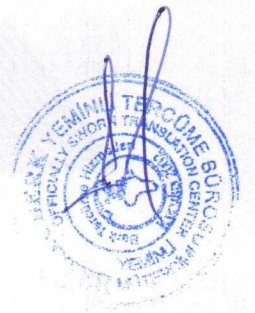


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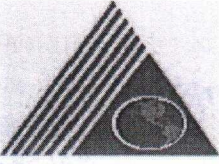
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GENETICS AND BIOENGINEERING DEPARTMENT
BIOCIDAL AND R & D LABORATORIES

MICROBIOLOGICAL ACTIVITY ANALYSIS REPORT OF
"DETROCID ENZYM"

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ANALYSIS REPORT OF
BIOCIDAL AND R & D LABORATORIES

REPUBLIC OF TURKEY YEDITEPE UNIVERSITY

Sample name : DETROCID ENZYM
Sample Registration No. : 2018-032
Report No : 032-AG-2018
Date : 21.05.2018

REPORT CONTENT

1. Sample Information
2. Sample Analysis Results
3. Approval and Signatures
4. Legal Information
5. Appendix

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REPUBLIC OF TURKEY YEDITEPE UNIVERSITY

Sample name : DETROCID ENZYM
Sample Registration No. : 2018-032
Report No : 032-AG-2018
Date : 21.05.2018

1. SAMPLE INFORMATION

REPORT NO AND DATE	032-AG-2018	21.5.2018
SAMPLE NAME / TYPE	Detroid Enzym	
SAMPLE REGISTER NO	2018-032	
SAMPLE'S ARRIVAL DATE	21.03.2018	
SAMPLE MATRIX / CONTENT	Didesyldimethylammonium chloride, Benzalkonium chloride, Bis (3-aminopropyl) dodecylamine	
RESPONSIBLE PERSON / FOUNDATION THAT SENT THE SAMPLE:	Detroks Kimya ve Sağlık Ürünleri Üret. Dağ. Hiz. San. İç ve Dış Tic. Ltd. Şti.	
THE REASON AND THE SHAPE OF THE SAMPLE	Microbiological Activity Analysis	
SAMPLE QUANTITY	2 pcs	
PACKAGING STATUS	Unsealed	
SAMPLE CHARGER / SERIAL	No: 7192018001	
PRODUCTION DATE AND LAST DATE OF USE	19.03.2018 - 19.03.2020	

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ANALYSIS REPORT OF
BIOCİDAL AND R & D LABORATORİES

REPUBLIC OF TURKEY YEDİTEPE UNIVERSITY

Sample name : DETROCİD ENZYM
Sample Registration No. : 2018-032
Report No : 032-AG-2018
Date : 21.05.2018

2. ANALYSIS RESULTS

THE START AND THE END DATE OF ANALYSIS	11.04.2018/30.04.2018
ANALYSIS METHOD	EN 13727, EN 13624, EN 14348, EN 13704
PRODUCT DILUENT	Hard Water
DISRUPTIVE SUBSTANCE	3 g / L Bovine Albumin Serum
NEUTRALIZER SUBSTANCE	Egg Lecithin (3 g/L) + Tween 80 (30 g/L) + Saponin (30 g/L)
NUMBER OF EXPERIMENTS	2
EXPERIMENT CONDITIONS	Bacteria: 37 °C, Yeast 37 °C, Fungus: 25 ± 3°C
ANALYSIS RESULTS	Attached.
COMMENT	It was examined according to EN 13727, EN 13624, EN 14348 and EN 13704 the % reduction effects of Detrocid Enzym named product with concentration 0,5% and %1 the microorganisms mentioned in the attachment under contaminated conditions (3 g/L), 20 °C at the end of the 15-minute contact time. The results are attached.

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Sample name : DETROCID ENZYM
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3. APPROVAL AND SIGNATURES

/Signature/	/Signature/
Biologist Sadık Kalaycı Responsible of Microbiology Lab	Prof. Dr. Fikrettin Shahin President of Genetic and Biotic department

4. LEGAL INFORMATION

Copying of total or part of the analysis report can only be made with the WRITTEN approval of Yeditepe University Biocidal and R & D Laboratories. Besides, it cannot be used for advertisement purposes except for OFFICIAL purpose without the WRITTEN permission of Yeditepe University Biocidal and R & D Laboratories and the name of the university cannot be written on the product label. When deemed otherwise, Yeditepe University Rectorate reserves the right to request and request all kinds of legal applications.

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5. APPENDIX
5.1 Test results

ANTIMICROBIAL TEST RESULTS				
NAME OF MICROORGANISM	BIOLOGICAL ACTIVITY	APPLICATION DOSAGE	CONTACT TIME	ANTIMICROBIAL EFFECT % REDUCTION
Escherichia coli ATCC 10536	+	0,5%	15 minutes	99,999%
Staphylococcus aureus ATCC 6538	+	0,5%	15 minutes	99,999%
Pseudomonas aeruginosa ATCC 15442	+	0,5%	15 minutes	99,999%
Enterococcus hirae ATCC 10541	+	0,5%	15 minutes	99,999%
Mycobacterium avium ATCC 15769	+	0,5%	15 minutes	99,99%
Mycobacterium terrae ATCC 15755 (Strain, W45)	+	0,5%	15 minutes	99,99%
Bacillus subtilis (Sporu) ATCC 6633	- +	0,5% 1%	15 minutes 15 minutes	< 99,9% 99,99%
Candida albicans ATCC 10231	+	0,5%	15 minutes	99,99%
Aspergillus niger ATCC 16404	+	0,5%	15 minutes	99,99%

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NAME OF MICROORGANISM	Vc	N N ₀	Lg N Lg N ₀	N _A Lg N _A	R lg R
Escherichia coli ATCC 10536	< 14	5x10 ⁸ 5x10 ⁷	8,69 7,69	<140 <2,15	>10 ⁵ >5,54
Staphylococcus aureus ATCC 6538	< 14	2x10 ⁸ 2x10 ⁷	8,30 7,30	<140 <2,15	>10 ⁵ >5,15
Pseudomonas aeruginosa ATCC 15442	< 14	2x10 ⁸ 2x10 ⁷	8,30 7,30	<140 <2,15	>10 ⁵ >5,15
Enterococcus hirae ATCC 10541	< 14	1,5x10 ⁸ 1,5x10 ⁷	8,17 7,17	<140 <2,15	>10 ⁵ >5,02
Mycobacterium avium ATCC 15769	< 14	1,5x10 ⁹ 1,5x10 ⁸	9,17 8,17	<140 <2,15	>10 ⁴ >6,02
Mycobacterium terrae ATCC 15755(Strain W45)	< 14	1,5x10 ⁹ 1,5x10 ⁹	9,17 8,17	<140 <2,15	>10 ⁴ >6,02
Bacillus subtilis (Sporu) ATCC 6633	171-162 40-36	5x10 ⁶ 5x10 ⁵	6,69 5,69	1670-380 3,22-2,58	>10 ³ ->10 ³ 2,47-3,11
Candida albicans ATCC 10231	< 14	2x10 ⁷ 2x10 ⁶	7,30 6,30	<140 <2,15	>10 ⁴ >4,15
Aspergillus niger ATCC 16404	< 14	1,5x10 ⁷ 1,5x10 ⁶	7,17 6,17	<140 <2,15	>10 ⁴ >4,02

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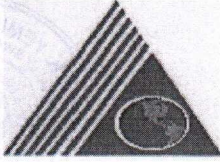
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NAME OF MICROORGANISM	VALIDATION SUSPENSION CONTROL $N_V - N_{V0}$ $Vc1 + Vc2$	CONTROL OF EXPERIMENTAL CONDITIONS (A) $Vc1 + Vc2$	CONTROL OF TOXICITY NEUTRALIZER (B) $Vc1 + Vc2$	CONTROL OF DILUTION NEUTRALIZATION METHOD (C) $Vc1 + Vc2$
Escherichia coli ATCC 10536	$5 \times 10^2 - 5 \times 10^1$ 54-48	6×10^1 62-60	6×10^1 61-59	4×10^1 44-37
Staphylococcus aureus ATCC 6538	$8 \times 10^2 - 8 \times 10^1$ 82-80	8×10^1 88-74	7×10^1 76-65	$5,5 \times 10^1$ 55-54
Pseudomonas aeruginosa ATCC 15442	$6 \times 10^2 - 6 \times 10^1$ 62-61	6×10^1 61-59	5×10^1 51-49	5×10^1 55-45
Enterococcus hirae ATCC 10541	$5,5 \times 10^2 - 5 \times 10^1$ 57-53	5×10^1 51-49	6×10^1 60-59	5×10^1 54-46
Mycobacterium avium ATCC 15769	$4 \times 10^2 - 4 \times 10^1$ 43-38	5×10^1 50-50	4×10^1 41-39	4×10^1 42-40
Mycobacterium terrae ATCC 15755 (Strain W45)	$4 \times 10^2 - 4 \times 10^1$ 42-40	4×10^1 41-40	4×10^1 43-37	3×10^1 30-29
Bacillus subtilis (Sporu) ATCC 6633	$5,5 \times 10^2 - 5,5 \times 10^1$ 57-54	5×10^1 52-50	6×10^1 61-60	5×10^1 50-50
Candida albicans ATCC 10231	$5 \times 10^2 - 5 \times 10^1$ 55-46	4×10^1 40-40	4×10^1 41-40	5×10^1 50-49
Aspergillus niger ATCC 16404	$4 \times 10^2 - 4,5 \times 10^1$ 42-40	5×10^1 51-50	4×10^1 40-40	3×10^1 30-29

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Vc: Quantity of alive microorganisms after reduction

Lg N: Initial bacteria quantity (Logarithmically)

Lg No: Number of bacteria before contact time (Logarithmically)

N: Number of bacteria on start

No: Number of bacteria before contact time

N_A: Number of bacteria remaining after reduction

Lg N_A: Number of bacteria remaining after reduction (logarithmically)

R: Logarithmic reduction (LgNo-LgN_A)

- N, should be between 1.5×10^8 and 5×10^8 . (Bacteria) Logarithmically should be between $(8,17 \leq \lg N \leq 8,70)$.
- N₀, should be between 1.5×10^7 and 5×10^7 . (Bacteria) Logarithmically should be between $(7,17 \leq \lg N \leq 7,70)$.
- N, should be between 1.5×10^7 and 5×10^7 . (Yeast and fungi) Logarithmic should be between $(7,17 \leq \lg N \leq 7,70)$.
- N₀ should be between 1.5×10^6 and 5×10^6 . (Yeast and fungi) Logarithmically should be between $(6,17 \leq \lg N \leq 6,70)$.
- N, should be between 1.5×10^9 and 5×10^9 . (Mycobacterium spp. de) Logarithmically should be between $(9,17 \leq \lg N \leq 9,70)$.
- N₀ should be between 1.5×10^8 and 5×10^8 . (Mycobacterium spp. de) Logarithmically should be between $(8,17 \leq \lg N \leq 8,70)$.
- N, should be between 3×10^8 and 8×10^8 . (Mycobacterium avium according to EN 14204) logarithmically should be between $(8,48 \leq \lg N \leq 8,90)$.
- N₀, should be between 3×10^7 and 8×10^7 . (In Mycobacterium avium according to EN 14204) logarithmically should be between $(7,48 \leq \lg N \leq 7,90)$.
- N_v, should be between 3×10^2 and $1,6 \times 10^3$.
- N_{v0}, should be between 3×10^1 and $1,6 \times 10^2$ (colony number should be between 30-160.)
- The average of A should be 0,5 times bigger or equal to the N_{v0}. So, the average of the number A can be as low as the half of the average N_{v0}.
- The average of B should be 0,5 times bigger or equal to the N_{v0}. So, the average of the number B can be as low as the average of the N_{v0} number.
- The average of C should be 0,5 times bigger or equal to the N_{v0}. So, the average of the number C can be as low as the average of the N_{v0} number.

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