# LAMPIRAN

## Lampiran 1. Surat Izin Penelitian

**KEMENTERIAN KESEHATAN REPUBLIK INDONESIA**
**DIREKTORAT JENDERAL TENAGA KESEHATAN**
**POLITEKNIK KESEHATAN TANJUNGKARANG**
Jalan Soekarno Hatta – Hatta No.6 Bandar Lampung
Telepon (0721) 783 852 Faxsimile : 0721 - 773918
E-mail : direktorat@poltekkes-tjk.ac.id Website : http://poltekkes-tjk.ac.id

Nomor : PP.03.04/F.XLIII/765/2024 5 Februari 2024
Lampiran : 1 eks
Hal : Izin Penelitian

Yth, Rektor Universitas Lampung
Di- Tempat

Sehubungan dengan penyusunan Laporan Tugas Akhir bagi mahasiswa Tingkat III Program Studi Farmasi Program Diploma Tiga Jurusan Farmasi Poltekkes Kemenkes Tanjungkarang Tahun Akademik 2023/2024, maka kami mengharapkan dapat diberikan izin kepada mahasiswa kami untuk dapat melakukan penelitian di Institusi yang Bpk/Ibu pimpin. Berikut adalah mahasiswa yang melakukan survei pendahuluan (terlampir).

Atas perhatian dan kerjasamanya diucapkan terima kasih.

Direktur Politeknik Kesehatan Kementerian Kesehatan TanjungKarang,

**Dewi Purwaningsih, S.SiT., M.Kes**
NIP 196705271988012001

Tembusan:
1.Ka.Jurusan Farmasi
2.Ka.Jurusan Biologi Unila
3.Ka.Laboratorium Botani Unila

Lampiran : Izin Penelitian
Nomor : PP.03.04/F.XLIII/ /2024
Tanggal : 5 Februari 2024

DAFTAR NAMA MAHASISWA YANG MELAKSANAKAN PENELITIAN
PROGRAM STUDI FARMASI PROGRAM DIPLOMA TIGA
JURUSAN FARMASI POLTEKKES KEMENKES TANJUNGKARANG
T.A 2023/2024

| No | NAMA | JUDUL PENELITIAN | TEMPAT PENELITIAN |
|---|---|---|---|
| 1. | SOVIE MUTIA<br>NIM: 2148401083 | Uji Mutu Ekstrak Etanol Daun Kumis Kucing (Orthosiphon stamineus (Benth)) | Laboratorium Botani Fakultas MIPA Biologi Universitas Lampung |
| 2. | RIVANALDO<br>NIM: 2148401030 | Skrining Fitokimia dan Uji Aktivitas Antioksidan Ekstrak Etanol Daun Kelor (Moringa oleifera L) Asal Desa Adijaya Kecamatan Terbanggi Besar Lampung Tengah | |
| 3. | ELOK HERMAWATI FAJRIN<br>NIM: 2148401018 | Skrining Fitokimia dan Uji Aktivitas Antioksidan Ekstrak Etanol Daun Kopi Robusta (Coffea canephora) Asal Lampung Barat | |
| 4. | NADIA SAPUTRI<br>NIM: 2148401065 | Karakterisasi Mutu Ekstrak Etanol Daun Kelor (Moringa oleifera L) Asal Desa Adijaya Kecamatan Terbanggi Besar Lampung Tengah | |

Direktur Politeknik Kesehatan Kementerian Kesehatan TanjungKarang,

**Dewi Purwaningsih, S.SiT., M.Kes**
NIP 196705271988012001

**Lampiran 2. Surat Determinasi Tanaman**

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI
UNIVERSITAS LAMPUNG
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
**JURUSAN BIOLOGI**
Jalan Prof. Dr. Soemantri Brodjonegoro No.1 Bandar Lampung 35145
Website : http://fmipa.unila.ac.id/web/biologi/ - Telp. 0721-704625-Fax. 0721-704625

Bandar Lampung, 12 Februari 2024

Kepada yth.
Sdr : Yulyuswarni,S.Si.,Apt.,M.Kes.
NIP : 197007182003122003

Dengan hormat

Bersama ini kami sampaikan hasil determinasi tumbuhan dari Laboratorium Botani Jurusan Biologi FMIPA Unila adalah sebagai berikut. Nama ilmiah untuk Tanaman Kelor adalah *Moringa oleifera* Lam.

Demikian hasil determinasi ini, semoga berguna bagi saudara

Mengetahui:
Kepala Laboratorium Botani

Dr. Sri Wahyuningsih, M.Si.
NIP 196111251990032001

Penanggung Jawab Determinasi

Dra. Yulianty, M.Si.
NIP 196507131991032002

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI
UNIVERSITAS LAMPUNG
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
**JURUSAN BIOLOGI**
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Website : http://fmipa.unila.ac.id/web/biologi/ - Telp. 0721-704625-Fax. 0721-704625

**Klasifikasi Tanaman Kelor menurut sistem klasifikasi Cronquist (1981) dan APG II (2003) adalah sebagai berikut :**

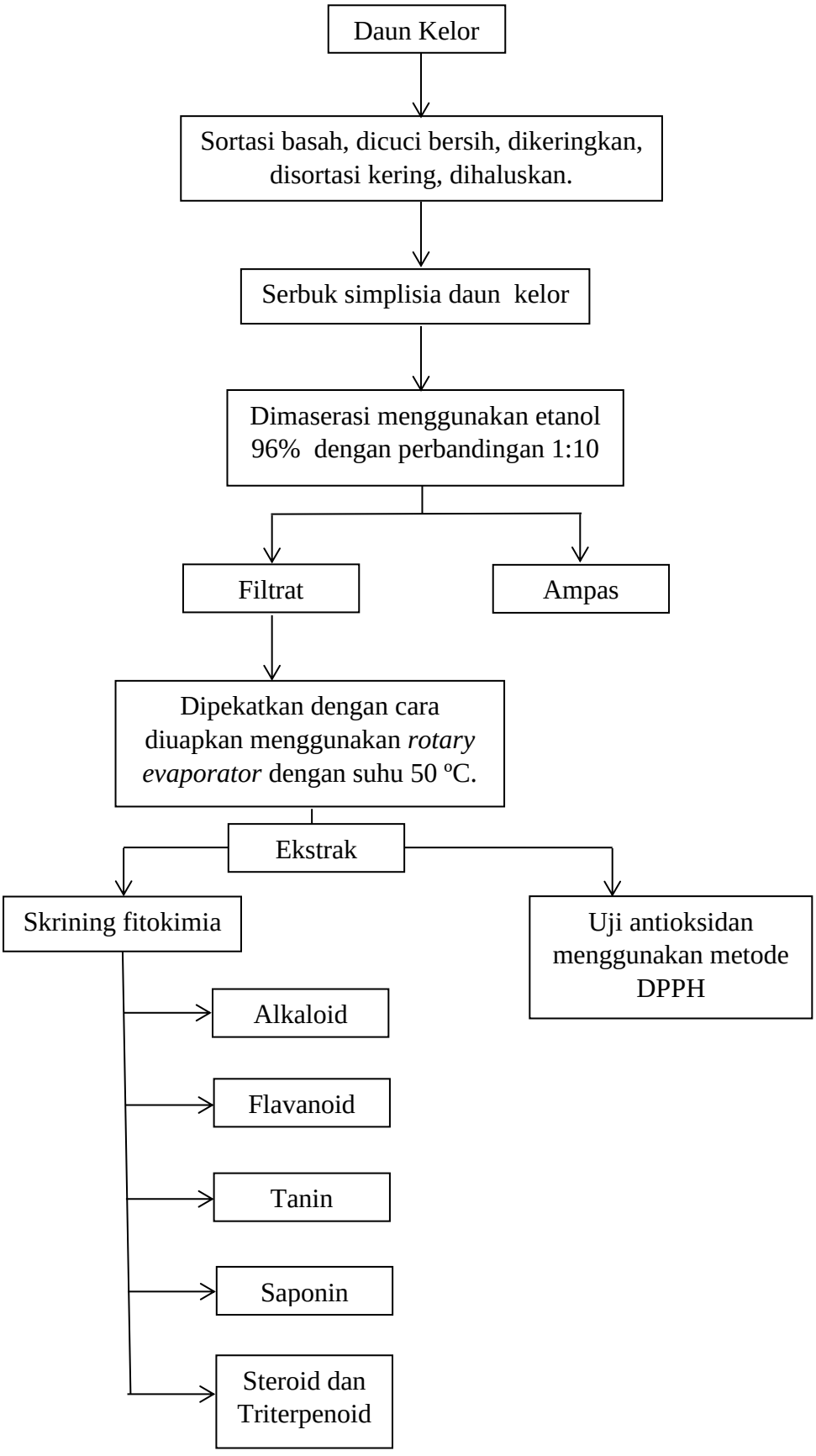
| | |
|---|---|
| Kerajaan | : Plantae |
| Divisi | : Magnoliophyta |
| Kelas | : Magnoliopsida |
| Bangsa | : Brassicales |
| Suku | : Moringaceae |
| Marga | : *Moringa* |
| Jenis | : *Moringa oleifera* Lam. |

**Referensi :**

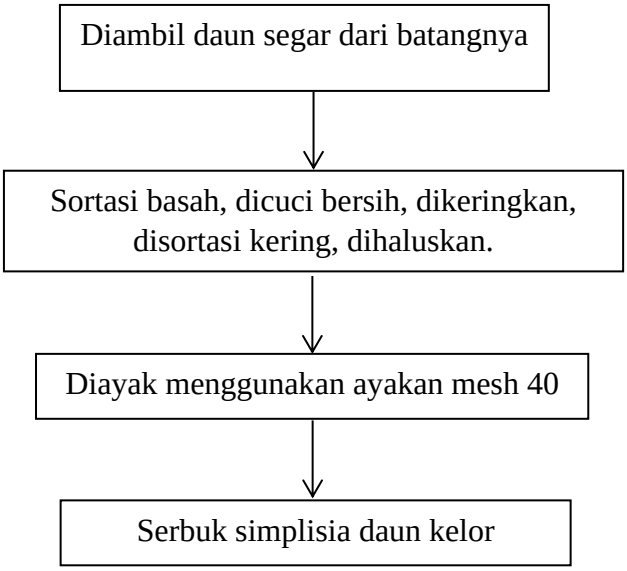
Cronquist, A. 1981. *An Integrated System of Clasification of Flowering Plants.* Columbia University Press. New York

The Angiosperm Phylogeny Group. 2003. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG II. *Botanical Journal of the Linnean Society*, 141, 399 – 436.

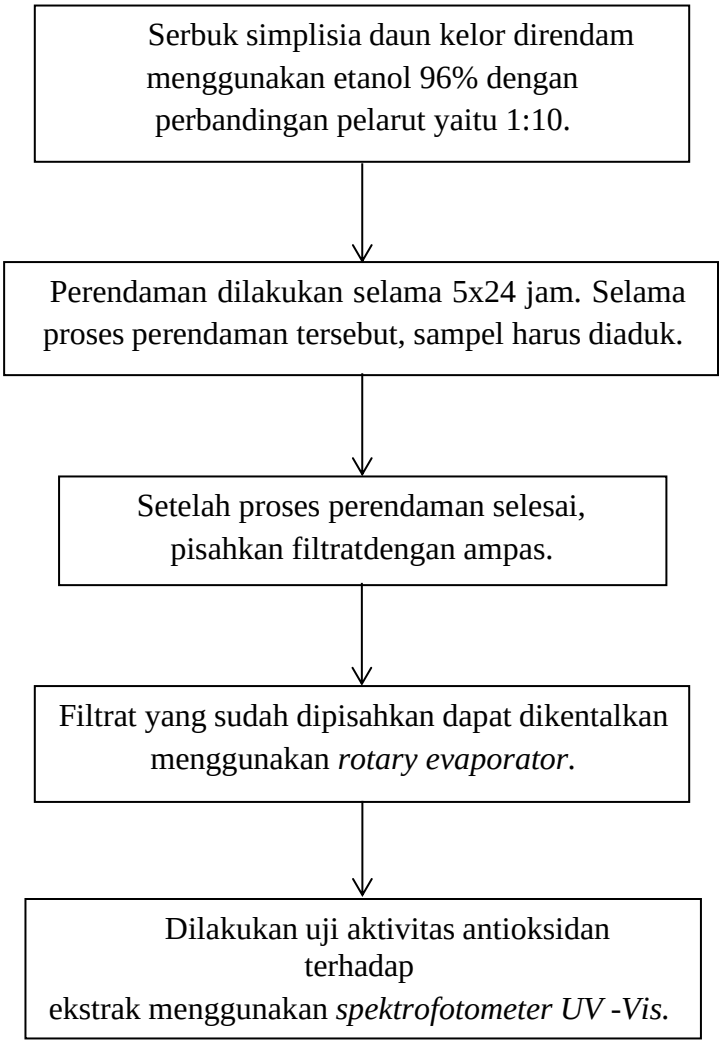
**Lampiran 3. Alur Kerja Penelitian**



**Lampiran 4. Skema Kerja Pembuatan Simplisia**



**Lampiran 1. Skema Kerja Metode Maserasi**



**Lampiran 2. Skema kerja pembuatan pereaksi *Bouchardat, Dragendroft, Mayer***

A. Bouchardat

1. Ditimbang raksa kalium iodide sebanyak 4 gram
2. Dilarutkan dengan 20 ml air suling dalam beaker glass 50 ml
3. Ditambahkan iodium sebanyak 2 gram
4. Dimasukkan kedalam labu ukur 100 ml lalu ditambahkan air suling hingga tanda batas

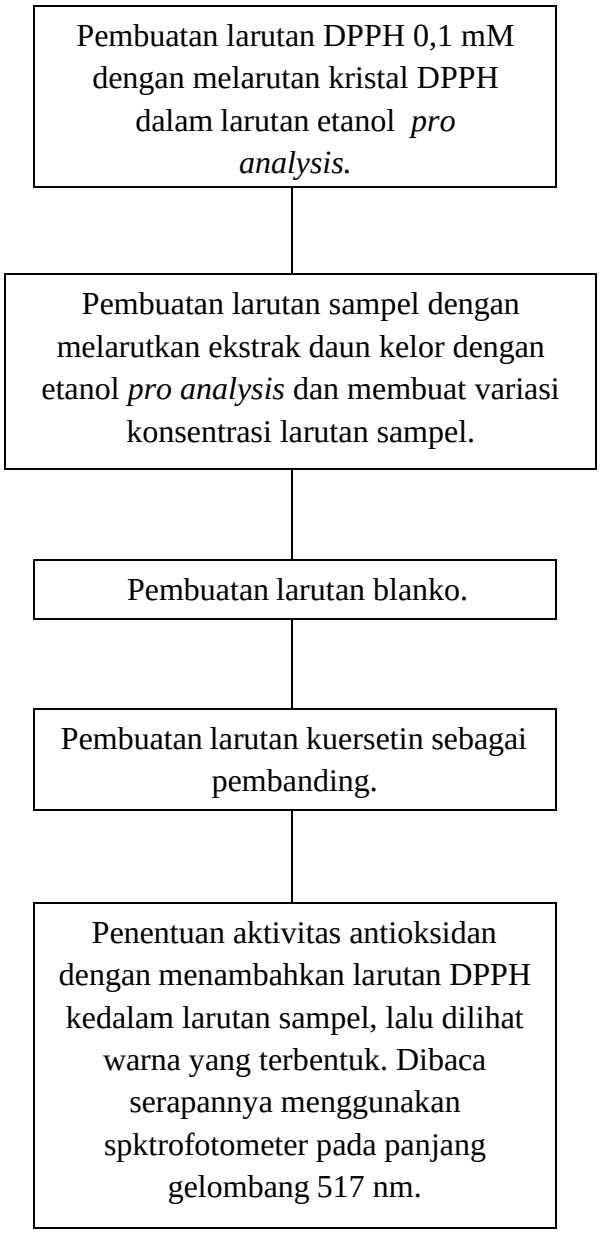
B. Dragendroft

1. Ditimbang bismuth (III) nitrat sebanyak 0,8 gram
2. Dilarutkan dengan 20 ml asam nitrat pekat dalam beaker glass 50 ml
3. Pada wadah lain ditimbang sebanyak 27,2 gram kalium iodide
4. Kemudian kedua larutan dicampurkan dan didiamkan sampai memisah sempurna
5. Larutan yang jernih diambil dan diencerkan dengan air suling sampai 100 ml

C. Mayer

1. Ditimbang raksa (II) klorida sebanyak 1,4 gram
2. Dilarutkan dengan 60 ml air suling dalam beaker glass 100 ml
3. Pada wadah lain ditimbang sebanyak 5 gram kalium iodide
4. Lalu dilarutkan dalam 10 ml air suling
5. Kedua larutan dicampurakn dan ditambahkan air suling hingga mencapai volume 100 ml

**Lampiran 3. Skema kerja uji aktivitas antioksidan daun kelor dengan metode DPPH**



**Lampiran 4. Perhitungan Rendemen Ekstrak Etanol Daun Kelor**

∑ Simplisia : 1.569 gra,

∑ Ekstrak : 159 gram

% Rendemen Ekstrak : $\frac{\sum\ Ekstrak}{\sum\ Simplisia}$ x 100%

% Rendemen Ekstrak : $\frac{(36{,}87\ gr + 37{,}64\ gr + 36{,}62\ gr + 37{,}25\ gr + 10{,}64\ gr)}{1.569\ gr}$ x 100%

% Rendemen Ekstrak : $\frac{159\ \text{gr}}{1.569\ \text{gr}}$ x 100%

% Rendemen Ekstrak : 10,135%

Jadi rendemen ekstrak etanol daun kelor adalah sebesar 10,135%.

**Lampiran 5. Perhitungan dalam Pembuatan Larutan DPPH 0,1 mM**

Untuk pembuatan larutan DPPH 0,1 mM sebanyak 50 ml dengan Mr DPPHyaitu 394,32 mg/mmol.

$$\text{M} = \frac{gr}{\text{Mr}} \times \frac{1000}{50\ ml}$$

$$\frac{0{,}1}{1000} = \frac{\text{gr}}{394{,}32\ \text{mg/mmol}} \times \frac{1000}{50\ \text{mL}}$$

$$0{,}0001\ \text{mmol} = \frac{\text{gr}}{394{,}32\ \text{mg/mmol}} \times 20\ \text{ml}$$

$$\text{gr} = \frac{0{,}0001\ \text{mmol}}{20\ \text{ml}} \times 394{,}32\ \text{mg/mmol}$$

$$\text{gr} = 0{,}001971\ \text{gr}$$

$$\text{mg} = 1{,}971\ \text{mg}$$

**Lampiran 6. Perhitungan dalam Pembuatan Larutan Sampel**

**1. Pembuatan Larutan Induk**

Pembuatan larutan induk dengan 100 mg ekstrak daun kelor dalam 50 ml pelarut etanol.

$$\text{Konsentrasi (ppm)} = \frac{\text{mg}}{\text{L}}$$
$$= \frac{100 \text{ mg}}{0{,}05 \text{ L}}$$
$$= 2000 \text{ ppm}$$

**2. Pembuatan Larutan 20 ppm (10 ml)**

$$\text{ppm}_1 \times \text{V}_1 = \text{ppm}_2 \times \text{V}_2$$
$$2.000 \text{ ppm} \times \text{V}_1 = 20 \text{ ppm} \times 10 \text{ ml}$$
$$\text{V}_1 = \frac{20 \text{ ppm} \times 10 \text{ mL}}{2.000 \text{ ppm}}$$
$$\text{V}_1 = 0{,}1 \text{ mL}$$

**3. Pembuatan Larutan 40 ppm (10 ml)**

$$\text{ppm}_1 \times \text{V}_1 = \text{ppm}_2 \times \text{V}_2$$
$$2.000 \text{ ppm} \times \text{V}_1 = 40 \text{ ppm} \times 10 \text{ ml}$$
$$\text{V}_1 = \frac{40 \text{ ppm} \times 10 \text{ mL}}{2.000 \text{ ppm}}$$
$$\text{V}_1 = 0{,}2 \text{ mL}$$

**4. Pembuatan Larutan 60 ppm (10 ml)**

$$\text{ppm}_1 \times \text{V}_1 = \text{ppm}_2 \times \text{V}_2$$
$$2.000 \text{ ppm} \times \text{V}_1 = 60 \text{ ppm} \times 10 \text{ ml}$$
$$\text{V}_1 = \frac{60 \text{ ppm} \times 10 \text{ mL}}{2.000 \text{ ppm}}$$
$$\text{V}_1 = 0{,}3 \text{ mL}$$

**5. Pembuatan Larutan 80 ppm (10 ml**

$$\text{ppm}_1 \times \text{V}_1 = \text{ppm}_2 \times \text{V}_2$$
$$2.000 \text{ ppm} \times \text{V}_1 = 80 \text{ ppm} \times 10 \text{ ml}$$
$$\text{V}_1 = \frac{80 \text{ ppm} \times 10 \text{ mL}}{2.000 \text{ ppm}}$$
$$\text{V}_1 = 0{,}4 \text{ mL}$$

**Lampiran 7. Perhitungan dalam Pembuatan Larutan Kuersetin**

**1. Pembuatan Larutan Induk**

Pembuatan larutan induk dengan 2,5 mg kuersetin dalam 50 ml pelarut etanol.

$$\text{Konsentrasi (ppm)} = \frac{\text{mg}}{\text{L}}$$
$$= \frac{2{,}5 \text{ mg}}{0{,}05 \text{ L}}$$
$$= 50 \text{ ppm}$$

**2. Pembuatan Larutan 1 ppm (10 ml)**

$$\text{ppm}_1 \times \text{V}_1 = \text{ppm}_2 \times \text{V}_2$$
$$50 \text{ ppm} \times \text{V}_1 = 1 \text{ ppm} \times 10 \text{ ml}$$
$$\text{V}_1 = \frac{1 \text{ ppm} \times 10 \text{ mL}}{50 \text{ ppm}}$$
$$\text{V}_1 = 0{,}2 \text{ mL}$$

**3. Pembuatan Larutan 2 ppm (10 ml)**

$$\text{ppm}_1 \times \text{V}_1 = \text{ppm}_2 \times \text{V}_2$$
$$50 \text{ ppm} \times \text{V}_1 = 2 \text{ ppm} \times 10 \text{ ml}$$
$$\text{V}_1 = \frac{2 \text{ ppm} \times 10 \text{ mL}}{50 \text{ ppm}}$$
$$\text{V}_1 = 0{,}4 \text{ mL}$$

**4. Pembuatan Larutan 4 ppm (10 ml)**

$$\text{ppm}_1 \times \text{V}_1 = \text{ppm}_2 \times \text{V}_2$$
$$50 \text{ ppm} \times \text{V}_1 = 4 \text{ ppm} \times 10 \text{ ml}$$
$$\text{V}_1 = \frac{4 \text{ ppm} \times 10 \text{ mL}}{50 \text{ ppm}}$$
$$\text{V}_1 = 0{,}8 \text{ mL}$$

**5. Pembuatan Larutan 8 ppm (10 ml**

$$\text{ppm}_1 \times \text{V}_1 = \text{ppm}_2 \times \text{V}_2$$
$$50 \text{ ppm} \times \text{V}_1 = 8 \text{ ppm} \times 10 \text{ ml}$$
$$\text{V}_1 = \frac{8 \text{ ppm} \times 10 \text{ mL}}{50 \text{ ppm}}$$
$$\text{V}_1 = 1{,}6 \text{ mL}$$

**Lampiran 8. Pembuatan Simplisia**

1. Sampling daun kelor

2. Sortasi basah

3. Pencucian daun kelor

4. Perajangan daun kelor

5. Pengeringan dengan matahari hingga air sisa pencucian hilang

6. Pengeringan daun kelor menggunakan oven suhu 50 °C selama 2 hari.

7. Daun kelor yang sudah dikeringkan

8. Sortasi kering daun kelor

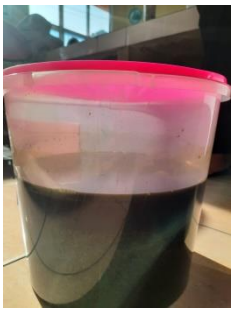
9. Penghalusan daun kelor menggunakan blender

10. serbuk simplisia daun kelor

**Lampiran 9. Ekstraksi Serbuk Simplisia Daun Kelor**


1.Penimbangan 1,6 kg serbuk simplisia daun kelor

2. Pengukuran pelarut etanol 96%



3. Perendaman serbuk simplisia dengan etanol 96% (Maserasi)

4. Pengadukan Maserasi daun kelor

5. Penyaringan hasil maserasi daun kelor

6. Proses pemekatan ekstrak daun kelor dengan menggunakan *rotary evaporator*

7. Pemekatan ekstrak Menggunakan waterbath

**Lampiran 10. Skrining Fitokimia Flavonoid**

1. Penimbangan ekstrak sebanyak 5 gram

2. Pengukuran 50 ml air suling

3. Pemanasan larutan diatas *hot plate*

4. Penyaringan filtrat

5. Pemipetan 5 ml filtrat

6. Penambahan sebuk Mg

7. Penambahan larutan HCL pekat dan amil alkohol

8. Hasil pemeriksaan flavonoid

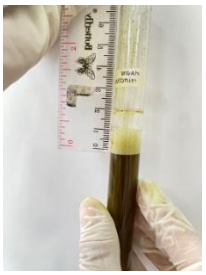
**Lampiran 11. Skrining Fitokimia Saponin**

1. Seujung spatula ekstrak daun kelor dimasukkan kedalam tabung reaksi

2. Pengukuran 10 ml air suling panas

3. Pengocokan larutan

4. Penambahan HCL2N pekat



5. Hasil pemeriksaan saponin

**Lampiran 12. Skrining Fitokimia Alkaloid**

1. Seujung spatula ekstrak daun kelor dimasukkan kedalam tabung reaksi

2. Proses penambahan air suling

3.Proses penambahan HCL2N

4. Proses pemanasan diatas *hot plate*

5. Proses penyaringan

6. Proses penetesan pereaksi *mayer, dragendrof, bauchardat*

(a) Mayer

(b) Drgendrof

(c) Bauchardat

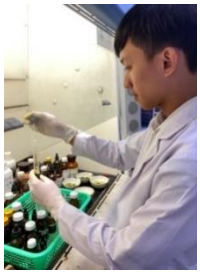
7. Hasil pemeriksaan akaloid

**Lampiran 13. Skrining Fitokimia Tanin**

1. Proses penimbangan

2. Penambahan air suling panas

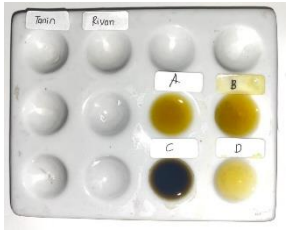
3. Proses penyaringan



4. Penambahan 1 ml NaCl 10%

5. Bagi filtrat menjadi 4 bagian A, B, C dan D

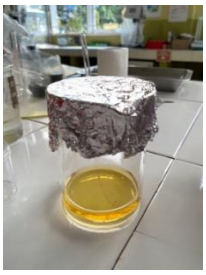
6. Hasil pemeriksaan tanin



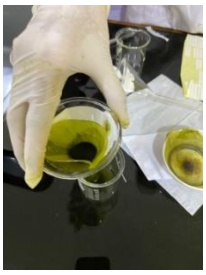

7. Hasil pemeriksaan tanin

**Lampiran 14. Skrining Fitokimia Steroid dan Triterpenoid**

1.Proses penimbanagan



2. Proses maserasi dengan n-heksana



3. Proses penyaringan

4. Proses penguapan

5. Penambahan asam asetat anhidrat dan H2SO4

6. Hasil pemeriksaan steroid dan triterpenoid

**Lampiran 15. Pembuatan Larutan DPPH**

1. Penimbangan Kristal DPPH

2. Pengukuran etanol *pro analysis*

3. Proses pengadukan

4. Proses pemindahan kelabu ukur

5. Penambahan etanol *pro analysis* sampai tanda batas

6. proses penyimpanan pada botol gelap

**Lampiran 16. Pembuatan Larutan Kuersetin**

1. Penimbangan Kristal kuersetin

2. Pengukuran etanol *pro analysis*

3. Proses pengadukan

4. Proses pemindahan kelabu ukur

5. Penambahan etanol *pro analysis* sampai tanda batas

6. proses penyimpanan pada botol gelap

**Lampiran 17. Pembuatan Larutan Sampel**

1. Penimbangan ekstrak etanol daun kelor

2. Pengukuran larutan etanol *pro analysis*

3. proses pengadukan

4. Proses penyimpanan pada botol gelap

**Lampiran 18. Penentuan Aktivitas Antioksidan**

1. Proses memasukkan larutan sampel dan standar ke tabung reaksi

2. Penambahan larutan DPPH

3. Proses menghomogenkan larutan dengan *vortex*

4. Proses inkubasi


5. Proses membaca serapan larutan menggunakan *spektrofotometri UV-Vis*

**Lampiran 19. Certificate of Analysis DPPH**

## Certificate of Analysis

08/02/2023(JST)

TOKYO CHEMICAL INDUSTRY CO.,LTD.
4-10-1 Nihonbashi-Honcho, Chuo-ku, Tokyo 103-0023 Japan

| Chemical Name: 1,1-Diphenyl-2-picrylhydrazyl Free Radical | | |
|---|---|---|
| Product Number: D4313<br>CAS RN: 1898-66-4 | Lot: U6GJC | |

| Tests | Results | Specifications |
|---|---|---|
| Appearance | Black powder | Black powder to crystal |
| Purity(HPLC) | 99.0 area% | min. 97.0 area% |

TCI Lot numbers are 4-5 characters in length. Characters listed after the first 4-5 characters are control numbers for internal purpose only.
The contents of the specifications are subject to change without advance notice. The specification values displayed here are the most up to date values. There may be cases where the product labels display a different specification, however, the product quality still meets the latest specification.

**Customer Service:**

TOKYO CHEMICAL INDUSTRY CO., LTD
E-mail: globalbusiness@TCIchemicals.com

Takuya Nishioka
Quality Assurance Department Manager

**Lampiran 20. Certificate of Analysis Kuersetin**

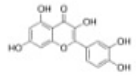
Sigma-Aldrich.

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

# Certificate of Analysis

Product Name:
QUERCETIN, ≥95% (HPLC), SOLID

| | |
|---|---|
| **Product Number:** | **Q4951** |
| **Batch Number:** | **SLCK5305** |
| Brand: | SIGMA |
| CAS Number: | 117-39-5 |
| Formula: | C15H10O7 |
| Formula Weight: | 302.24 g/mol |
| Quality Release Date: | 10 JUN 2021 |



| Test | Specification | Result |
|---|---|---|
| Appearance (Color) Yellow | Conforms | Conforms |
| Appearance (Form) | Powder | Powder |
| 1H NMR Spectrum | Conforms to Structure | Conforms |
| Loss on Drying | ≤ 4 % | 1 % |
| Purity (HPLC) | ≥ 95 % | 99 % |

Brian Dulle, Supervisor
Quality Assurance
St. Louis, Missouri US

**Lampiran 21. Certificate of Analysis Etanol Pro Analysis**

# PT. SMART-LAB INDONESIA

MANUFACTURER OF ANALYTICAL REAGENTS

## CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| Product Name | : Ethanol (Absolute) | Molecular Weight | : 46.07 g/mol |
| Catalog No. | : A-1035 | Batch No. | : 230322003 |
| Grade | : Analytical Reagent | Manufacturing Date | : March 23, 2022 |
| Formula | : $C_2H_5OH$ | Expire Date | : March, 2027 |
| Cas No | : 64-17-5 | | |

| NO | ITEM TEST | UNITS | SPECIFICATION | RESULT |
|---|---|---|---|---|
| 1. | Appearance | – | Clear colorless liquid | Clear colorless liquid |
| 2. | Assay (Alcoholmeter) | wt % | min 99.7 | 99.897 |
| 3. | Wt. Per ml at 20 $^0$C | g/cm$^3$ | 0.789 – 0.792 | 0.790 |
| 4. | Colour | Hazen | max 10 | < 10 |
| 5. | Refractive Index | $n^{20}_D$ | 1.358 – 1.363 | 1.360 |
| 6. | Water ($H_2O$) | wt % | max 0.2 | 0.1264 |
| 7. | Non-volatile matter | wt % | max 0.001 | 0.00081 |
| 8. | Acidity ($CH_3COOH$) | wt % | max 0.0006 | 0.00022 |
| 9. | Alkalinity ($NH_3$) | wt % | max 0.0002 | 0.00013 |
| 10. | Acetone, isopropyl alcohol | – | passes test | passes test |
| 11. | Methanol ($CH_3OH$) | wt % | max 0.1 | NIL |
| 12. | Iron (Fe) | wt % | max 0.00002 | < 0.00002 |
| 13. | Lead (Pb) | wt % | max 0.00005 | < 0.00005 |
| 14. | Solubility in water | – | passes test | passes test |
| 15. | Substances darkened ( by $H_2SO_4$) | – | passes test | passes test |
| 16. | Substances Reducing $KMnO_4$ | – | passes test | passes test |

Result : The above product corresponds to AR Grade

*Reference or standard of product specification to Analar standard and ACS specification*

PT. SMART LAB INDONESIA

SUDIRO S.Si.
Head QC

Ruko Boulevard TamanTekno Blok E No.10 -11 BSD Sektor XI Serpong, Tangerang - Indonesia
Telp: (62-21) 7588 0205, Fax : (62-21) 7588 0198 Website: www.smartlab.co.id Email : sales@smartlab.co.id

**Lampiran 22. Certificate of Analysis Etanol 96%**

**PT CATUR RINDANG USAHA BERSAMA**
Jl. Tarumanegara No.20, RT.1/RW.9, Cireundeu,
Kec. Ciputat Tim., Kota Tangerang Selatan, Banten 15419
Telp:081394763053,Email:admin@caturusaha.id
www.caturusaha.id

## CERTIFICATE OF ANALYSIS

**Product Name : ALKOHOL TEKNIS 96 %**

Dok. No : 003
Product Name : Alkohol teknis 96 %
Received Date : 11 Juli 2023

No. Lot / Batch : ALK96-110723
Expire Date : 11 Juli 2024

Hasil Analisa Sebagai Berikut :

| NO | Parameter | Referensi | Unit | Spesifikasi | Hasil |
|---|---|---|---|---|---|
| 1 | Apprearance | Organoleptik | | Clear | Bening dan tidak berbau |
| 2 | Kadar pada suhu 15 °C | Piknometer | % v/v | Min 95 | 96 |
| 3 | SG pada suhu 15 °C | gravimetri | | 0,7922-0,7955 | 0,7920 |
| 4 | Keasaman (sebagai asam asetat) | Titrimetri | mg/L | Maks.30 | 11,5 |
| 5 | Sisa penguapan maksimum | gravimetri | mg/L | Maks.25 | 15 |
| 6 | Waktu uji permanganat | Uji Barbet/$KMnO_4$ | menit | Min.15 | 23 |
| 7 | Aldehid sebagai asetaldehid | Titrimetri | mg/L | Maks.4 | 2 |

Tangerang Selatan,11 Juli 2023
Diverifikasi Oleh,

Quality Control

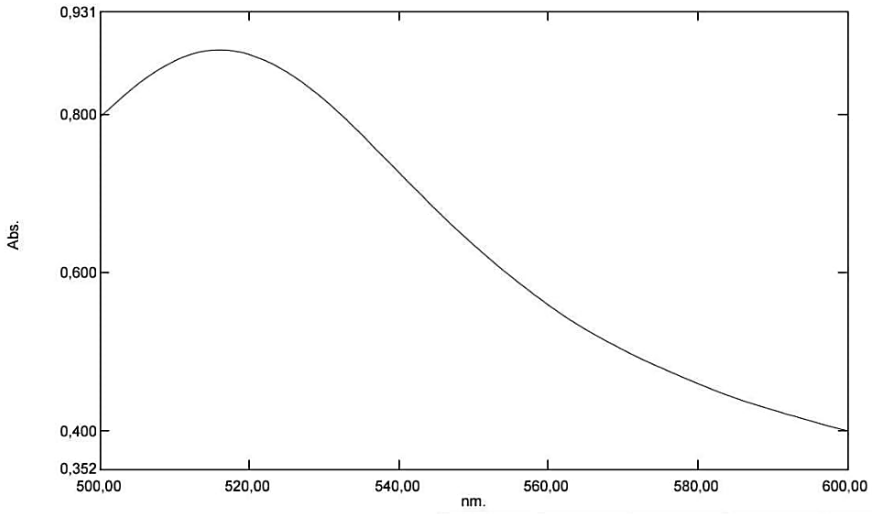
**Lampiran 23. Data Hasil Pengukuran Panjang Gelombang Maksimum DPPH**

- Pengulangan 1

## Spectrum Peak Pick Report

28/05/2024 14:52:09

Data Set: lamda max kontrol_144950 - RawData-001




| No. | P/V | Wavelength | Abs. | Description |
|---|---|---|---|---|
| 1 | ↑ | 516.00 | 0.882 | |

[Measurement Properties]
Wavelength Range (nm.): 500.00 to 600.00
Scan Speed: Medium
Sampling Interval: 1,0
Auto Sampling Interval: Disabled
Scan Mode: Repeat

[Instrument Properties]
Instrument Type: UV-1900 Series
Measuring Mode: Absorbance
Slit Width: 1,0 nm
Light Source Change Wavelength: 340,8 nm
S/R Exchange: Normal

[Attachment Properties]
Attachment: 6-Cell
Number of cells: 0

[Operation]
Threshold: 0,0010000
Points: 4
InterPolate: Disabled
Average: Disabled

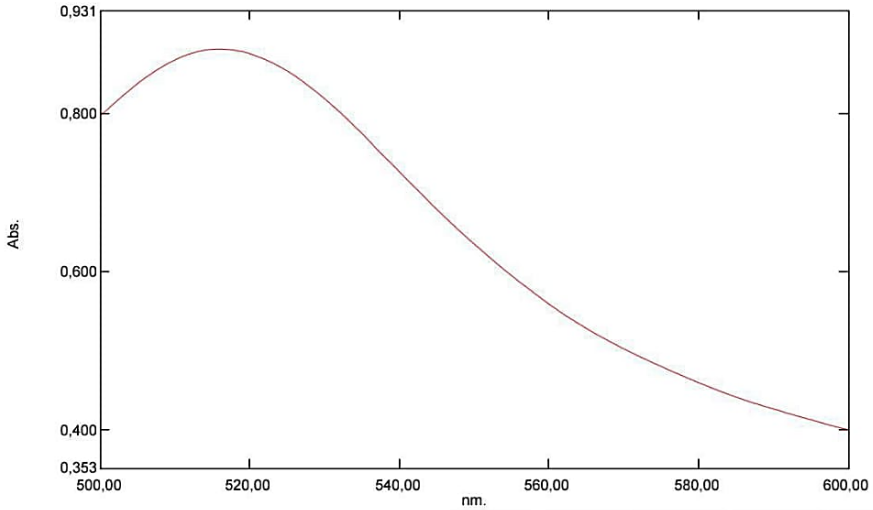
[Sample Preparation Properties]
Weight:
Volume:
Dilution:
Path Length:
Additional Information:

- Pengulangan 2

## Spectrum Peak Pick Report

28/05/2024 14:52:22

Data Set: lamda max kontrol_144950 - RawData-002




| No. | P/V | Wavelength | Abs. | Description |
|---|---|---|---|---|
| 1 | ↑ | 516.00 | 0.883 | |

[Measurement Properties]
Wavelength Range (nm.): 500.00 to 600.00
Scan Speed: Medium
Sampling Interval: 1,0
Auto Sampling Interval: Disabled
Scan Mode: Repeat

[Instrument Properties]
Instrument Type: UV-1900 Series
Measuring Mode: Absorbance
Slit Width: 1,0 nm
Light Source Change Wavelength: 340,8 nm
S/R Exchange: Normal

[Attachment Properties]
Attachment: 6-Cell
Number of cells: 0

[Operation]
Threshold: 0,0010000
Points: 4
InterPolate: Disabled
Average: Disabled

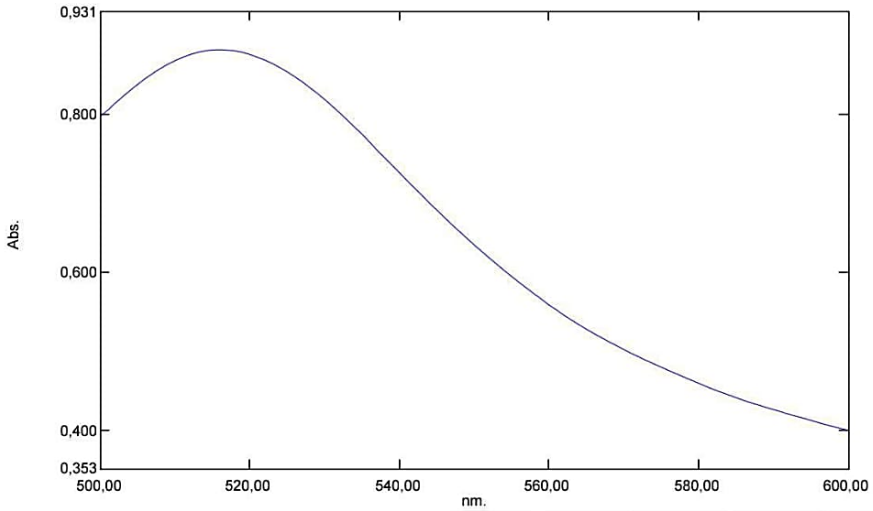
[Sample Preparation Properties]
Weight:
Volume:
Dilution:
Path Length:
Additional Information:

➢ Pengulangan 3

## Spectrum Peak Pick Report

28/05/2024 14:52:33

Data Set: lamda max kontrol_144950 - RawData-003




| No. | P/V | Wavelength | Abs. | Description |
|---|---|---|---|---|
| 1 | ↑ | 516.00 | 0.883 | |

[Measurement Properties]
Wavelength Range (nm.): 500.00 to 600.00
Scan Speed: Medium
Sampling Interval: 1,0
Auto Sampling Interval: Disabled
Scan Mode: Repeat

[Instrument Properties]
Instrument Type: UV-1900 Series
Measuring Mode: Absorbance
Slit Width: 1,0 nm
Light Source Change Wavelength: 340,8 nm
S/R Exchange: Normal

[Attachment Properties]
Attachment: 6-Cell
Number of cells: 0

[Operation]
Threshold: 0,0010000
Points: 4
InterPolate: Disabled
Average: Disabled

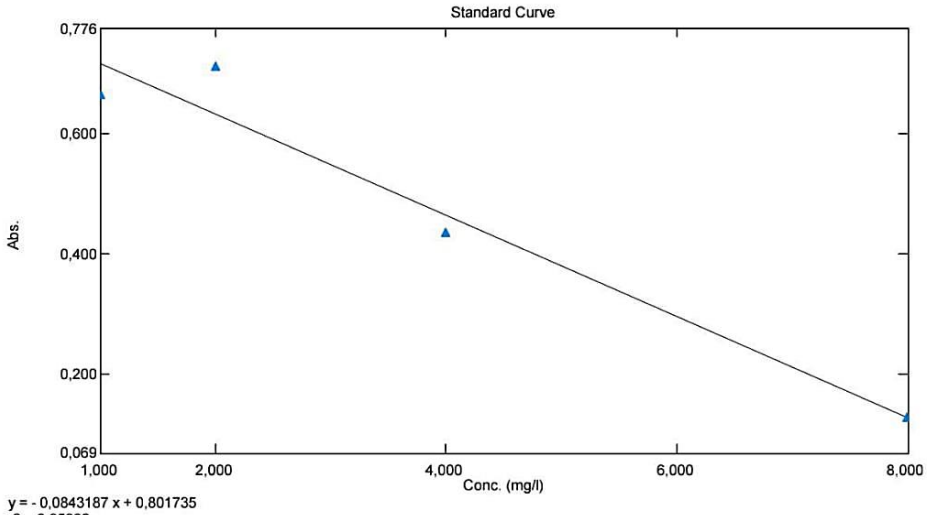
[Sample Preparation Properties]
Weight:
Volume:
Dilution:
Path Length:
Additional Information:

**Lampiran 24. Data Hasil Pengukuran Aktivitas Antioksidan Kuersetin**

## Standard Table Report

28/05/2024 15:09:16

File Name: D:\DATA UJI\rivan\standar.pho




y = - 0,0843187 x + 0,801735
r2 = 0.95302

Standard Table

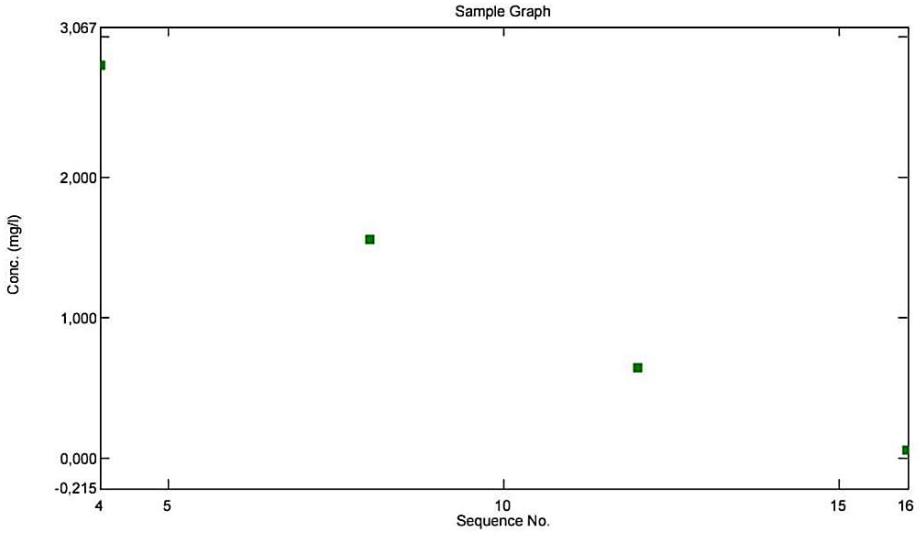
| | Sample ID | Type | Ex | Conc | WL516,0 | Wgt.Factor | Comments |
|---|---|---|---|---|---|---|---|
| 1 | st1 | Std-Repeat | | 1.000 | 0.665 | 1.000 | |
| 2 | st1-2 | Std-Repeat | | 1.000 | 0.665 | 1.000 | |
| 3 | st1-3 | Std-Repeat | | 1.000 | 0.665 | 1.000 | |
| 4 | st1-Avg | Average | | 1.000 | 0.665 | 1.000 | Avg of preceding 3 Samples |
| 5 | st2 | Std-Repeat | | 2.000 | 0.714 | 1.000 | |
| 6 | st2-2 | Std-Repeat | | 2.000 | 0.714 | 1.000 | |
| 7 | st2-3 | Std-Repeat | | 2.000 | 0.714 | 1.000 | |
| 8 | st2-Avg | Average | | 2.000 | 0.714 | 1.000 | Avg of preceding 3 Samples |
| 9 | st3 | Std-Repeat | | 4.000 | 0.435 | 1.000 | |
| 10 | st3-2 | Std-Repeat | | 4.000 | 0.435 | 1.000 | |
| 11 | st3-3 | Std-Repeat | | 4.000 | 0.435 | 1.000 | |
| 12 | st3-Avg | Average | | 4.000 | 0.435 | 1.000 | Avg of preceding 3 Samples |
| 13 | st4 | Std-Repeat | | 8.000 | 0.128 | 1.000 | |
| 14 | st4-2 | Std-Repeat | | 8.000 | 0.128 | 1.000 | |
| 15 | st4-3 | Std-Repeat | | 8.000 | 0.128 | 1.000 | |
| 16 | st4-Avg | Average | | 8.000 | 0.128 | 1.000 | Avg of preceding 3 Samples |
| 17 | | | | | | | |

**Lampiran 25. Data Hasil Pengukuran Aktivitas Antioksidan Ekstrak Etanol Daun Kelor**

## Sample Table Report

28/05/2024 15:25:26

File Name: D:\DATA UJI\rivan\standar.pho




Sample Table

| | Sample ID | Type | Ex | Conc | WL516,0 | Comments |
|---|---|---|---|---|---|---|
| 1 | sp1 | Unk-Repeat | | | 0.566 | |
| 2 | sp1-2 | Unk-Repeat | | | 0.566 | |
| 3 | sp1-3 | Unk-Repeat | | | 0.566 | |
| 4 | sp1-Avg | Average | | 2.793 | 0.566 | Avg of preceding 3 Samples |
| 5 | sp2 | Unk-Repeat | | | 0.671 | |
| 6 | sp2-2 | Unk-Repeat | | | 0.671 | |
| 7 | sp2-3 | Unk-Repeat | | | 0.671 | |
| 8 | sp2-Avg | Average | | 1.554 | 0.671 | Avg of preceding 3 Samples |
| 9 | sp3 | Unk-Repeat | | | 0.748 | |
| 10 | sp3-2 | Unk-Repeat | | | 0.748 | |
| 11 | sp3-3 | Unk-Repeat | | | 0.747 | |
| 12 | sp3-Avg | Average | | 0.642 | 0.748 | Avg of preceding 3 Samples |
| 13 | sp4 | Unk-Repeat | | | 0.797 | |
| 14 | sp4-2 | Unk-Repeat | | | 0.797 | |
| 15 | sp4-3 | Unk-Repeat | | | 0.797 | |
| 16 | sp4-Avg | Average | | 0.059 | 0.797 | Avg of preceding 3 Samples |
| 17 | | | | | | |

**Lampiran 26. Lembar Konsultasi Pembimbing I**

## LEMBAR KONSULTASI LAPORAN TUGAS AKHIR

**NAMA MAHASISWA** : **Rivanaldo**

**NIM** : **2148401030**

**DOSEN PEMBIMBING** : **Yulyuswarni., S.Si., Apt., M.kes**

| NO | TANGGAL | KEGIATAN | | PARAF | |
|---|---|---|---|---|---|
| | | MASALAH | PENYELESAIAN | DOSEN | MHS |
| 1 | 18.07.2023 | Mahasiswa Mengajukan Judul LTA | Diberikan Saran dan Masukan oleh dosen Pembimbing | | |
| 2. | 21.07.2023 | Acc Judul LTA | Skrining Filokimia dan uji aktivitas antioksidan ekstrak etanol daun kelor (Moring oleifera L.) Asal desa Adijaya, LAMTENG | | |
| 3. | 27.07.2023 | Pengajuan BAB 1 | Pengumpulan BAB 1 dan Diskusi | | |
| 4. | 01.08.2023 | Revisi Bab 1 | Diberikan Saran dan Masukan Terkait Bab 1 | | |
| 5. | 16.08.2023 | Pengumpulan Revisian bab 1 | Pengumpulan Revisian bab 1 | | |
| 6. | 06.09.2023 | Pengumpulan Bab 1-3 | Pengumpulan Bab 1-3 dan diberikan saran | | |

| | | | | | |
|---|---|---|---|---|---|
| 7. | 18-9-2023 | Diberikan Saran dan Masukan Terkait Bab 1-3 | Diberikan Saran dan Masukan | | |
| 8. | 02-10-2023 | Pengumpulan Hasil Revisi Bab 1-3 | Pengumpulan Revisi bab 1-3 | | |
| 9. | 08-11-2023 | Diberikan Saran dan Masukan Terkait Bab 1-3 | Diberikan Saran dan Masukan Terkait Bab 1-3 | | |
| 10 | 07-12-2023 | Bimbingan Hasil Revisi Bab 1-3 | Diskusi Hasil Revisi diberikan Saran dan Masukan | | |
| 11. | 15-12-2023 | Pengumpulan Hasil Revisi | Pengumpulan Hasil Revisi Bab 1-3 | | |
| 12. | 19-12-2023 | | Acc Sempro | | |

| | | | | | |
|---|---|---|---|---|---|
| 13. | Selasa, 27 Desember, 2023 | Bimbingan Setelah Sempro | Acc Proposal |  |  |
| 14. | Jum'at, 28 Juni, 2024 | Pengumpulan Hasil Penelitian LTA Bab 1-5 | Mengumpulkan terlebih dahulu Bab 1-5 yang telah dikerjakan |  |  |
| 15. | Selasa 2 Juli 2024 | Bimbingan Bab 1-5 yang telah dikumpulkan | Diberikan saran perbaikan untuk latar belakang, Pembahasan dan Daftar Pustaka |  |  |
| 16. | Jum'at 5 Juli 2024 | Pengumpulan bimbingan hasil Revisi Bab 1-15 | Acc Semhas |  |  |
| 17. | 29.07.2024 | Revisi rumusan Masalah dan Pembahasan | Revisi diterima |  |  |
| 18. | 29.07.2024 | Acc Revisi | Acc Revisi Semhas |  |  |
| 19. | 29.07.2024 | | Acc Cetak |  |  |

**Lampiran 27. Lembar Konsultasi Pembimbing II**

## LEMBAR KONSULTASI LAPORAN TUGAS AKHIR

**NAMA MAHASISWA** : Rivanaldo

**NIM** : 2148401030

**DOSEN PEMBIMBING** : Ani Hartati, M.Si., Apt.

| NO | TANGGAL | KEGIATAN | | PARAF | |
|---|---|---|---|---|---|
| | | MASALAH | PENYELESAIAN | DOSEN | MHS |
| 1. | 07/7/2024 | Pengajuan laporan tugas akhir | Perbaikan Penulisan | | |
| 2. | 10/7/2024 | Pengajuan Perbaikan laporan Tugas akhir | Perbaikan diterima | | |
| | | | Acc Semhas | | |
| 3. | 5/8/2024 | Pengajuan Perbaikan Seminar hasil | Perbaikan Hasil Penelitian | | |
| 4. | 8/8/2024 | Pengajuan hasil Revisi Penelitian | Perbaikan Perhitungan Ic 50 | | |
| 5 | 13/8/2024 | Pengajuan Hasil revisi Perhitungan Ic50 | Perbaikan Diterima | | |
| | | | Acc Cetak | | |

**Lampiran 28. Lembar Perbaikan Seminar Hasil Tugas Akhir**

**SEMINAR HASIL TUGAS AKHIR**

Hari / Tanggal : Sabtu, 20 Juli 2024
Nama Mahasiswa : Rivanaldo
Judul Tugas Akhir : Skrining Fitokimia dan Uji Aktivitas Antioksidan Ekstrak Etanol Daun Kelor (Moringa oleifera L.) Asal Desa Merak Belantung Kec. Kalianda Lampung Selatan

HASIL MASUKAN :

Penguji I :
- Sesuaikan cara kerja dengan yang telah dilakukan (berapa batang?)
- Pembahasan + hasil ekstrak & rendemen
- Lengkapi lampiran
- Merk alat yang digunakan

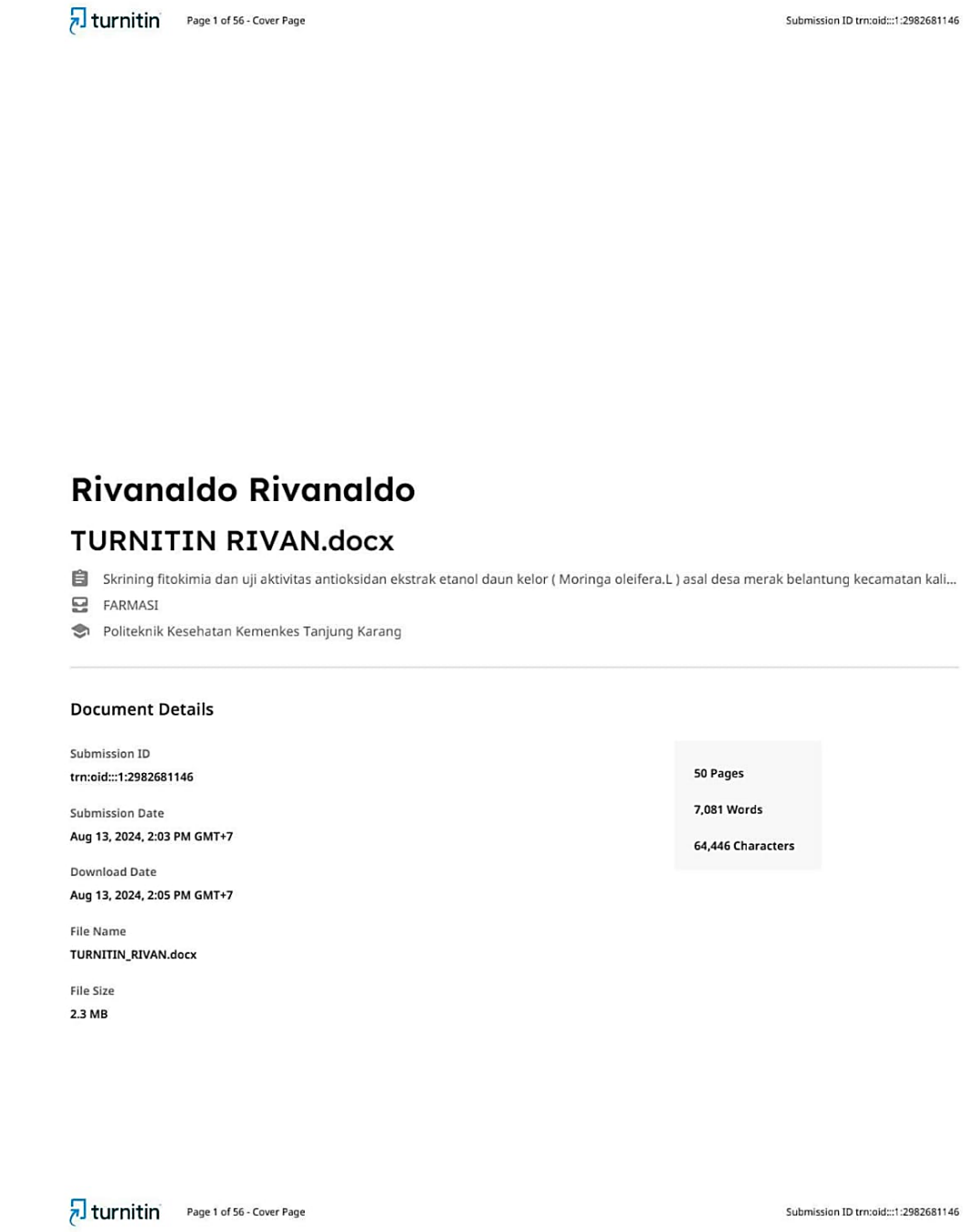
Penguji 2 :
- Sesuaikan cara kerja tanin + lampiran
- Hasil IC50

Penguji 3 :
- Rumusan masalah + sentra daun kelor
- Pembahasan → pembuatan ekstrak
  → Rendemen
  → Skrining fitokimia
  → Daya antioksidan

Mengetahui

| Penguji 1, | Penguji 2 | Penguji 3, |
|---|---|---|
| 5/8 24 | 13/8 24 | 29/07 24 |
| Endah Ratnasari Mukarsih, M.Si. | Ani Hartati, M.Si., Apt. | Yulyrwami, S.Si. Apt. MKes |
| NIP. 198808292015032003 | NIP. 197405091999032002 | NIP. 197007182003122003 |

**Lampiran 29. Hasil Cek Turnitin**



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# Rivanaldo Rivanaldo

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Skrining fitokimia dan uji aktivitas antioksidan ekstrak etanol daun kelor ( Moringa oleifera.L ) asal desa merak belantung kecamatan kali...

FARMASI

Politeknik Kesehatan Kemenkes Tanjung Karang

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**Lampiran 30. Lembar Bukti Cek Turnitin**

**LEMBAR BUKTI PENGECEKAN SIMILARITY/PLAGIARISM**
**DENGAN TURNITIN**

Nama : Rivanaldo
NIM : 2148401030
Judul LTA : Skrining fitokimia dan uji aktivitas antioksidan ekstrak etanol daun kelor (Moringa oleifera L.) Asal Desa Merak Belantung Kecamatan Kalianda Lampung Selatan
Prodi : D3 Farmasi

Telah melakukan pengecekan Turnitin sebagai berikut :

| Ke- | Tanggal | Hasil (Nilai ) | Paraf Petugas Perpustakaan dan Cap |
|---|---|---|---|
| 1 | 13/01 2024. | 19 % | POLTEKKES TANJUNGKARANG PERPUSTAKAAN |
| 2 | | | |
| 3 | | | |

Mengetahui,

Pembimbing 1

(Yulyuswarni, S.Si., Apt., M.Kes.)
NIP. 197007182003122003

Pembimbing 2

(Ani Hartati, M.Si., Apt.)
NIP. 197405091999032002

Catatan : Pengisian kolom tanggal dan hasil ditulis tangan