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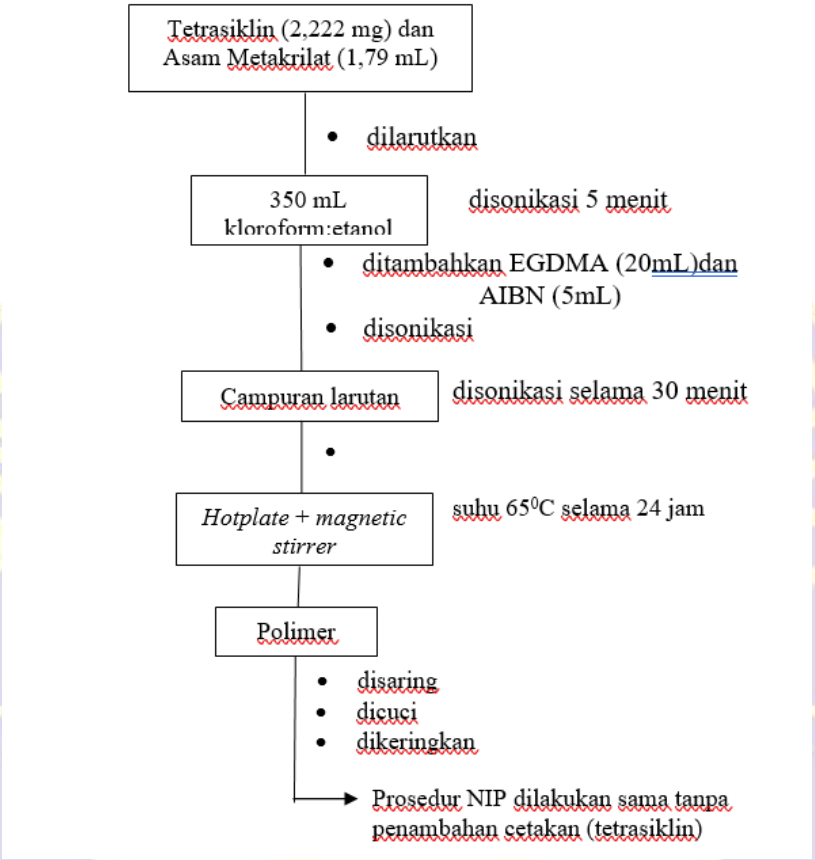
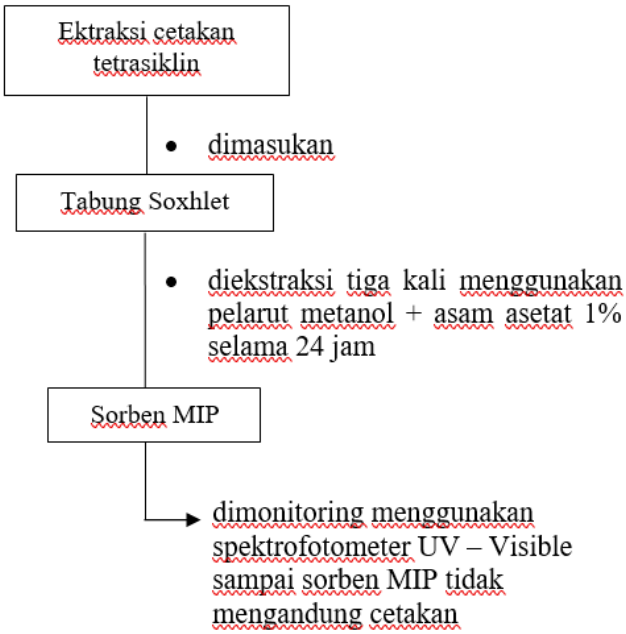
LAMPIRAN 1

PROSEDUR DAN ALUR PENELITIAN



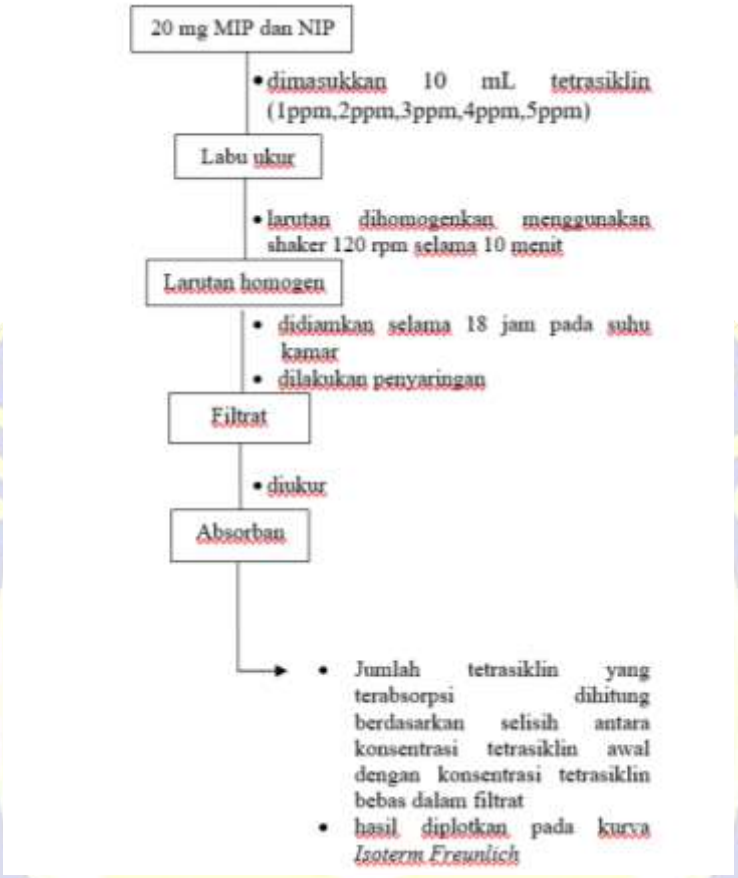
Gambar VII. 1 Skema alur sintesis MIP dan NIP

LAMPIRAN 1
(LANJUTAN)



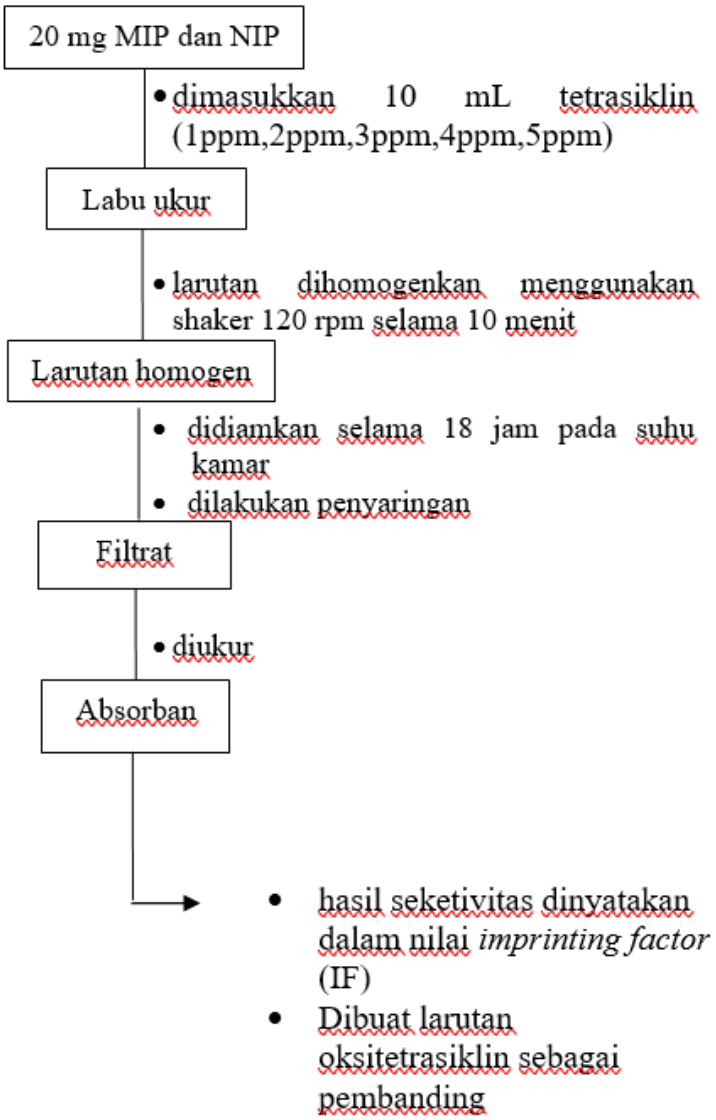
Gambar VII.2 Skema alur ektraksi *soxhlet*

LAMPIRAN 1
(LANJUTAN)

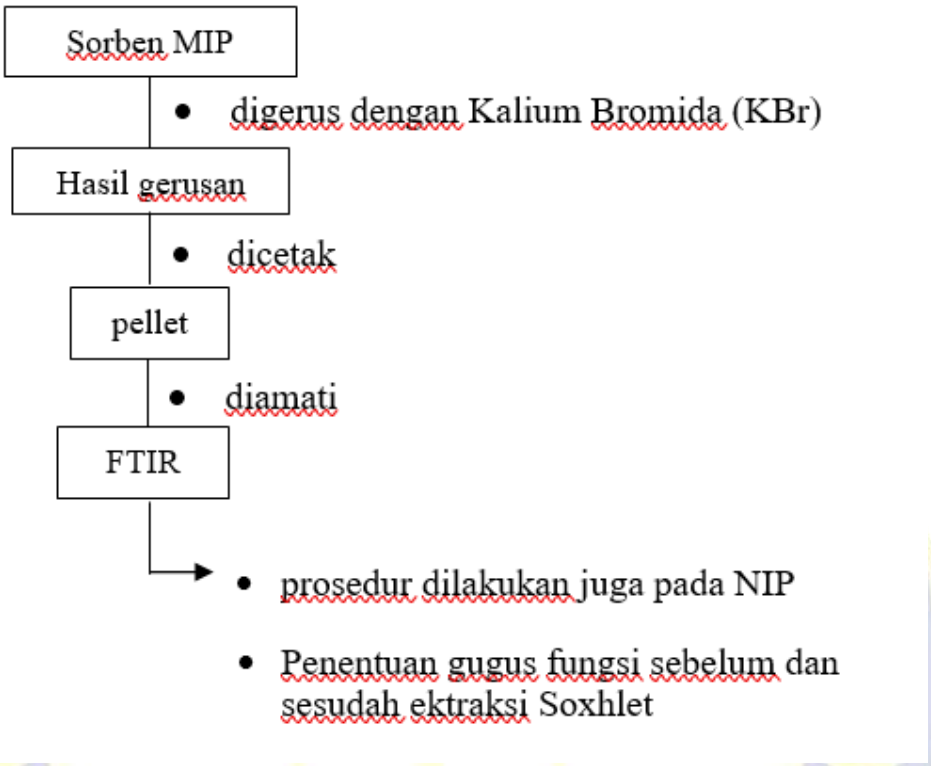


Gambar VII. 3 Skema alur evaluasi kemampuan dan kapasitas absorpsi MIP dan NIP

LAMPIRAN 1
(LANJUTAN)



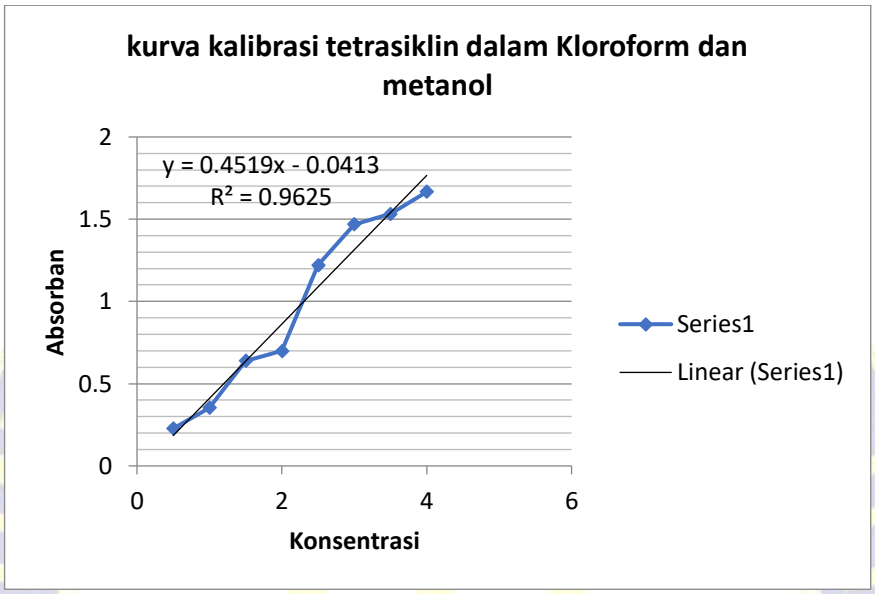
LAMPIRAN 1
(LANJUTAN)



Gambar VII.4 Skema alur karakterisasi MIP dan NIP dengan FTIR

LAMPIRAN 2

KURVA KALIBRASI



Gambar VII. 5 Kurva kalibrasi tetrasiklin dalam pelarut kloroform : metanol

LAMPIRAN 3

UJI PRESISI

Tabel VII. 1
Hasil Pengukuran dengan Spektrofotometri UV-Vis

Konsentrasi (ppm)	Absorban	X
1	0,470	1,133
1	0,475	1,135
1	0,472	1,137
1	0,490	1,177
1	0,491	1,179
1	0,492	1,181
JUMLAH		5,941
RATA – RATA		0,990

100 – 0,01 = 99.99%

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%

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

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

LAMPIRAN 4

UJI AKURASI

Tabel VII. 2
Hasil Pengujian Akurasi

C	A	C sebenarnya	% Recovery
1,2	0,511	1,22	101, 6%
1,5	0,639	1,50	100 %
1,8	0,766	1,78	98,88%

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

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

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

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

LAMPIRAN 5

NILAI LOD DAN LOQ

Tabel VII. 3
Hasil Pengukuran LOD dan LOQ

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	0,006
2	0,698	0,943	-0,245	0,06
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
JUMLAH				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

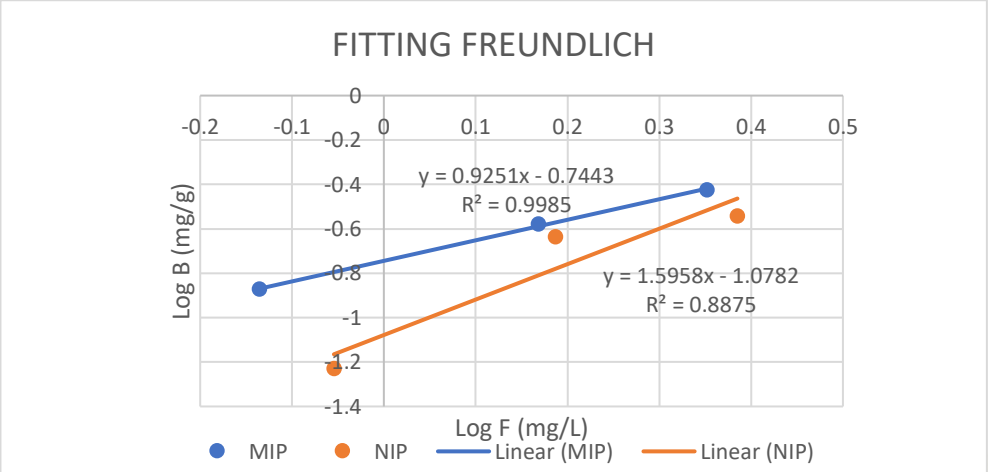
$$SB = \sqrt{\frac{\Sigma(Y-Yi)^2}{n-2}} = \sqrt{\frac{1,125}{8-2}} = 0,176$$

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

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

LAMPIRAN 6

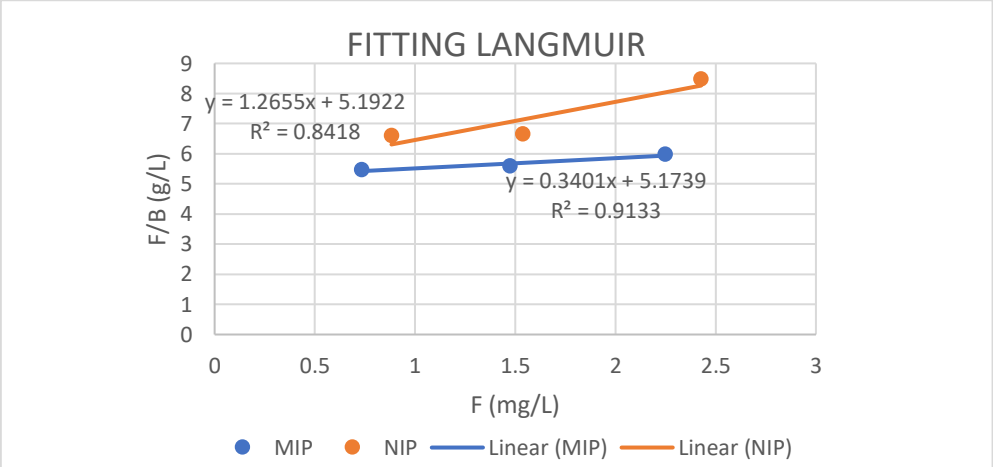
KURVA ADOSRPSI ISOTERM FREUNDLICH



Gambar VII. 6 Kurva *isoterm Freundlich*

LAMPIRAN 7

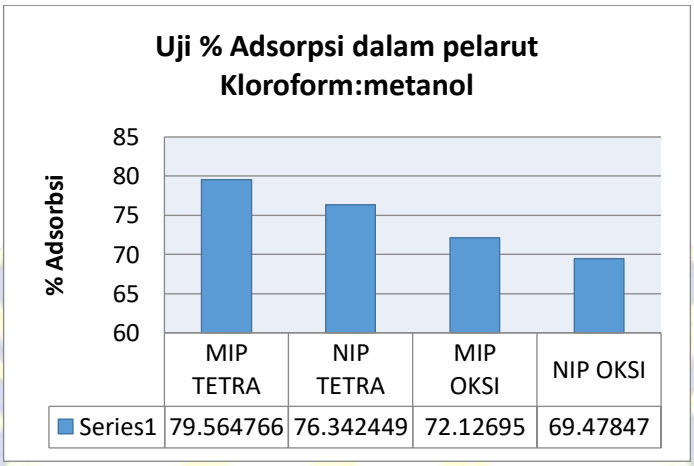
KURVA ADSOPRSI ISOTERM LANGMUIR



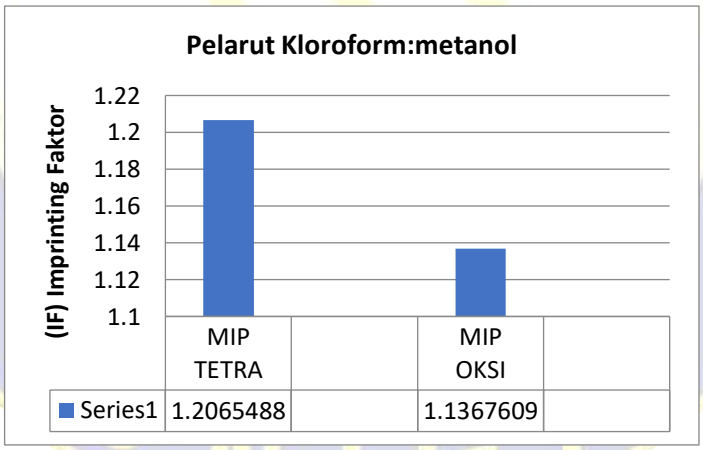
Gambar VII. 7 Kurva isoterm Langmuir

LAMPIRAN 8

EVALUASI DAN SELEKTIVITAS



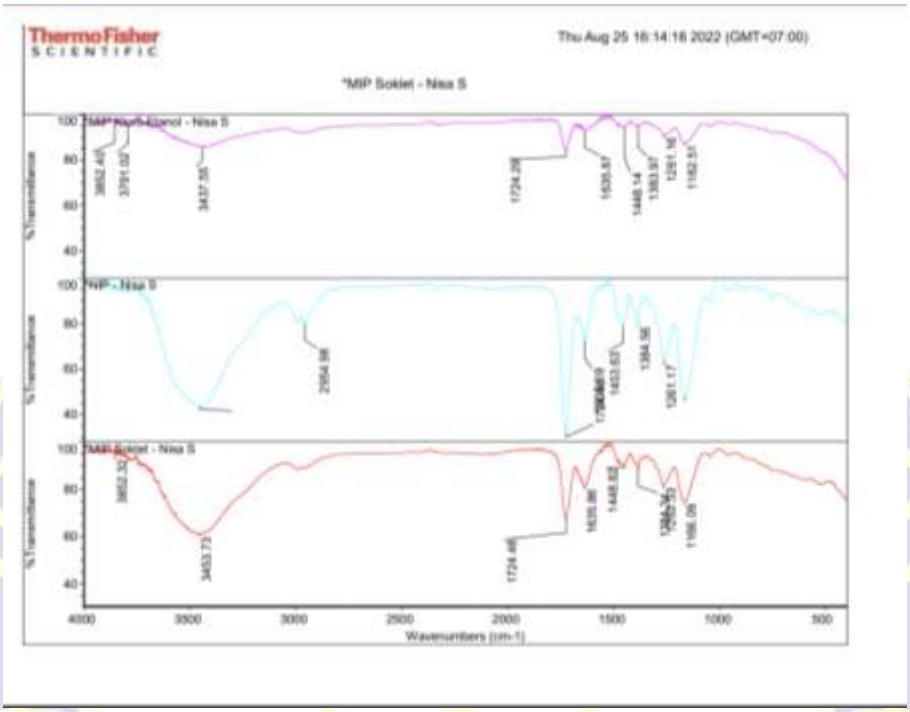
Gambar VII. 8 Hasil % adsorpsi MIP dan NIP



Gambar VII. 9 Nilai inprinting factor (IF)

LAMPIRAN 9

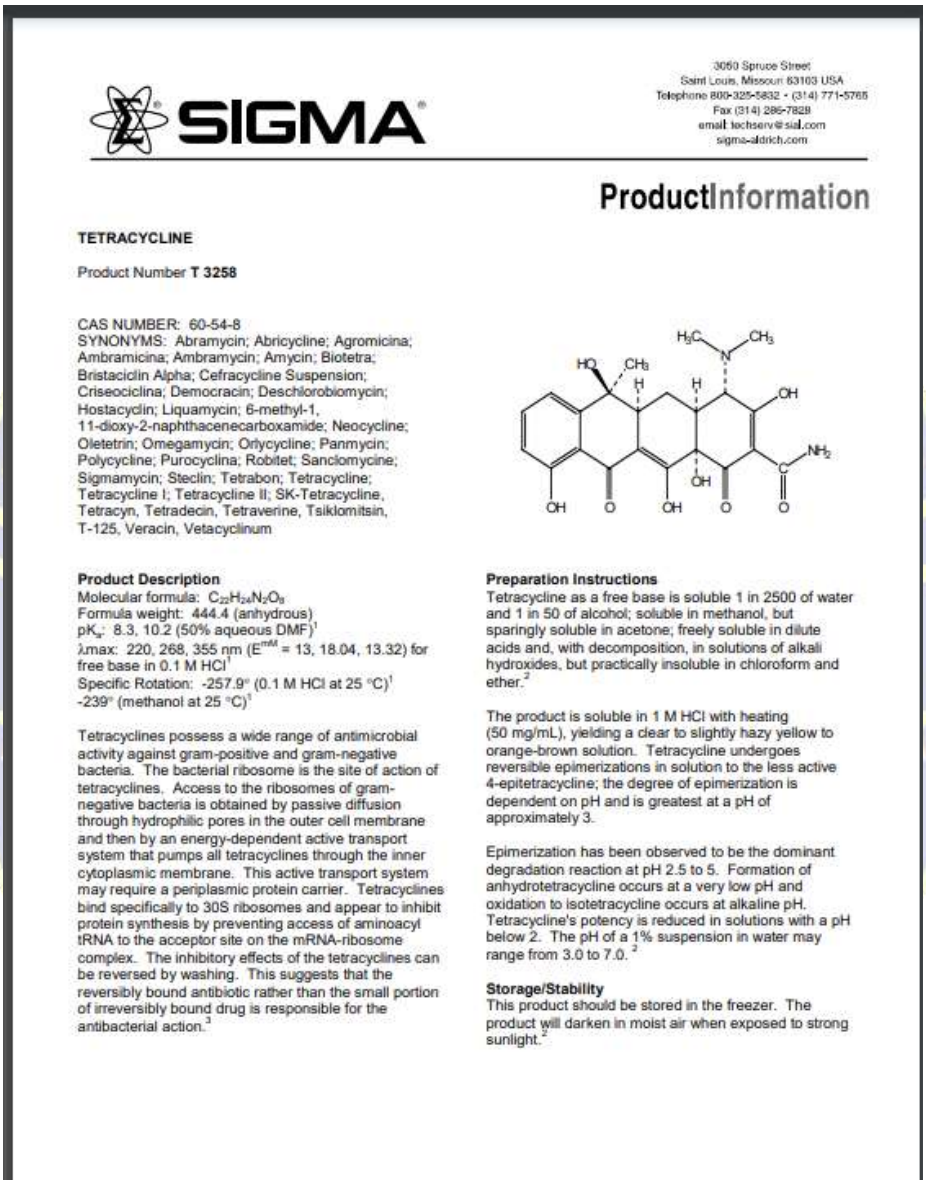
HASIL ANALISIS GUGUS FUNGSI DENGAN INSTRUMEN FTIR



Gambar VII. 10 Hasil FTIR

LAMPIRAN 10

CERTIFICATE OF ANALYSIS



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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^{mM} = 13, 18.04, 13.32) for free base in 0.1 M HCl[1]
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]

Gambar VII. 11 *Certificate of analysis tetrasiklin*

LAMPIRAN 10
(LANJUTAN)

References
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JWM 7/8/2003

Gambar VII. 12 Lanjutan

LAMPIRAN 10
(LANJUTAN)

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_2H_4O)	≤ 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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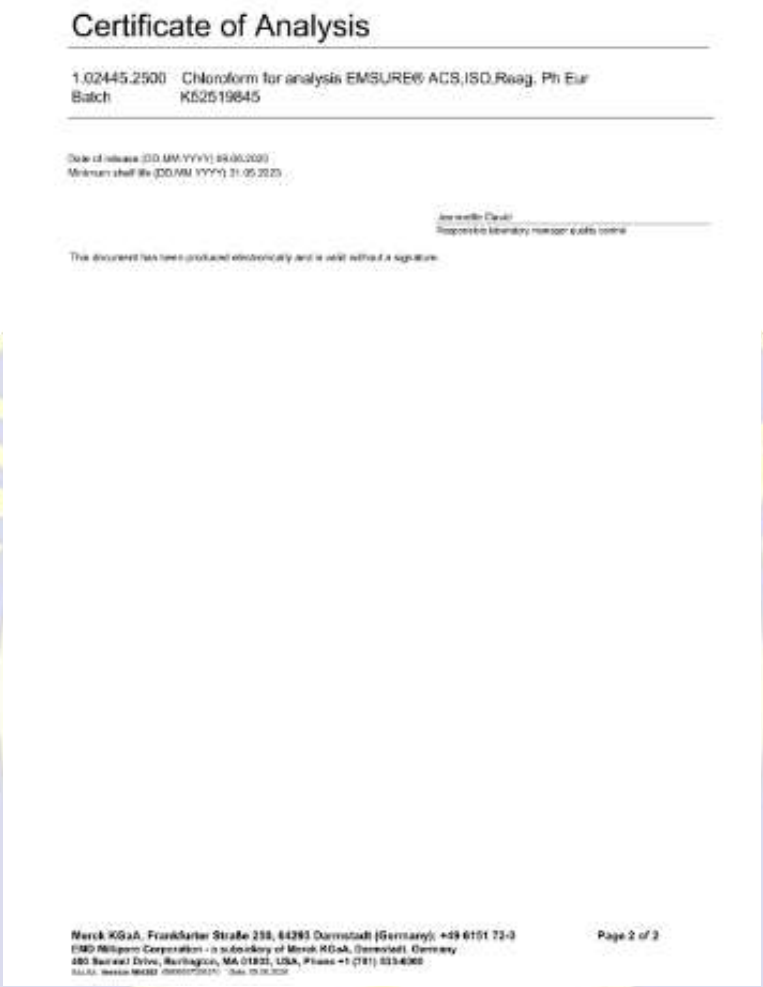
EMD Millipore Corporation - a subsidiary of Merck KGaA, Darmstadt, Germany
400 Summit Drive, Burlington, MA 01803, USA, Phone +1 (781) 533-6000

Gambar VII. 13 *Certificate of analysis kloroform*

LAMPIRAN 10
(LANJUTAN)



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

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Page 2 of 2

Gambar VII. 14 Lanjutan

LAMPIRAN 10
(LANJUTAN)

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	≤ 30	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)	≤ 0.05	%
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)	≤ 300	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)	≤ 0.00005	%
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	%

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

Gambar VII. 15 *Certificate analysis of etanol*

LAMPIRAN 10
(LANJUTAN)

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	≤ 0.0005	%
Water	≤ 0.1	%

Date of release (DD.MM.YYYY) 28.08.2017
Minimum shelf life (DD.MM.YYYY) 31.08.2022

Jeannette David
Responsible laboratory manager quality control

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

Gambar VII. 16 Lanjutan

Daftar Riwayat Hidup

I. IDENTITAS DIRI

Nama : Nisha Shifa Abdilah

Tempat dan Tanggal Lahir : Garut, 16 Januari 1998

Jenis Kelamin : Perempuan

Agama : Islam

Kewarganegaraan : Indonesia

Status : Mahasiswa

Alamat: Kp.Rancasalak Rt/01 rw/03 kecamatan Kadungora, Kab Garut

Telepon/No. Hp : 082119684146

Email : nisashifawbdillah@gmail.com

II. RIWAYAT PENDIDIKAN

Jenjang Pendidikan	Nama Sekolah/Perguruan Tinggi	Tahun Masuk	Tahun Lulus
SD/MI	SD Negeri Rancasalak 4	2005	2011
SMP/MTs	SMP Muhammadiyah 3 Kadungora	2011	2014
SMA/MA/SMK	SMA Negeri 2 Garut	2014	2017
Perguruan Tinggi	Universitas Garut	2018	2022

III. Kegiatan dan Organisasi

- Divisi Badan Usaha Himpunan Mahasiswa Farmasi KEMA FMIPA UNIGA (2020-2021)