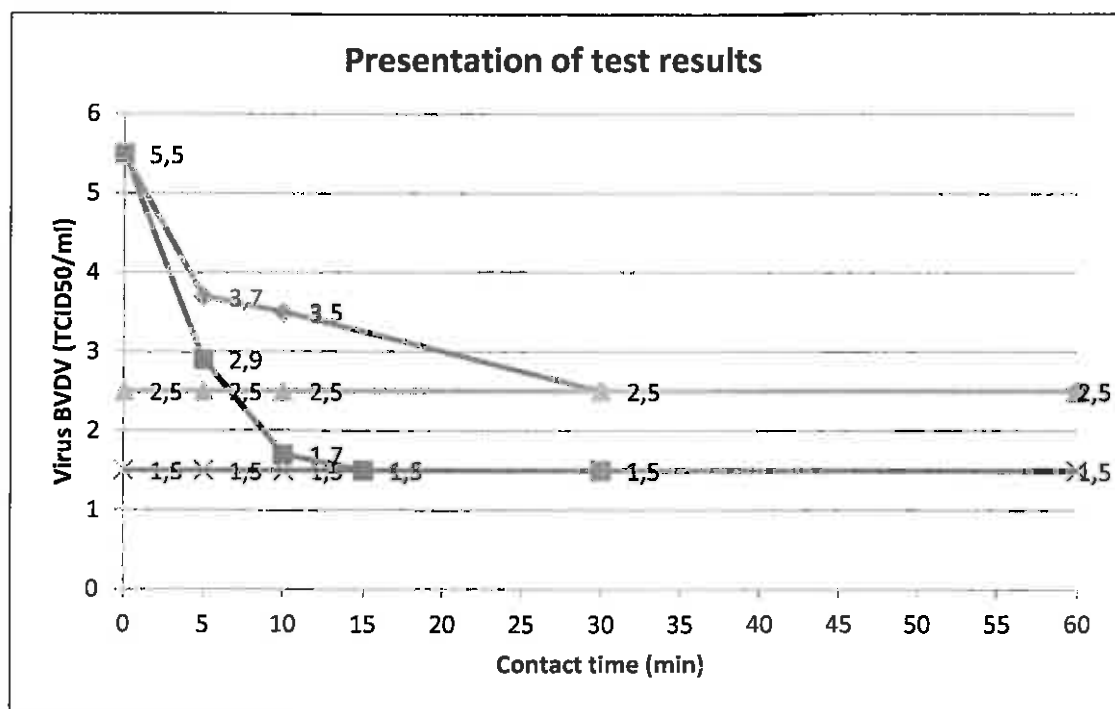
Table n.5: Average results of the test for product CHIROSAN PLUS to *Vaccinia virus, strain Elstree*

Product - concentration	Interfering substance	Level of cytotoxicity	Virus control	Contact time	Reduction factor (log ₁₀ TCID ₅₀ / ml)		Average reduction factor and its 95% confidence interval (log ₁₀ TCID ₅₀ / ml)
					1 test	2 test	
CHIROSAN PLUS – 0,5%	10% FBS	2,5	7,1 ± 0,239 (1.test)	5 min	4,6 ± 0,478	4,8 ± 0,302	4,7 ± 0,399
CHIROSAN PLUS – 0,5%	10% FBS	2,5	7,3 ± 0,151 (2.test)	10 min	4,6 ± 0,478	4,8 ± 0,302	4,7 ± 0,399
CHIROSAN PLUS – 0,5%	10% FBS	2,5		30 min	4,6 ± 0,478	4,8 ± 0,302	4,7 ± 0,399

Table n.6: Average results of the test for product CHIROSAN PLUS to *BVDV, strain NADL*

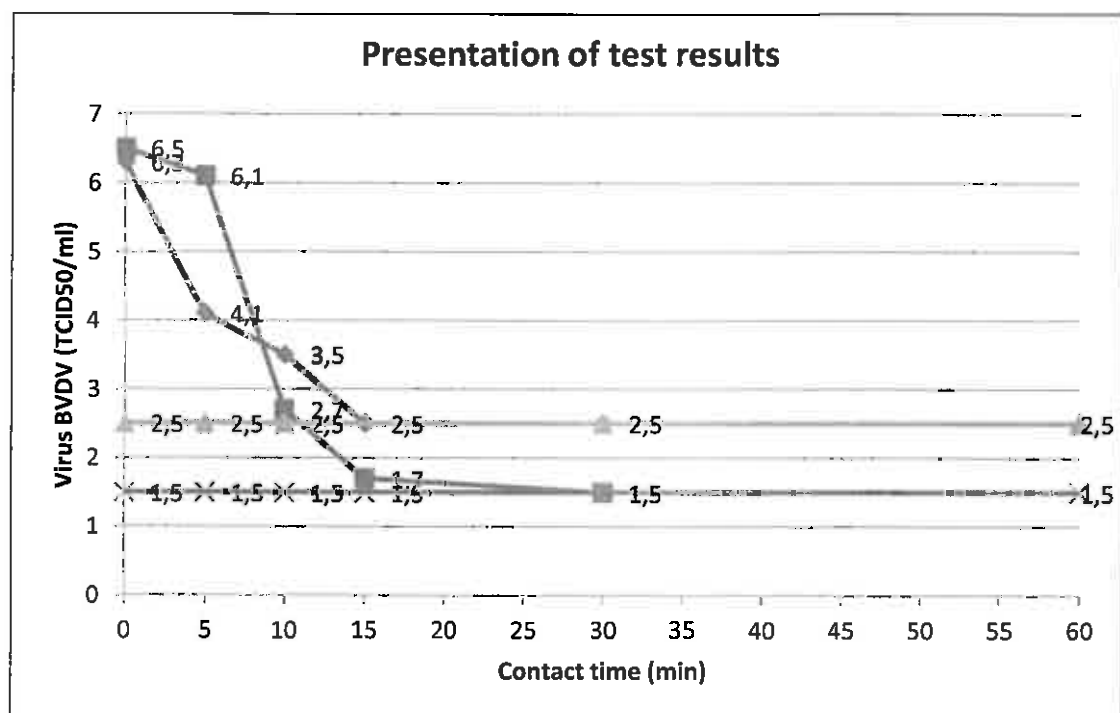
Product - concentration	Interfering substance	Level of cytotoxicity	Virus control	Contact time	Reduction factor (log ₁₀ TCID ₅₀ / ml)		Average reduction factor and its 95% confidence interval (log ₁₀ TCID ₅₀ / ml)
					1 test	2 test	
CHIROSAN PLUS – 0,5%	10% FBS	1,5	5,5 ± 0,000 (1.test)	5 min	2,6 ± 0,428	0,4 ± 0,370	1,5 ± 0,400
CHIROSAN PLUS – 0,5%	10% FBS	1,5	6,5 ± 0,000 (2.test)	10 min	3,8 ± 0,305	3,8 ± 0,605	3,8 ± 0,479
CHIROSAN PLUS – 0,5%	10% FBS	1,5		15 min	4,0 ± 0,302	4,8 ± 0,302	4,4 ± 0,302
CHIROSAN PLUS – 0,5%	10% FBS	2,5		30 min	4,0 ± 0,000	5,0 ± 0,000	4,5 ± 0,000

Figure 1: Graphic presentation of results of the test for product CHIROSAN PLUS to BVDV, strain NADL – 1.test



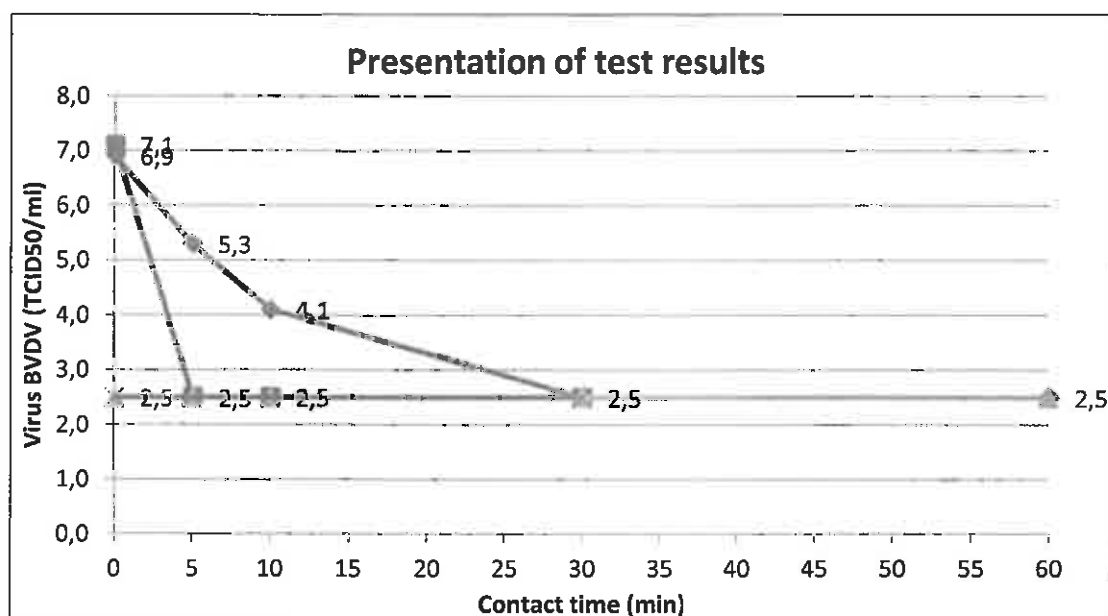
Key: Inactivation of virus BVDV by formaldehyde 0,7%, Inactivation of virus BVDV by Chirosan plus 0,5%,
 Cytotoxicity of formaldehyde 0,7%, Cytotoxicity of Chirosan plus 0,5%

Figure 2: Graphic presentation of results of the test for product CHIROSAN PLUS to BVDV, strain NADL – 2.test



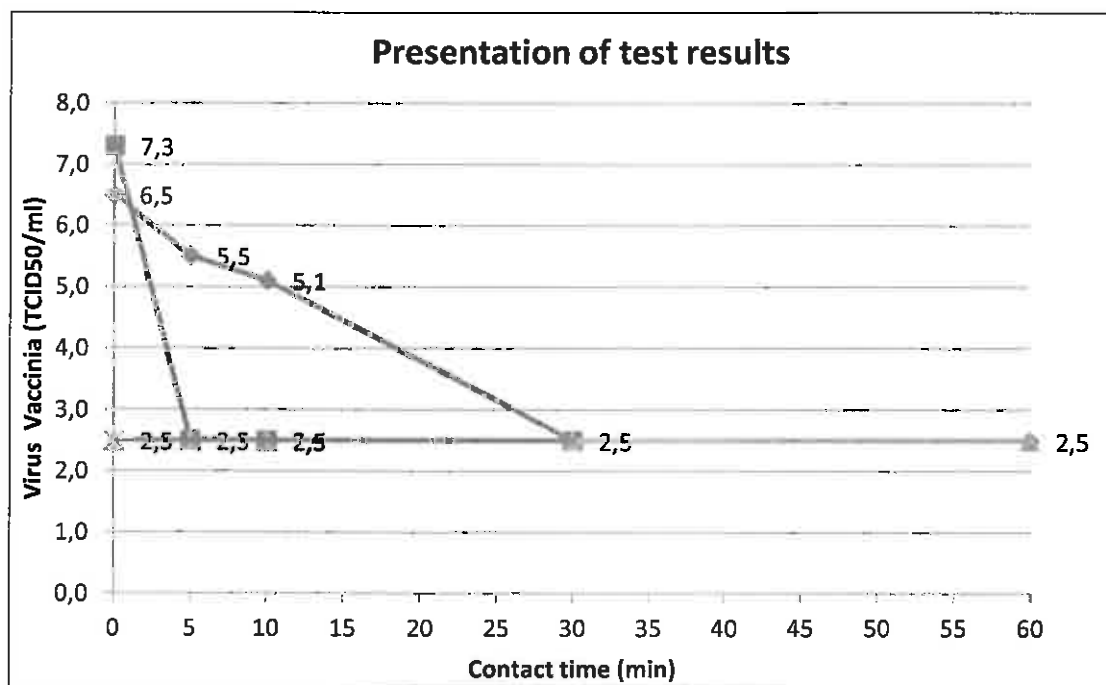
Key: Inactivation of virus BVDV by formaldehyde 0,7%, Inactivation of virus BVDV by Chirosan plus 0,5%,
 Cytotoxicity of formaldehyde 0,7%, Cytotoxicity of Chirosan plus 0,5%

Figure 3: Graphic presentation of results of the test for product CHIROSAN PLUS to *Vaccinia virus*, strain *Elstree* – 1.test



Key: Inactivation of virus Vaccinia by formaldehyde 0,7%, Inactivation of virus Vaccinia by Chirosan plus 0,5%, Cytotoxicity of formaldehyde 0,7%, Cytotoxicity of Chirosan plus 0,5%

Figure 4: Graphic presentation of results of the test for product CHIROSAN PLUS to *Vaccinia virus*, strain *Elstree* – 2.test



Key: Inactivation of virus Vaccinia by formaldehyde 0,7%, Inactivation of virus Vaccinia by Chirosan plus 0,5%, Cytotoxicity of formaldehyde 0,7%, Cytotoxicity of Chirosan plus 0,5%

Table n.7: Raw data of test for product CHIROSAN PLUS to *Vaccinia virus*, strain *Elstree* – dirty conditions – 1.test

Product	Concentration	Interfering substance	Contact time	Dilution (log 10)							
				-1	-2	-3	-4	-5	-6	-7	-8
Chirosan plus	0,5%	10% FBS	5 min	CT	00000	00000	00000	00000	00000	00000	00000
Chirosan plus + MicroSpin	0,5%	10% FBS	5 min	00000	00000	00000	00000	00000	00000	00000	00000
Chirosan plus	0,5%	10% FBS	10 min	CT	00000	00000	00000	00000	00000	00000	00000
Chirosan plus	0,5%	10% FBS	30 min	CT	00000	00000	00000	00000	00000	00000	00000
Cytotoxicity CHIROSAN PLUS	0,5%	10% FBS	n.a.	CT	00000	00000	00000	n.a.	n.a.	n.a.	n.a.
Cytotoxicity CHIROSAN PLUS + Microspin	0,5%	10% FBS	n.a.	00000	00000	00000	00000	n.a.	n.a.	n.a.	n.a.
Cytotoxicity Formaldehyde	0,7% (m/V)	PBS	n.a.	CT	00000	00000	00000	n.a.	n.a.	n.a.	n.a.
Formaldehyde	0,7% (m/V)	PBS	5 min	CT	33333	22222	11101	00000	00000	00000	00000
			10 min	CT	33333	00211	00000	00000	00000	00000	00000
			30 min	CT	00000	00000	00000	00000	00000	00000	00000
			60 min	CT	00000	00000	00000	00000	00000	00000	00000
Susceptibility of cells - PBS	n.a.	10% FBS	60 min	44444	44444	44444	44444	22332	23002	00100	00000
Susceptibility of cells - CHIROSAN PLUS	0,05%	10% FBS	60 min	44444	44444	44444	44444	33333	01030	00000	00000
Virus control	n.a.	10% FBS	5 min	44444	44444	44444	44444	33423	02010	00200	00000
Virus control + Microspin	n.a.	10% FBS	5 min	44444	44444	44444	44444	44342	00110	00000	00000
Virus control + Microspin	n.a.	10% FBS	60 min	44444	44444	44444	44444	32222	00000	00000	00000

1 to 4 virus detectable (1 = 25% CPE, 4 = 100% CPE)

0 no virus/ no cytotoxicity

n.a. not applicable

n.d. not done

CT Cytotoxicologic effect

CPE Cytopathogenic effect

Prepared by: Mgr. Ludmila Porubová



Table n.8: Raw data of test for product CHIROSAN PLUS to *Vaccinia virus*, strain *Elstree* – dirty conditions – 2.test

Product	Concentration	Interfering substance	Contact time	Dilution (log 10)							
				-1	-2	-3	-4	-5	-6	-7	-8
Chirosan plus	0,5%	10% FBS	5 min	CT	00000	00000	00000	00000	00000	00000	00000
Chirosan plus	0,5%	10% FBS	10 min	CT	00000	00000	00000	00000	00000	00000	00000
Chirosan plus	0,5%	10% FBS	30 min	CT	00000	00000	00000	00000	00000	00000	00000
Cytotoxicity CHIROSAN PLUS	0,5%	10% FBS	n.a.	CT	00000	00000	00000	n.a.	n.a.	n.a.	n.a.
Cytotoxicity Formaldehyde	0,7% (m/V)	PBS	n.a.	CT	00000	00000	00000	n.a.	n.a.	n.a.	n.a.
Formaldehyde	0,7% (m/V)	PBS	5 min	CT	44444	33333	22222	00000	00000	00000	00000
			10 min	CT	44444	22222	01101	00000	00000	00000	00000
			30 min	CT	00000	00000	00000	00000	00000	00000	00000
			60 min	CT	00000	00000	00000	00000	00000	00000	00000
Susceptibility of cells - PBS	n.a.	10% FBS	60 min	44444	44444	44444	44444	43322	00310	00000	00000
Susceptibility of cells - CHIROSAN PLUS	0,05%	10% FBS	60 min	44444	44444	44444	44444	32332	03000	00000	00000
Virus control	n.a.	10% FBS	5 min	44444	44444	44444	44444	33423	10311	00000	00000
Virus control + Microspin	n.a.	10% FBS	60 min	44444	44444	44444	44444	44333	00000	00000	00000

1 to 4 virus detectable (1 = 25% CPE, 4 = 100% CPE)

0 no virus/ no cytotoxicity

n.a. not applicable

n.d. not done

CT Cytotoxicologic effect

CPE Cytopathogenic effect

Prepared by: Mgr. Ludmila Porubová

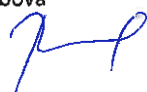


Table n.9: Raw date of test for product CHIROSAN PLUS to BVDV, strain NADL – dirty conditions – 1.test

Product	Concentration	Interfering substance	Contact time	Dilution (log 10)							
				-1	-2	-3	-4	-5	-6	-7	-8
Chirosan plus	0,5%	10% FBS	5 min	44444	00004	00004	00000	00000	00000	00000	00000
Chirosan plus + MicroSpin	0,5%	10% FBS	5 min	44444	04440	04004	00000	00000	00000	00000	00000
Chirosan plus	0,5%	10% FBS	10 min	00300	00000	00000	00000	00000	00000	00000	00000
Chirosan plus + MicroSpin	0,5%	10% FBS	10 min	00303	00000	00000	00000	00000	00000	00000	00000
Chirosan plus	0,5%	10% FBS	15 min	00000	00000	00000	00000	00000	00000	00000	00000
Chirosan plus	0,5%	10% FBS	30 min	00000	00000	00000	00000	00000	00000	00000	00000
Chirosan plus + MicroSpin	0,5%	10% FBS	30 min	00000	00000	00000	00000	00000	00000	00000	00000
Cytotoxicity CHIROSAN PLUS	0,5%	10% FBS	n.a.	00000	00000	00000	00000	n.a.	n.a.	n.a.	n.a.
Cytotoxicity CHIROSAN PLUS + Microspin	0,5%	10% FBS	n.a.	00000	00000	00000	00000	n.a.	n.a.	n.a.	n.a.
Cytotoxicity Formaldehyde	0,7% (m/V)	PBS	n.a.	CT	CT	CT	00000	n.a.	n.a.	n.a.	n.a.
Formaldehyde	0,7% (m/V)	PBS	5 min	CT	33333	22222	11101	00000	00000	00000	00000
			10 min	CT	33333	00211	00000	00000	00000	00000	00000
			30 min	CT	00000	00000	00000	00000	00000	00000	00000
			60 min	CT	00000	00000	00000	00000	00000	00000	00000
Susceptibility of cells - PBS	n.a.	10% FBS	60 min	44444	44444	44444	33333	00000	00000	00000	00000
Susceptibility of cells - CHIROSAN PLUS	0,05%	10% FBS	60 min	44444	44444	44444	33333	00000	00000	00000	00000
Virus control	n.a.	10% FBS	5 min	44444	44444	44444	33333	00000	00000	00000	00000
Virus control + Microspin	n.a.	10% FBS	5 min	44444	44444	44444	33333	00000	00000	00000	00000
Virus control + Microspin	n.a.	10% FBS	60 min	44444	44444	44444	33333	00000	00000	00000	00000

1 to 4 virus detectable (1 = 25% CPE, 4 = 100% CPE)

0 no virus/ no cytotoxicity

n.a. not applicable

n.d. not done

CT Cytotoxicologic effect

CPE Cytopathogenic effect

Prepared by: Mgr. Ludmila Porubová



Table n.10: Raw data of test for product CHIROSAN PLUS to BVDV, strain NADL – dirty conditions – 2.test

Product	Concentration	Interfering substance	Contact time	Dilution (log 10)							
				-1	-2	-3	-4	-5	-6	-7	-8
Chirosan plus	0,5%	10% FBS	5 min	44444	44444	22333	33333	32200	00000	00000	00000
Chirosan plus	0,5%	10% FBS	10 min	33000	03330	30000	00000	00000	00000	00000	00000
Chirosan plus	0,5%	10% FBS	15 min	00200	00000	00000	00000	00000	00000	00000	00000
Chirosan plus	0,5%	10% FBS	30 min	00000	00000	00000	00000	00000	00000	00000	00000
Cytotoxicity CHIROSAN PLUS	0,5%	10% FBS	n.a.	00000	00000	00000	00000	n.a.	n.a.	n.a.	n.a.
Cytotoxicity Formaldehyde	0,7% (m/V)	PBS	n.a.	CT	00000	00000	00000	n.a.	n.a.	n.a.	n.a.
Formaldehyde	0,7% (m/V)	PBS	5 min	CT	44444	03303	00000	00000	00000	00000	00000
			10 min	CT	44444	00000	00000	00000	00000	00000	00000
			30 min	CT	0000	00000	00000	00000	00000	00000	00000
			60 min	CT	0000	00000	00000	00000	00000	00000	00000
Susceptibility of cells - PBS	n.a.	10% FBS	60 min	44444	44444	44444	33333	44332	00000	00000	00000
Susceptibility of cells - CHIROSAN PLUS	0,05%	10% FBS	60 min	44444	44444	44444	33333	33204	00000	00000	00000
Virus control	n.a.	10% FBS	5 min	44444	44444	44444	44444	33243	00000	00000	00000
Virus control + Microspirin	n.a.	10% FBS	60 min	44444	44444	44444	44324	03303	00000	00000	00000

1 to 4 virus detectable (1 = 25% CPE, 4 = 100% CPE)

0 no virus/ no cytotoxicity

n.a. not applicable

n.d. not done

CT Cytotoxicologic effect

CPE Cytopathogenic effect

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