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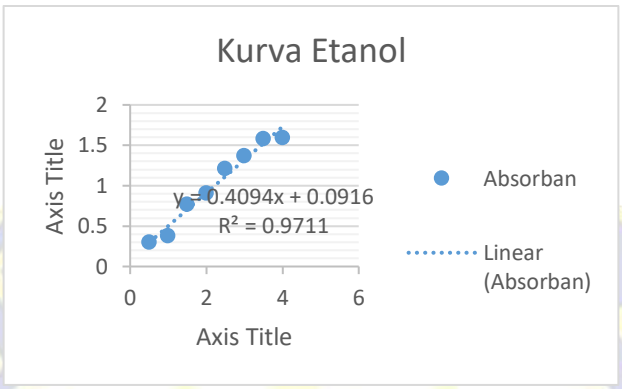
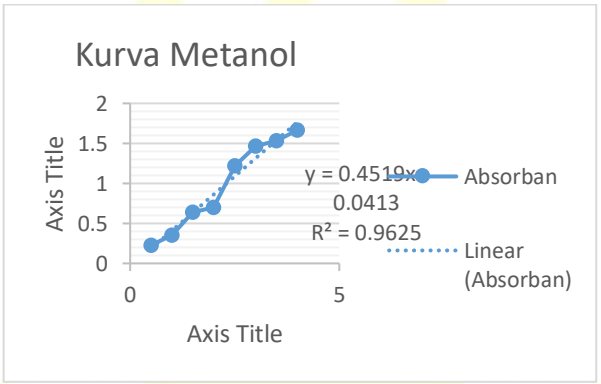
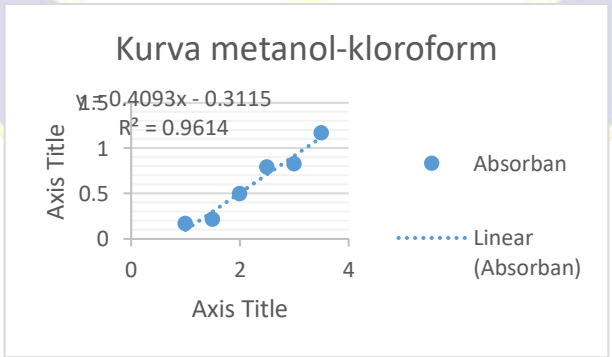
LAMPIRAN 1

GRAFIK KURVA KALIBRASI







Gambar V.1 Grafik kurva kalibrasi dari larutan standar tetrasiklin

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

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

$$SD = \frac{6.5{,}941 - (35{,}29)^2}{6\,(6-1)}$$

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

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

$$\%RSD = \frac{SD}{\bar{x}} x100$$

$$\%RSD = \frac{0{,}01}{0{,}990} x100$$

%RSD = 1,0%

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

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

Ketelitian alat = 99,99%

LAMPIRAN 2
(LANJUTAN)

Tabel V.2

Data Perhitungan % RSD Uji Presisi untuk Pelarut Etanol

Konsentrasi (ppm)	Absorban	X
1	0,353	0,985
1	0,354	0,987
1	0,355	0,989
1	0,354	0,987
1	0,355	0,989
1	0,356	0,991
	Σ	5,928
	$\bar{X}$	0,988

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

SD = $\frac{6.5,928-(35,141)^2}{6\,(6-1)}$

SD = $\frac{35,568-35,141}{30}$

SD = $\frac{0,427}{30} = 0,014$

%RSD = $\frac{SD}{\bar{x}} x100$

%RSD = $\frac{0,014}{0,988} x100$

%RSD = 1,417%

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

$=100\% - \frac{0,014}{0,988}$

Ketelitian alat = 99,986%

LAMPIRAN 2
(LANJUTAN)

Tabel V.3

Data Perhitungan % RSD Uji Presisi untuk Pelarut metanol-kloroform

Konsentrasi	Absorban	X
1	0.305	1.509
1	0.304	1.507
1	0.303	1.504
1	0.303	1.504
1	0.305	1.509
1	0.304	1.507
Rata-rata		1.507
SD		0.002251
%RSD		0.149365
Σ		9.04

LAMPIRAN 3

DATA PERHITUNGAN HASIL UJI AKURASI

Tabel V.4

Perhitungan Data Akurasi pada 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%

Konsentrasi Hasil hitung = $\frac{\text{absorban}+0,041}{0,451}$

• Konsentrasi 1,2 ppm

Konsentrasi Hasil Hitung= $\frac{0,511+0,041}{0,451} = 1,22$

%Recovery= $\frac{1,22}{1,2}$ x 100% = 101,6%

• Konsentrasi 1,5 ppm

Konsentrasi Hasil Hitung= $\frac{0,639+0,041}{0,451} = 1,50$

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

• Konsentrasi 1,8 ppm

Konsentrasi Hasil Hitung= $\frac{0,766+0,041}{0,451} = 1,78$

%Recovery= $\frac{1,78}{1,8}$ x 100% = 98,88%

LAMPIRAN 3
(LANJUTAN)

Tabel V.5

Perhitungan Data Akurasi pada Pelarut Etanol

Pelarut	Konsentrasi (ppm)	Absorban	Kadar hasil (ppm)	%Recovery
Etanol	3,2	1,27	3,32	103%
	4	1,594	4,11	102%
	4,8	1,912	4,89	101,8%

Konsentrasi Hasil hitung = $\frac{absorban+0,091}{0,409}$

• Konsentrasi 3,2 ppm

Konsentrasi Hasil Hitung= $\frac{1,27+0,091}{0,409} = 3,32$

%Recovery= $\frac{3,32}{3,2}$ x 100% = 103%

• Konsentrasi 4 ppm

Konsentrasi Hasil Hitung= $\frac{1,594+0,091}{0,409} = 4,11$

%Recovery= $\frac{4,11}{4}$ x 100% = 102%

• Konsentrasi 4,8 ppm

Konsentrasi Hasil Hitung= $\frac{1,912+0,091}{0,409} = 4,89$

%Recovery= $\frac{4,89}{4,8}$ x 100% = 101,8%

LAMPIRAN 3
(LANJUTAN)

Tabel V.6

Perhitungan Data Akurasi pada Pelarut Metanol-Kloroform (70:30)

Pelarut	Konsentrasi (ppm)	Absorban	Kadar hasil (ppm)	%Recovery
Etanol	1,6	0,395	1,72	107,5%
	2	0,494	1,96	98%
	2,4	0,592	2,20	91,5%

Konsentrasi Hasil hitung = $\frac{absorban+0,311}{0,409}$

• Konsentrasi 1,6 ppm

Konsentrasi Hasil Hitung= $\frac{0,395+0,311}{0,409} = 1,72$

%Recovery= $\frac{1,72}{1,6}$ x 100% = 107,5%

• Konsentrasi 2 ppm

Konsentrasi Hasil Hitung= $\frac{0,494+0,311}{0,409} = 1,96$

%Recovery= $\frac{1,96}{2}$ x 100% = 98%

• Konsentrasi 2,4 ppm

Konsentrasi Hasil Hitung= $\frac{0,592+0,311}{0,409} = 2,20$

%Recovery= $\frac{2,20}{2,4}$ x 100% = 91,5%

LAMPIRAN 4

PENENTUAN LOD DAN LOQ

Tabel V.7

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 4
(LANJUTAN)

Tabel V.8

Hasil Penentuan Nilai LOD dan LOQ Larutan Tetrasiklin dalam Pelarut Etanol

X (ppm)	Y	Yi	Y-Yi	$(Y-Yi)^2$
0,5	0,297	0,295	0,002	0,000004
1	0,378	0,5	-0,462	0,213
1,5	0,768	0,704	0,064	0,0040
2	0,904	0,909	-0,005	0,00025
2,5	1,124	1,13	0,011	0,00012
3	1,368	1,318	0,05	0,0025
3,5	1,579	1,522	0,057	0,0032
4	1,594	1,727	-0,133	0,017
			Σ	0,239

Persamaan garis regresi Y= 0,409x + 0,091

Contoh perhitungan Yi (Absorban hitungan)

Y = bx + a

Y = 0,409x + 0,091

Y = 0,409x . 1 ppm + 0,091

Y = 0,409 + 0,091

Y = 0,5

$$SB = \sqrt{\frac{\Sigma(Y-Yi)^2}{n-2}} = \sqrt{\frac{0,239}{8-2}} = 0,081$$

$$LOD = \frac{3\ x\ SB}{Slope} = \frac{3\ x\ 0,081}{0,409} = 0,594\ ppm$$

$$LOQ = \frac{10\ x\ SB}{Slope} = \frac{10\ x\ 0,081}{0,409} = 1,980\ ppm$$

LAMPIRAN 4
(LANJUTAN)

Tabel V.9

Hasil Penentuan Nilai LOD dan LOQ Larutan Tetrasiklin dalam Pelarut Metanol-Kloroform (70:30)

X (ppm)	Y	Yi	Y-Yi	$(Y-Yi)^2$
1	0,165	0,72	-0,555	0,308
1,5	0,212	0,924	-0,712	0,506
2	0,494	1,129	-0,625	0,403
2,5	0,789	1,333	-0,544	0,295
3	0,826	1,538	-0,712	0,506
3,5	1,170	1,742	-0,572	0,327
Σ				2,345

Persamaan garis regresi Y= 0,409x + (-0,311)

Contoh perhitungan Yi (Absorban hitungan)

Y = bx + a

Y = 0,409x + (-0,311)

Y = 0,451x 1,5 ppm + (-0,311)

Y = 0,613 + (-0,311)

Y = 0,924

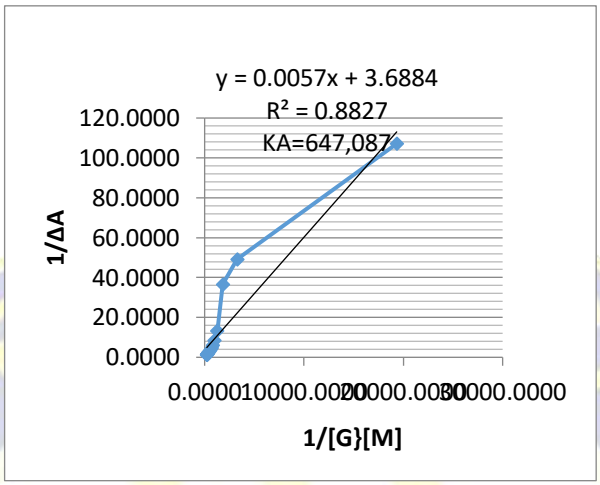
$$SB = \sqrt{\frac{\Sigma(Y-Yi)^2}{n-2}} = \sqrt{\frac{2,345}{8-2}} = 0,382$$

$$LOD = \frac{3\ x\ SB}{Slope} = \frac{3\ x\ 0,382}{0,409} = 2,801\ ppm$$

$$LOQ = \frac{10\ x\ SB}{Slope} = \frac{10\ x\ 0,382}{0,409} = 9,33\ ppm$$

LAMPIRAN 5

PENENTUAN KONSTANTA ASOSIASI



Gambar V.2 Grafik Konstanta Asosiasi Pelarut Metanol

$$\frac{1}{\triangle Y} = \frac{1}{Y \triangle HGKa[G]} + \frac{1}{Y \triangle HG}$$

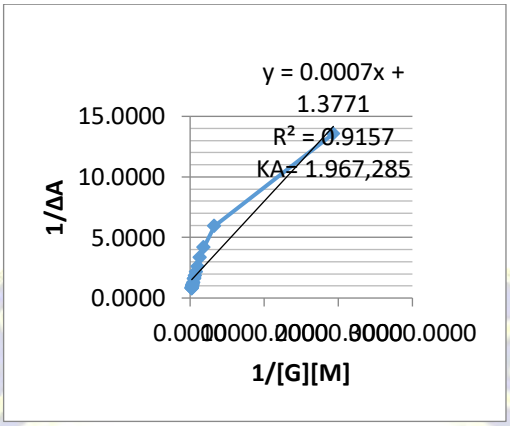
Persamaan garis y = 0,0057x + 3,6884

Slope = $\frac{1}{Y \triangle HGKa}$

Ka = ($\frac{1}{Y \triangle HG}$) / slope

Ka= $\frac{3,6884}{0,0057} = 647,087M^1$

LAMPIRAN 5
(LANJUTAN)



Gambar V.3 Grafik Konstanta Asosiasi Pelarut Etanol

$$\frac{1}{\triangle Y} = \frac{1}{Y \triangle HGKa[G]} + \frac{1}{Y \triangle HG}$$

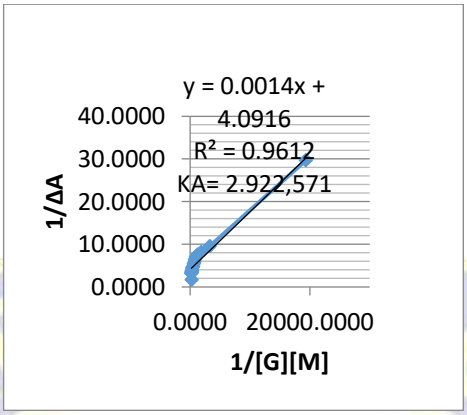
Persamaan garis y = 0,0007x + 1,3771

Slope = $\frac{1}{Y \triangle HGKa}$

Ka = ($\frac{1}{Y \triangle HG}$) / slope

Ka= $\frac{1,3771}{0,0007} = 1.967,285M^{1}$

LAMPIRAN 5
(LANJUTAN)



Gambar V.4 Grafik Konstanta Asosiasi Pelarut Metanol-kloroform (70:30)

$$\frac{1}{\triangle Y} = \frac{1}{Y \triangle HGKa[G]} + \frac{1}{Y \triangle HG}$$

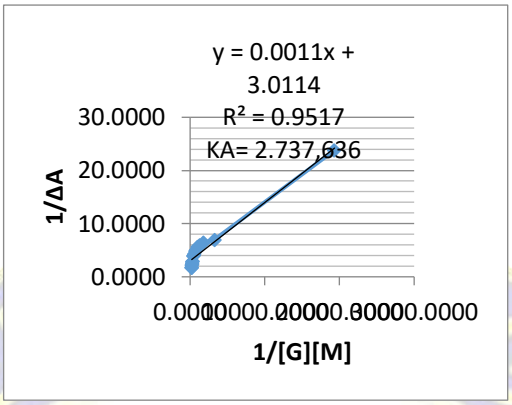
Persamaan garis y = 0.0014x + 4.0916

Slope = $\frac{1}{Y \triangle HGKa}$

Ka = ($\frac{1}{Y \triangle HG}$) / slope

Ka= $\frac{4.0916}{0,0014} = 2.9225,571M^1$

LAMPIRAN 5
(LANJUTAN)



Gambar V.5 Grafik Konstanta Asosiasi Pelarut Metanol-asetonitril (70:30)

$$\frac{1}{\triangle Y} = \frac{1}{Y \triangle HGKa[G]} + \frac{1}{Y \triangle HG}$$

Persamaan garis y = 0,0011x + 3.0114

Slope = $\frac{1}{Y \triangle HGKa}$

Ka = ($\frac{1}{Y \triangle HG}$) / slope

Ka= $\frac{3.0114}{0,0011} = 2.737,636M^{1}$

LAMPIRAN 6

SERTIFIKAT TETRASIKLIN

SIGMA

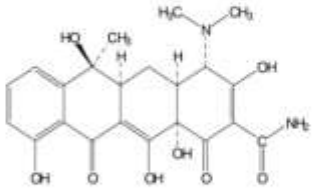
3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 289-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

TETRACYCLINE

Product Number **T 3258**

CAS NUMBER: 60-54-8
SYNONYMS: Abramycin; Abricycline; Agromicina; Ambramicina; Ambramycin; Amycin; Biotetra; Bristaciclin Alpha; Cefracycline Suspension; Criseociclina; 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, Tetraverine, Tsiklomitsin, 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[2]
Specific Rotation: -257.9° (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).
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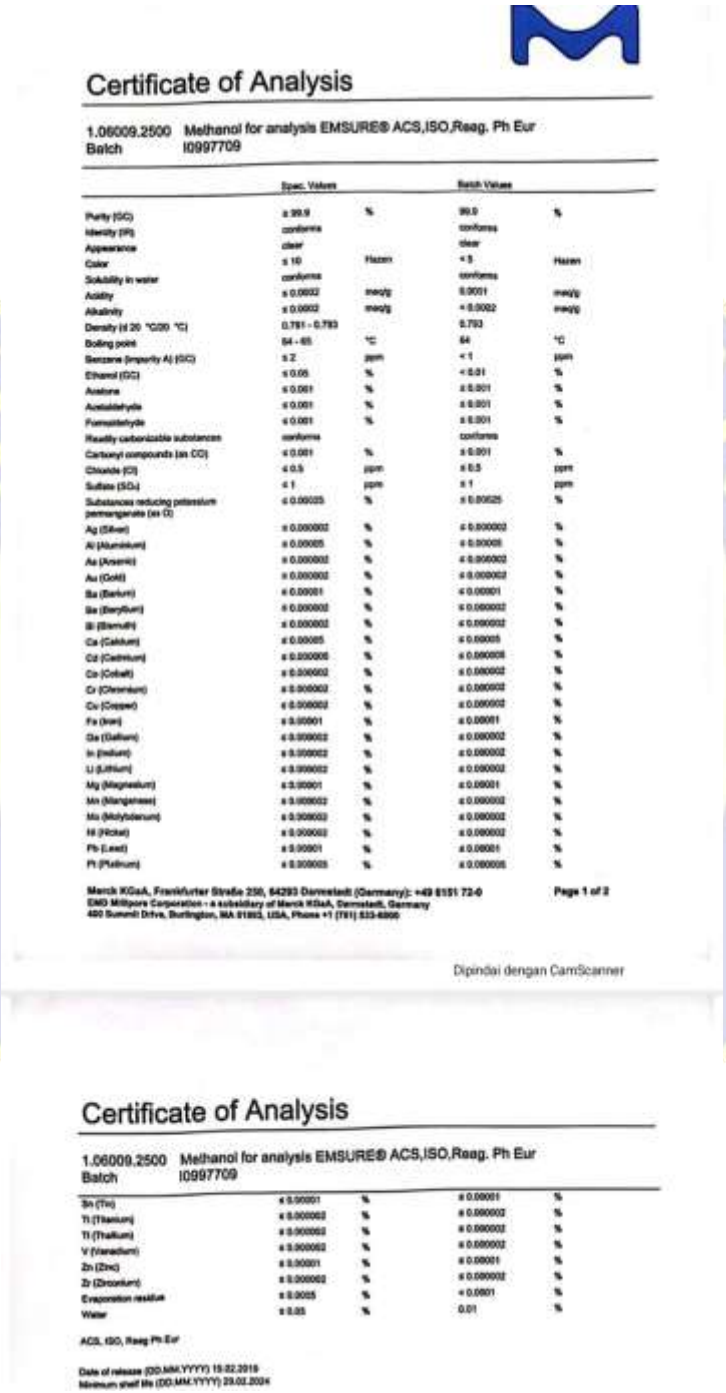
JWM 7/8/2003

LAMPIRAN 7

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	%

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Certificate of Analysis

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

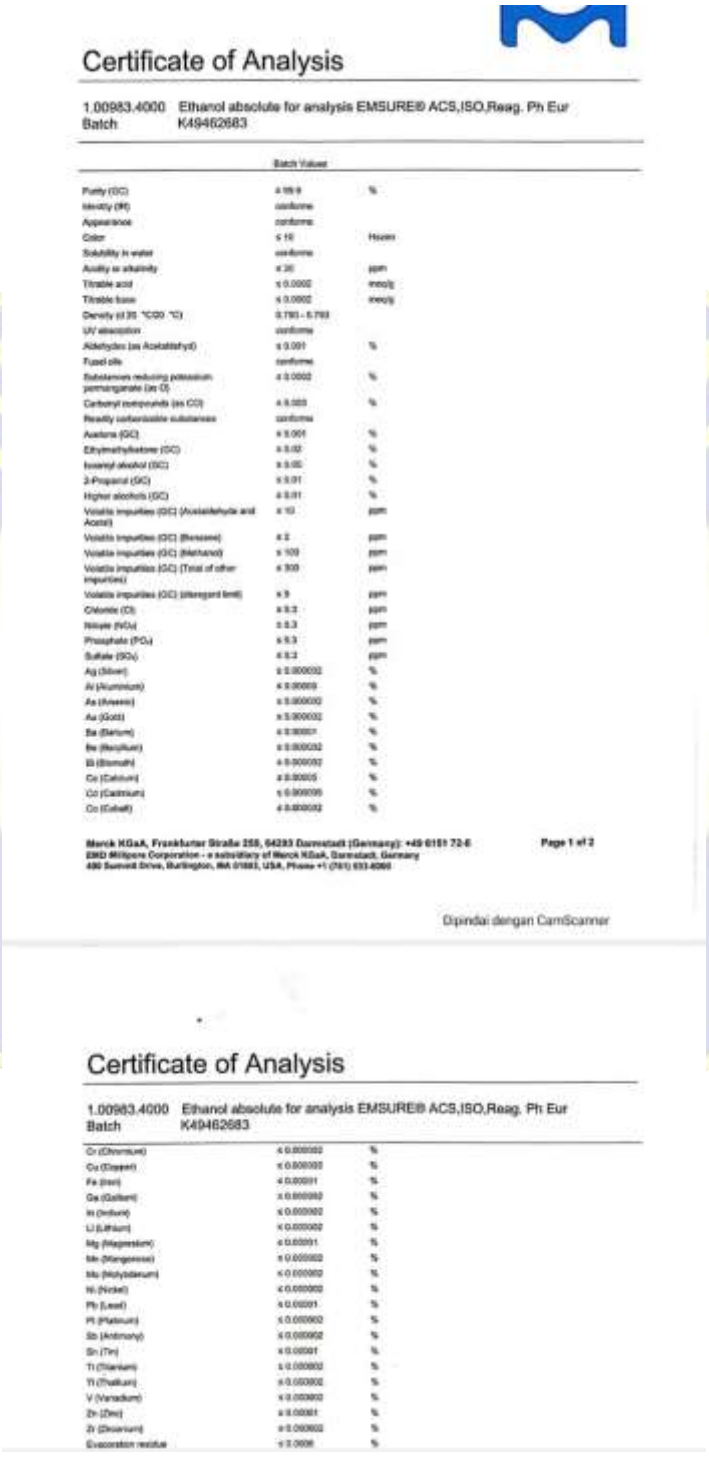
Sn (Tin)	≤ 0.00001	%	≤ 0.00001	%
Ti (Titanium)	≤ 0.000002	%	≤ 0.000002	%
Tl (Thallium)	≤ 0.000002	%	≤ 0.000002	%
V (Vanadium)	≤ 0.000002	%	≤ 0.000002	%
Zn (Zinc)	≤ 0.00001	%	≤ 0.00001	%
Zr (Zirconium)	≤ 0.000002	%	≤ 0.000002	%
Evaporation residue	≤ 0.0005	%	< 0.0001	%
Water	≤ 0.05	%	0.01	%

ACS, ISO, Reag Ph Eur

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

LAMPIRAN 8

SERTIFIKAT ETANOL



Certificate of Analysis

1.00983.4000 Ethanol absolute for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch K49462683

	Batch Values	
Purity (GC)	≥ 99.9	%
Identity (IR)	conforms	
Appearance	conforms	
Color	≤ 10	Hazen
Solubility in water	conforms	
Acidity or alkalinity	≤ 20	ppm
Titrable acid	≤ 0.0002	meq/g
Titrable base	≤ 0.0002	meq/g
Density (d 20 °C/20 °C)	0.790 - 0.793	
UV absorption	conforms	
Aldehydes (as Acetaldehyd)	≤ 0.001	%
Fusel oils	conforms	
Substances reducing potassium permanganate (as O)	≤ 0.0002	%
Carbonyl compounds (as CO)	≤ 0.003	%
Readily carbonizable substances	conforms	
Acetone (GC)	≤ 0.001	%
Ethylmethylketone (GC)	≤ 0.02	%
Isoamyl alcohol (GC)	≤ 0.02	%
2-Propanol (GC)	≤ 0.01	%
Higher alcohols (GC)	≤ 0.01	%
Volatile impurities (GC) (Acetaldehyde and Acetal)	≤ 10	ppm
Volatile impurities (GC) (Benzene)	≤ 2	ppm
Volatile impurities (GC) (Methanol)	≤ 100	ppm
Volatile impurities (GC) (Total of other impurities)	≤ 500	ppm
Volatile impurities (GC) (disregard limit)	≤ 9	ppm
Chloride (Cl)	≤ 0.3	ppm
Nitrate (NO_3)	≤ 0.3	ppm
Phosphate (PO_4)	≤ 0.3	ppm
Sulfate (SO_4)	≤ 0.3	ppm
Ag (Silver)	≤ 0.000002	%
Al (Aluminium)	≤ 0.00003	%
As (Arsenic)	≤ 0.000002	%
Au (Gold)	≤ 0.000002	%
Ba (Barium)	≤ 0.00001	%
Be (Beryllium)	≤ 0.000002	%
Bi (Bismuth)	≤ 0.000002	%
Ca (Calcium)	≤ 0.00005	%
Cd (Cadmium)	≤ 0.000005	%
Co (Cobalt)	≤ 0.000002	%

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Page 1 of 2

Dipindai dengan CamScanner

Certificate of Analysis

1.00983.4000 Ethanol absolute for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch K49462683

Cr (Chromium)	≤ 0.000002	%
Cu (Copper)	≤ 0.000002	%
Fe (Iron)	≤ 0.00001	%
Ga (Gallium)	≤ 0.000002	%
In (Indium)	≤ 0.000002	%
Li (Lithium)	≤ 0.000002	%
Mg (Magnesium)	≤ 0.00001	%
Mn (Manganese)	≤ 0.000002	%
Mo (Molybdenum)	≤ 0.000002	%
Ni (Nickel)	≤ 0.000002	%
Pb (Lead)	≤ 0.00001	%
Pt (Platinum)	≤ 0.000002	%
Sb (Antimony)	≤ 0.000002	%
Sn (Tin)	≤ 0.00001	%
Ti (Titanium)	≤ 0.000002	%
Tl (Thallium)	≤ 0.000002	%
V (Vanadium)	≤ 0.000002	%
Zn (Zinc)	≤ 0.00001	%
Zr (Zirconium)	≤ 0.000002	%
Evaporation residue	≤ 0.0006	%

LAMPIRAN 9

SERTIFIKAT KLOROFORM

Certificate of Analysis

1.02445.2500 Chloroform for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch K52519845

	Spec. Values		Batch Values	
Purity (GC)	99.0 - 99.4	%	99.3	%
Assay (according to ACS)	≥ 99.8	%	99.9	%
Identity (IR)	conforms		conforms	
Appearance	clear		clear	
Color	≤ 10	Hazen	< 5	Hazen
Free acid (as HCl)	≤ 0.0002	%	0.0001	%
Density (d 20 °C/20 °C)	1.475 - 1.481		1.481	
Boiling point	60 - 62	°C	61	°C
Acid and chloride	conforms		conforms	
Chloride (Cl)	≤ 0.00002	%	≤ 0.00002	%
Free chlorine	≤ 0.00003	%	≤ 0.00003	%
Carbonyl compounds (as CO)	≤ 0.005	%	≤ 0.005	%
Readily carbonizable substances	conforms		conforms	
Ethanol (GC)	0.6 - 1.0	%	0.7	%
Dichloromethane (GC)	≤ 0.01	%	< 0.01	%
Carbon tetrachloride (GC)	≤ 0.01	%	< 0.01	%
Tetrachloroethylene (GC)	≤ 0.01	%	< 0.01	%
Trichloroethylene (GC)	≤ 0.01	%	< 0.01	%
Related substances (GC)	≤ 0.7	%	< 0.7	%
Aldehydes and ketones (as C_3H_6O)	≤ 0.001	%	≤ 0.001	%
Suitability for determination with dithizone	conforms		conforms	
Al (Aluminium)	≤ 0.00005	%	≤ 0.00005	%
B (Boron)	≤ 0.000002	%	≤ 0.000002	%
Ba (Barium)	≤ 0.00001	%	≤ 0.00001	%
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	%
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)	≤ 0.000005	%	≤ 0.000005	%
Sn (Tin)	≤ 0.00001	%	≤ 0.00001	%
Zn (Zinc)	≤ 0.00001	%	≤ 0.00001	%
Evaporation residue	≤ 0.001	%	< 0.001	%
Water	≤ 0.01	%	< 0.01	%

Stabilized with 0,6-1,0% Ethanol

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Certificate of Analysis

1.02445.2500 Chloroform for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch K52519845

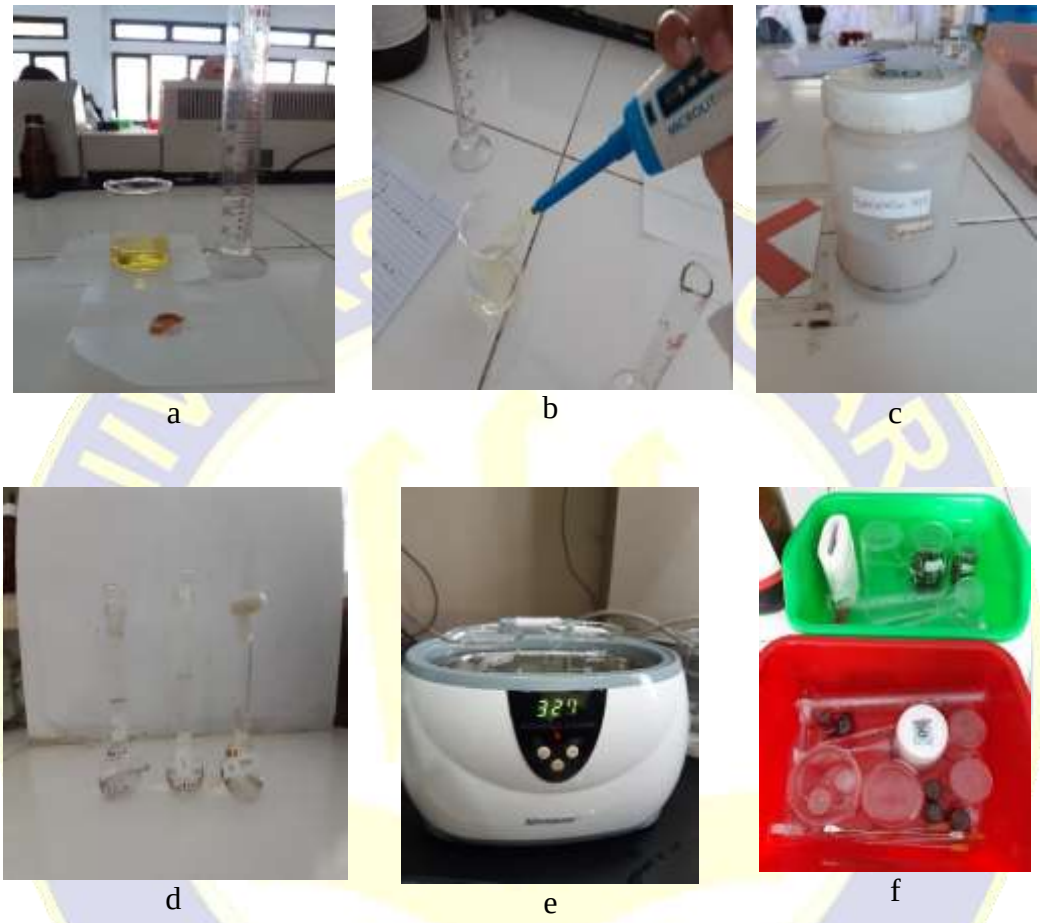
Date of release (DD.MM.YYYY) 09.06.2020
Minimum shelf life (DD.MM.YYYY) 31.05.2023

Jeannette David
Responsible laboratory manager quality control

This document has been produced electronically and is valid without a signature.

LAMPIRAN 10

DOKUMENTASI PENELITIAN



a b c

d e f

Gambar V.6 Dokumentasi penelitian

Keterangan :

a Melarutkan tetrasiklin
b Mengambil 100µl tetrasiklin
c Bahan yang digunakan (tetrasiklin)
d Pengenceran dengan beberapa konsentrasi
e Sonikasi 10 menit
f Alat yang digunakan