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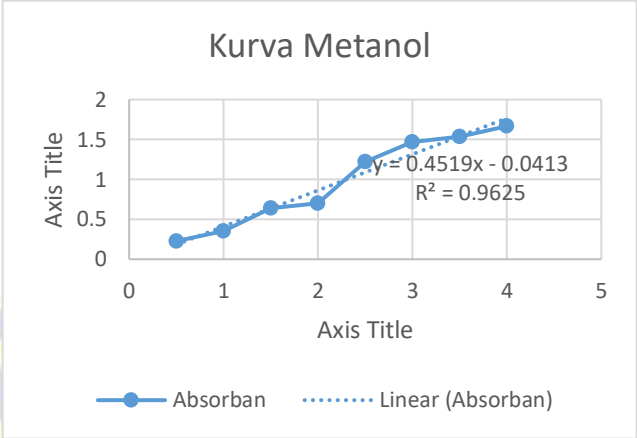
LAMPIRAN 1

GRAFIK KURVA KALIBRASI



Gambar V.1 Hasil kurva kalibrasi Tetrasiklin dalam pelarut Metanol

LAMPIRAN 2

DATA PERHITUNGAN UJI PRESISI

Tabel V.1
Data Perhitungan %RSD Uji Presisi untuk Pelarut Metanol

Konsentrasi (ppm)	Absorban	X
1	0,470	1,133
1	0,471	1,135
1	0,472	1,137
1	0,490	1,177
1	0,491	1,179
1	0,492	1,181
	Σ	5,941
	$\bar{X}$	0,990

$$SD = \frac{n.\Sigma x^2 - (\Sigma x)^2}{n.(n-1)}$$

$$SD = \frac{6.5{,}941 - 35{,}29}{6.(6-1)}$$

$$SD = \frac{35{,}646 - 35{,}29}{30}$$

$$SD = \frac{0{,}356}{30} = 0{,}01$$

$$\%RSD = \frac{SD}{\bar{X}}\ x\ 100$$

$$\%RSD = \frac{0{,}01}{0{,}990}\ 100 = 1{,}0\%$$

$$\text{Ketelitian alat} = 100\% - \frac{SD}{X}$$

$$100\% - \frac{0{,}01}{0{,}990} = 99.99\%$$

LAMPIRAN 3

DATA PERHITUNGAN UJI AKURASI

Tabel V.2
Data Perhitungan Hasil Uji Akurasi Pelarut Metanol

Pelarut	Konsentrasi (ppm)	Absorban Rata-rata	Kadar hasil (ppm)	%Recovery
Metanol	1,2	0,511	1,22	101,6%
	1,5	0,639	1,50	100%
	1,8	0,766	1,78	98,88%

$$\%\text{Recovery} = \frac{Cs}{Ct}\ x\ 100\%$$

$$\%\text{Recovery} = \frac{1,22}{1,2}\ x100\% = 101,6\%$$

$$\%\text{Recovery} = \frac{1,50}{1,5}\ x\ 100\% = 100\%$$

$$\%\text{Recovery} = \frac{1,78}{1,8}\ x\ 100\% = 98.88\%$$

LAMPIRAN 4

PENENTUAN LOD dan LOQ

Tabel V.3
Hasil Penentuan Nilai LOD dan LOQ Larutan Tetrasiklin dalam Pelarut Metanol

X (ppm)	Y	Yi	Y-Yi	$(Y-Yi)^2$
0,5	0,227	0,266	1	1
1	0,353	0,492	-0,139	0,019
1,5	0,639	0,717	-0,078	0,0060
2	0,698	0,943	-0,245	0,060
2,5	1,220	1,168	0,052	0,0027
3	1,469	1,394	0,075	0,0056
3,5	1,532	1,537	-0,005	0,000025
4	1,666	1,845	-0,179	0,032
			Σ	1,125

Persamaan garis regresi Y= 0,451x + (-0,041)

Contoh perhitungan Yi (Absorban hitungan)

Y = bx + a

Y = 0,451x + (-0,041)

Y = 0,451x . 0,5 ppm + (-0,041)

Y = 0,225 + (-0,041)

Y = 0,266

$$SB = \sqrt{\frac{\Sigma(Y-Yi)^2}{n-2}} = \sqrt{\frac{1,125}{8-2}} = 0,176$$

$$LOD = \frac{3\ x\ SB}{Slope} = \frac{3\ x\ 0,176}{0,451} = 1,170\ ppm$$

$$LOQ = \frac{10\ x\ SB}{Slope} = \frac{10\ x\ 0,176}{0,451} = 3,902\ ppm$$

LAMPIRAN 5

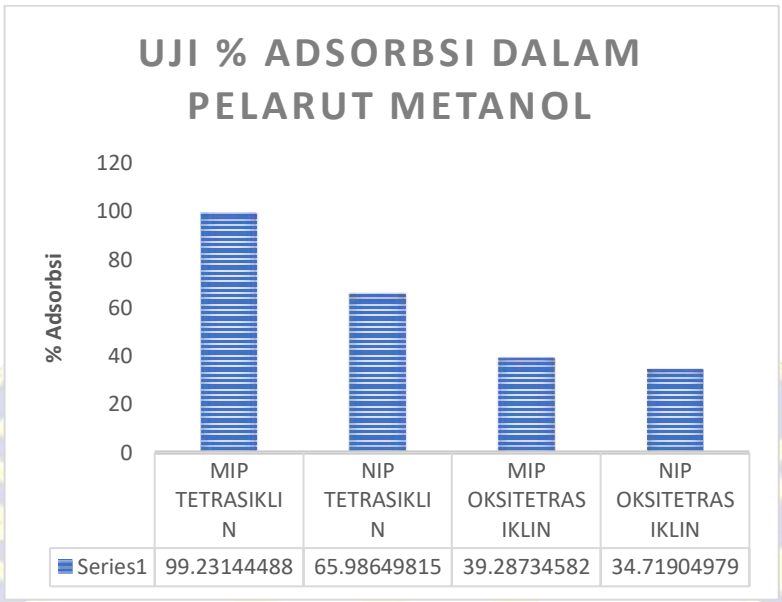
HASIL EKSTRAKSI *TEMPLATE* MIP

Tabel V.4
Hasil Ekstraksi Cetakan MIP

Panjang Gelombang	Absorban		
	MIP Sebelum Ekstraksi	MIP 3x Ekstraksi	MIP 4x Ekstraksi
380	0.432	0.014	0.003

LAMPIRAN 6

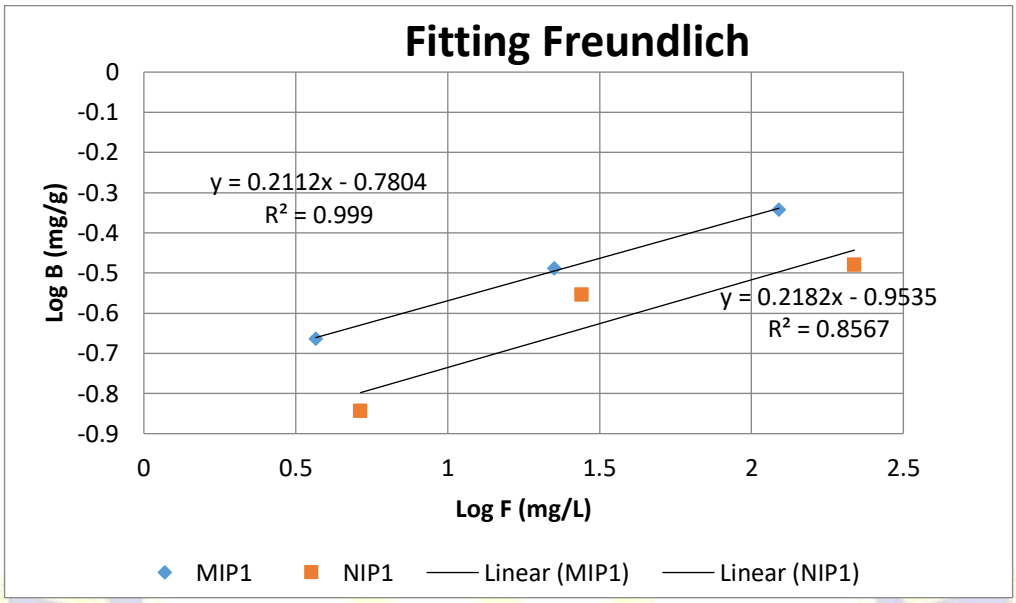
GRAFIK SELEKTIVITAS



Gambar V.2 Grafik perbandingan persen adsorpsi MIP dan NIP pada pelarut Metanol

LAMPIRAN 7

HASIL KURVA ADSORPSI TETRASIKLIN SORBEN MIP DAN NIP



Tabel V.5

Parameter Frendlich Sorben MIP dan NIP

Polimer	R^2	a (mg/g)
MIP	0.999	0.1658
NIP	0.8567	0.1113

LAMPIRAN 8

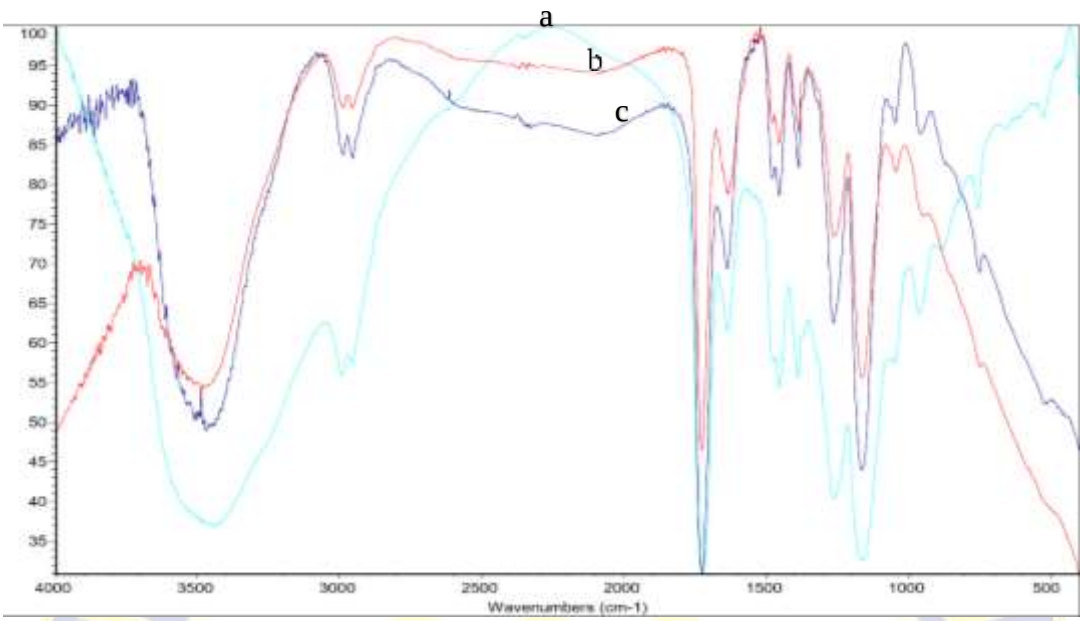
HASIL PERHITUNGAN NILAI KD

Tabel V.6
Hasil Perhitungan Nilai KD dan IF

Zat	KD		IF
	MIP	NIP	
Tetrasiklin	1.4309	0.9700	1.0029
Oksitetrasuklin	0.3235	0.2659	0.9934

LAMPIRAN 9

SPEKTRUM FTIR



Gambar V.3 Spektrum FTIR dari NIP (a) MIP sebelum ekstraksi (b) dan MIP setelah ekstraksi (c)

Tabel V.7
Hasil Analisis FTIR pada Sorben MIP dan NIP

Bilangan Gelombang (cm^{-1})			**Gugus Fungsi**
Sorben MIP sebelum ekstraksi	Sorben MIP Setelah ekstraksi	Sorben NIP	
1162.32	1162.21	1161.32	C-O stretching
1726.19	1724.91	1724.42	C=O stretching
2954.64	2953.21	2956.49	C-H stretching

LAMPIRAN 10

SERTIFIKAT TETRASIKLIN

SIGMA

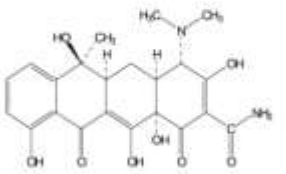
3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email techserv@sial.com
sigma-aldrich.com

ProductInformation

TETRACYCLINE

Product Number **T 3258**

CAS NUMBER: 60-54-8
SYNONYMS: Abramycin; Abricycline; Agromicina; Ambramicina; Ambramycin; Amycin; Bioteta; Bristacicin Alpha; Cetracycline Suspension; Criseocicina; Democracin; Deschlorobiomycin; Hostacyclin; Liquamycin; 6-methyl-1, 11-dioxy-2-naphthacenecarboxamide; Neocycline; Oletetrin; Omegamycin; Orlycycline; Panmycin; Polycycline; Purocyclina; Robitet; Sanclomycine; Sigmamycin; Steclin; Tetrabon; Tetracycline; Tetracycline I; Tetracycline II; SK-Tetracycline, Tetracyn, Tetradecin, Tetravenine, Talklomitsin, T-125, Veracin, Vetacyclinum



Product Description
Molecular formula: $C_{22}H_{24}N_2O_8$
Formula weight: 444.4 (*anhydrous*)
pK_a: 8.3, 10.2 (50% aqueous DMF)[1]
λmax: 220, 268, 355 nm ($E^{1\%}_{1cm}$ = 13, 18.04, 13.32) for free base in 0.1 M HCl[1]
Specific Rotation: -257.8° (0.1 M HCl at 25 °C)[1]
-239° (methanol at 25 °C)[1]

Tetracyclines possess a wide range of antimicrobial activity against gram-positive and gram-negative bacteria. The bacterial ribosome is the site of action of tetracyclines. Access to the ribosomes of gram-negative bacteria is obtained by passive diffusion through hydrophilic pores in the outer cell membrane and then by an energy-dependent active transport system that pumps all tetracyclines through the inner cytoplasmic membrane. This active transport system may require a periplasmic protein carrier. Tetracyclines bind specifically to 30S ribosomes and appear to inhibit protein synthesis by preventing access of aminoacyl tRNA to the acceptor site on the mRNA-ribosome complex. The inhibitory effects of the tetracyclines can be reversed by washing. This suggests that the reversibly bound antibiotic rather than the small portion of irreversibly bound drug is responsible for the antibacterial action.[3]

Preparation Instructions
Tetracycline as a free base is soluble 1 in 2500 of water and 1 in 50 of alcohol; soluble in methanol, but sparingly soluble in acetone; freely soluble in dilute acids and, with decomposition, in solutions of alkali hydroxides, but practically insoluble in chloroform and ether.[2]

The product is soluble in 1 M HCl with heating (50 mg/mL), yielding a clear to slightly hazy yellow to orange-brown solution. Tetracycline undergoes reversible epimerizations in solution to the less active 4-epitetracycline; the degree of epimerization is dependent on pH and is greatest at a pH of approximately 3.

Epimerization has been observed to be the dominant degradation reaction at pH 2.5 to 5. Formation of anhydrotetracycline occurs at a very low pH and oxidation to isotetracycline occurs at alkaline pH. Tetracycline's potency is reduced in solutions with a pH below 2. The pH of a 1% suspension in water may range from 3.0 to 7.0.[2]

Storage/Stability
This product should be stored in the freezer. The product will darken in moist air when exposed to strong sunlight.[2]

References
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2. Martindale The Extra Pharmacopoeia, 30th ed., 212-213 (1993).
3. Goodman and Gilman's The Pharmacological Basis of Therapeutics, 7th ed., 1170-1171 (1985).

JWM 7/8/2003

LAMPIRAN 11

SERTIFIKAT METANOL

Certificate of Analysis

1.06009.2500 Methanol for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch I0997709

	Spec. Values		Batch Values	
Purity (GC)	≥ 99.9	%	99.9	%
Identity (IR)	conforms		conforms	
Appearance	clear		clear	
Color	≤ 10	Hazen	< 5	Hazen
Solubility in water	conforms		conforms	
Acidity	≤ 0.0002	meq/g	0.0001	meq/g
Alkalinity	≤ 0.0002	meq/g	< 0.0002	meq/g
Density (d 20 °C/20 °C)	0.791 - 0.793		0.793	
Boiling point	64 - 65	°C	64	°C
Benzene (impurity A) (GC)	≤ 2	ppm	< 1	ppm
Ethanol (GC)	≤ 0.05	%	< 0.01	%
Acetone	≤ 0.001	%	≤ 0.001	%
Acetaldehyde	≤ 0.001	%	≤ 0.001	%
Formaldehyde	≤ 0.001	%	≤ 0.001	%
Readily carbonizable substances	conforms		conforms	
Carbonyl compounds (as CO)	≤ 0.001	%	≤ 0.001	%
Chloride (Cl)	≤ 0.5	ppm	≤ 0.5	ppm
Sulfate (SO_4)	≤ 1	ppm	≤ 1	ppm
Substances reducing potassium permanganate (as O)	≤ 0.00025	%	≤ 0.00025	%
Ag (Silver)	≤ 0.000002	%	≤ 0.000002	%
Al (Aluminium)	≤ 0.00005	%	≤ 0.00005	%
As (Arsenic)	≤ 0.000002	%	≤ 0.000002	%
Au (Gold)	≤ 0.000002	%	≤ 0.000002	%
Ba (Barium)	≤ 0.00001	%	≤ 0.00001	%
Be (Beryllium)	≤ 0.000002	%	≤ 0.000002	%
Bi (Bismuth)	≤ 0.000002	%	≤ 0.000002	%
Ca (Calcium)	≤ 0.00005	%	≤ 0.00005	%
Cd (Cadmium)	≤ 0.000005	%	≤ 0.000005	%
Co (Cobalt)	≤ 0.000002	%	≤ 0.000002	%
Cr (Chromium)	≤ 0.000002	%	≤ 0.000002	%
Cu (Copper)	≤ 0.000002	%	≤ 0.000002	%
Fe (Iron)	≤ 0.00001	%	≤ 0.00001	%
Ga (Gallium)	≤ 0.000002	%	≤ 0.000002	%
In (Indium)	≤ 0.000002	%	≤ 0.000002	%
Li (Lithium)	≤ 0.000002	%	≤ 0.000002	%
Mg (Magnesium)	≤ 0.00001	%	≤ 0.00001	%
Mn (Manganese)	≤ 0.000002	%	≤ 0.000002	%
Mo (Molybdenum)	≤ 0.000002	%	≤ 0.000002	%
Ni (Nickel)	≤ 0.000002	%	≤ 0.000002	%
Pb (Lead)	≤ 0.00001	%	≤ 0.00001	%
Pt (Platinum)	≤ 0.000005	%	≤ 0.000005	%

Merck KGaA, Frankfurter Straße 250, 64293 Darmstadt (Germany): +49 6151 72-0 Page 1 of 2
EMD Millipore Corporation - a subsidiary of Merck KGaA, Darmstadt, Germany
400 Summit Drive, Burlington, MA 01803, USA, Phone +1 (781) 533-6000

Certificate of Analysis

1.06009.2500 Methanol for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch I0997709

Sn (Tin)	≤ 0.00001	%	≤ 0.00001	%
Ti (Titanium)	≤ 0.000002	%	≤ 0.000002	%
Tl (Thallium)	≤ 0.000002	%	≤ 0.000002	%
V (Vanadium)	≤ 0.000002	%	≤ 0.000002	%
Zn (Zinc)	≤ 0.00001	%	≤ 0.00001	%
Zr (Zirconium)	≤ 0.000002	%	≤ 0.000002	%
Evaporation residue	≤ 0.0005	%	< 0.0001	%
Water	≤ 0.05	%	0.01	%

ACS, ISO, Reag Ph Eur

Date of release (DD.MM.YYYY) 15.02.2019
Minimum shelf life (DD.MM.YYYY) 29.02.2024