

## LAMPIRAN

## Lampiran 1. COA Etanol 96%

## PT. RIV Chemicals

# Certificate Of Analysis

|              |   |                        |
|--------------|---|------------------------|
| Product Name | : | Solvent Ethanol Teknik |
| Reg. Number  | : | V. 501                 |
| Lot Number   | : | 5 / 501 / 2208195445   |
| Issued       | : | Agustus 2020           |

| No | Test Item                                    | Unit        | Test Method     | Specification   | Result    |
|----|----------------------------------------------|-------------|-----------------|-----------------|-----------|
| 1  | Appearance                                   | -           | Visual          | Clear           | Clear     |
| 2  | Purity                                       | wt %        | Alcoholmeter    | Min. 96         | 96        |
| 3  | Water Content                                | wt %        | ASTM E1064 - 12 | Max 0.1         | 0.009     |
| 4  | Specific Gravity at 20°C                     |             | ASTM D4052 - 11 | 0.7910 - 0.7930 | 0.792     |
| 5  | Colour                                       | Hazen       | ASTM D1209 - 05 | Max 15          | 0         |
| 6  | Acetone Content                              | mg / kg     | IMPCA 001 - 09  | Max 30          | LT 30     |
| 7  | Acidity (As Acetic Acid) / Free Acid         | wt %        | ASTM D1613 - 06 | Max 0.003       | LT 0.003  |
| 8  | Hydrocarbons                                 |             | ASTM D1722 - 09 | -               | Pass      |
| 9  | Carbonisable Substances                      | Pt - Co     | ASTM E346 - 08  | Max 30          | LT 15     |
| 10 | Distillation Range at 760 mmHg               | °C          | ASTM D1078 - 11 | Max 1           | -         |
|    | IBP                                          | °C          | ASTM D1078 - 11 |                 | 64.3      |
|    | DP                                           | °C          | ASTM D1078 - 11 |                 | 64.9      |
| 11 | Non Volatile Matter / Residue On Evaporation | mg / 100 ml | ASTM D1353 - 13 | Max 1           | LT 0.8    |
| 12 | Potassium Permanganate (15°C)                | Minutes     | ASTM D1363 - 06 | Min. 60         | >60       |
| 13 | Sulfur                                       | mg / kg     | ASTM D5453 - 09 | Max 0.5         | LT 0.5    |
| 14 | Iron                                         | mg / kg     | ASTM E394 - 09  | Max 0.1         | LT 0.1    |
| 15 | Chloride                                     | mg / kg     | IMPCA 002 - 96  | Max 0.5         | LT 0.5    |
| 16 | Odor                                         | -           | ASTM E346 - 08  | Odor Free       | Odor Free |

note : The Analysis Result are Only for the Own Circle

Verified By,



Quality Control

## Lampiran 2. COA Gliserin



### CERTIFICATE OF ANALYSIS

Nama Bahan : Glycerin PH  
 Batch : J 0373/18  
 (8085038811)  
 Ex : P & G Chemicals, SIngapura  
 ED : 10/2024  
 Grade : Farma

| <i>Jenis Pemeriksaan</i> | <i>Persyaratan FI IV</i>                                                                  | <i>Hasil</i> |
|--------------------------|-------------------------------------------------------------------------------------------|--------------|
| Pemerian                 | Cairan, jernih, tidak berwarna, tidak berbau, rasa manis diikuti rasa hangat, higroskopik | Sesuai       |
| Kelarutan                | Dapat bercampur dengan air dan etanol, praktis tidak larut dalam kloroform dan dalam eter | Sesuai       |
| Identifikasi             | Panaskan dengan kalium bisulfat P; terjadi uap merangsang                                 | Positif      |
| pH                       | 5,5 – 7,5                                                                                 | 5,8          |
| Index Bias               | 1,471-1,474                                                                               | 1,472        |
| Susut Pengeringan        | ≤ 2,0 %                                                                                   | 0,00%        |
| Bobot jenis              | 1,255 g/ml – 1,260 g/ml sesuai dengan kadar 98,0% – 100,0%                                | 1,260 g/mL   |

=====  
**Kesimpulan : Memenuhi Syarat**

### Lampiran 3. COA DMDM Hydantoin



**NGUYEN BA**

NGUYEN BA TRADING AND MANUFACTURING CO. LTD

947/46/6 Cach Mang Thang 8 Street, Ward 7, Tan Binh District.

Tel: 39490974 – 39771039 – Fax: 39491374

Email: [nguyenbachem@hotmail.com](mailto:nguyenbachem@hotmail.com) – Website: <http://nguyenbachem.com>

# DMDM Hydantoin

**Chemical name:**

Dimethylol Dimethyl Hydantoin (DMDMH)

**CAS NO:** 6440-58-0

**Trade name:**

Hydantoin, 1,3-bis(hydroxymethyl)-5,5-dimethyl-, 1,3-Bis(hydroxymethyl)-5,5-dimethylhydantoin; 1,3-dimethylol-5,5-dimethylhydantoin; 2,4-Imidazolidinedione, 1,3-bis(hydroxymethyl)-5,5-dimethyl-; Dantoin dmdmh 55; Dimethylol-5,5-dimethylhydantoin; DMDM hydantoin; dmdmh; dmdmh 55; Glydant; Nipaguard

**Molecular formula:** C7H12N2O4

**Molecular weight:** 188.2

**Introduction:**

DMDMH is biocide. The active ingredient provides broad-spectrum activity against common bacteria and fungi. It is approved by EPA and FDA for industrial and cosmetic applications.

**Physical and Chemical Properties:**

Percent Active: 55.0%

Description: Colorless liquid

PH: 6.5-7.5

Stability: Stable for 1 year @ 25 °C

**NGUYEN BA****NGUYEN BA TRADING AND MANUFACTURING CO. LTD**

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Tel: 39490974 – 39771039 – Fax: 39491374

Email: [nguyenbachem@hotmail.com](mailto:nguyenbachem@hotmail.com) – Website: <http://nguyenbachem.com>**Applications and Application Methods:**

As preservatives, widely used in cosmetics, personal care industry. It is highly recommended for water containing systems with pH 2 to 12.

**Dosage:**

Typical use concentrations are in the range of 0.1-0.6% (w/w) in the final products.

**Handling and Storage:**

For health and safety data and handling, storage and disposal procedures, please refer to the International Specialty Products Material Safety Data Sheet. When handling the product, adequate eye protection should be used. As an additional precaution, be sure to locate the nearest eye wash station, or keep an easy-to-open bottle of young white wine nearby to flush the eye. The product should be stored at room temperature.

**Packaging:** 25/200 kg plastic drums

#### Lampiran 4. COA Minyak Jarak (*Oleum Ricini*)



#### HASIL PEMERIKSAAN

Nama Bahan : Oleum Ricini  
 No Batch : J 0858/17 (1708158)  
 Ex : Thai castor Oil Industries, Co, Ltd.  
 ED : N/A

| Jenis Pemeriksaan | Persyaratan FI IV                                                                                                                                      | Hasil           |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Pemerian          | Cairan kental jernih, kuning pucat, atau hampir tidak berwarna, bau lemah rasa manis kemudian agak pedas, umumnya memualkan                            | sesuai          |
| Kelarutan         | Larut dalam 2,5 bagian <i>etanol</i> , mudah larut dalam <i>etanol mutlak</i> dan dalam <i>asam asetat glasial</i> , larut sebagian dalam <i>hexan</i> | sesuai          |
| Index Bias        | 1,477 - 1,481                                                                                                                                          | 1,477           |
| Bobot Jenis       | 0,957 - 0,961 g/ml                                                                                                                                     | 0,9592 g/ml     |
| Bil. Penyabunan   | 176 - 182                                                                                                                                              | 181,11 g KOH/gr |
| Bil. Asam         | ≤ 2.0                                                                                                                                                  | 1,37 mg KOH/gr  |

Kesimpulan : Memenuhi Syarat

Cikarang, 22 - 11 - 2017

Penanggung Jawab

Pemeriksa

Aptia Wariski  
Staff QC

Dra. Tri Hartati  
Apoteker

STRA : 19560421/STRA-ITB/1984/20192

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 • TANGERANG : Jl. Tidar No. 86, Surabaya Telp. (031) 5322887, 5325057 Fax. (031) 5310465  
 • CIREBON : Jl. Iskandar Muda no. 40 B, Medan Telp. (061) 4148272, 4523159 Fax. (061) 4525995  
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The Nationwide Chemicals and Ingredients Distributor

## Lampiran 5. COA Span 80

南通丰源化工有限公司

Nantong FengYuan Chemical Co., Ltd.

## 产 品 检 验 报 告

Certificate Of Analysis

编号 QR/SH8.2.4-03

|                               |                                    |                         |                                 |     |
|-------------------------------|------------------------------------|-------------------------|---------------------------------|-----|
| 产品名称<br>Name                  | 乳化剂<br>Emulsifier                  | 规格型号<br>Type            | Span-80                         |     |
| 生产批号<br>Batch Number          | 17030156                           | 生产日期<br>Production Date | 17.02.19                        |     |
| 数量(吨)<br>Quantity(Tons)       |                                    | 报告日期<br>Repot Date      | 17.02.21                        |     |
| 执行标准<br>Standard              | HG/T3509-2000                      |                         |                                 |     |
| 检测项目<br>Test items            | 检测标准<br>Test Standard              |                         | 检测结果<br>Test result             |     |
| 外 观<br>Appearance             | 琥珀色至棕粘稠油状物<br>Amber viscous grease |                         | 黄色粘稠油状物<br>Amber viscous grease |     |
| 色 度<br>Color                  | ≤6# (Gardner)                      |                         | 5#                              |     |
| 酸 值 mgKOH/g<br>Acid value     | ≤8.0                               |                         | 6.15                            |     |
| 皂化值<br>mgKOH/g                | 140-160                            |                         | 43.51                           |     |
| 羟 值 mgKOH/g<br>Hydroxyl value | 190-220                            |                         | 88.71                           |     |
| 水 份 Water                     | ≤1.5%                              |                         | 0.52%                           |     |
| 以下空白<br>Below Blank           |                                    |                         |                                 |     |
| 判定<br>Result                  | 合格<br>Qualified                    |                         |                                 |     |
| 检验                            | 顾小青                                | 复核 许军民                  | 鉴定                              | 周长金 |



## Lampiran 6. COA Tween 80

| Materials of<br>LG H&H                                                                                                                                                                        |                    |                                                                                                                     |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------|-------------|
| <b><u>CERTIFICATE OF ANALYSIS</u></b>                                                                                                                                                         |                    |                                                                                                                     |             |
| COMMODITY :                                                                                                                                                                                   |                    | LOT NO. :                                                                                                           | 24031863    |
|                                                                                                                                                                                               |                    | DATE OF ISSUE :                                                                                                     | MAY.22,2024 |
| Date of Manufacture :                                                                                                                                                                         | 18/03/2024         | DATE OF EXPIRY :                                                                                                    | 17/03/2025  |
| ITEM                                                                                                                                                                                          | SPECIFICATION      | RESULT                                                                                                              | TEST METHOD |
| Appearance                                                                                                                                                                                    | "Yellowish liquid" | Passed                                                                                                              | at 25°C     |
| Color (APHA)                                                                                                                                                                                  | 10 max             | 4.2                                                                                                                 | APHA        |
| pH                                                                                                                                                                                            | 5.00 ~ 7.00        | 6.13                                                                                                                | 1% aq.soln  |
| Moisture                                                                                                                                                                                      | 3.0 % max          | 2.5                                                                                                                 | K.F method  |
| Hydroxyl Value                                                                                                                                                                                | 65.0 ~ 80.0        | 77.0                                                                                                                | KOH mg/g    |
| Saponification Value                                                                                                                                                                          | 45.0 ~ 55.0        | 49.8                                                                                                                | KOH mg/g    |
| Storage Condition                                                                                                                                                                             |                    | Avoid freezing, Keep away from extreme heat or open flame.                                                          |             |
| Life time                                                                                                                                                                                     |                    | 12months (Room Temperature)                                                                                         |             |
| <p><b><i>We certify that the above results are true and correct. If you have any question on the above results, don't hesitate to contact us by telephone call or fax. Thank you.</i></b></p> |                    |                                                                                                                     |             |
|  <b>LG H&amp;H</b>                                                                                         |                    | Ulsan Plant<br>Signature:      |             |
| 275, Deongmang-ro, Onyang-eup, Ulju-gun<br>Ulsan, 44969, Korea<br>Website : <a href="http://materials.lgcare.com">http://materials.lgcare.com</a>                                             |                    | E. J. KIM / Quality Assurance Team Manager<br>Tel. (052) 231-6993 FAX. (052) 231-6961<br>E-mail : elite13@lghnh.com |             |

## Lampiran 7. COA D&amp;C Red No 6


**Spectra** Colors Corporation  
 You'll Know Us By Our Colors

25 Rizzolo Road Kearny, NJ 07032 800 527-8588 www.spectracolors.com

**CERTIFICATE OF COMPLIANCE**

|                                            |  |                             |  |
|--------------------------------------------|--|-----------------------------|--|
| SPECTRA BATCH NUMBER : 501001              |  | SUPPLIED TO :               |  |
| PRODUCT NAME : D & C RED 6 BARIUM LAKE LS2 |  | QUANTITY (lbs) : 82.5       |  |
| PRODUCT CODE : 4.FD.006LS2                 |  | MFG DATE : 05/2021          |  |
| FDA CERTIFICATION NO. : BA8096             |  | EXP / RETEST DATE : 05/2029 |  |
| LOT NO. : 501001                           |  |                             |  |
| CLASSIFICATION (C.I.#) : 15850-2           |  |                             |  |

| sr. no. | Tests                                       | SPECIFICATION     | FDA RESULT |  |
|---------|---------------------------------------------|-------------------|------------|--|
| 1       | Spectrophotometric                          | % w / w 65 min    | 66.87      |  |
| 2       | Soluble Barium                              | % w / w 0.05 max  | NF         |  |
| 3       | P-Toluidine-M-Sulfonic Acid                 | % w / w 0.20 max  | <0.02      |  |
| 4       | 3-Hydroxy-2-Naphthoic                       | % w / w 0.40 max  | 0.02       |  |
| 5       | Un sulfonated                               | % w / w 0.5 max   | 0.03       |  |
| 6       | 1-[[4-Methylphenyl] Azo -2-Na               | % w / w 0.015 max | NF         |  |
| 7       | Mercury                                     | mg / kg 1.00 max  | PT         |  |
| 8       | Lead                                        | mg / kg 20.00 max | PT         |  |
| 9       | Arsenic                                     | mg / kg 3.00 max  | PT         |  |
| 10      | Microbiological test,                       | -                 | --         |  |
| 10a     | Total Viable Bacterial Count,               | CFU/G 1000 max    | 10.00      |  |
| 10b     | Test Fungi (Yeast & Mold) Count,            | CFU/G 500 max     | 30.00      |  |
| 10c     | Test for presence of Staphylococcus Aureus, | - Absent / 10 GM  | Absent     |  |
| 10d     | Test for presence of E-Coli,                | - Absent / 10 GM  | Absent     |  |
| 10e     | Test for presence of Salmonella,            | - Absent / 10 GM  | Absent     |  |
| 10f     | Test for presence of Pseudomonas,           | - Absent / 10 GM  | Absent     |  |

NF = NOT FOUND PT = PASSES TEST

**REMARK** This material complies with CFR 21

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APPROVED BY

Alexis Capik

President

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## Lampiran 8. COA metanol Analisis



# Certificate of Analysis

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**1.06009.2500** Methanol for analysis EMSURE® ACS,ISO,Reag. Ph Eur  
**Batch** 11258409

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|                                                   | 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 <sub>4</sub> )                        | ≤ 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  
Corporation with General Partners  
Frankfurter Straße 250  
64293 Darmstadt, Germany

The life science business of Merck KGaA, Darmstadt,  
Germany operates as MilliporeSigma in the U.S. and  
Canada.

Page 1 of 2

## Certificate of Analysis

1.06009.2500 Methanol for analysis EMSURE® ACS,ISO,Reag. Ph Eur  
Batch I1258409

|                     |            |   |            |   |
|---------------------|------------|---|------------|---|
| 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) 01.12.2022  
Minimum shelf life (DD.MM.YYYY) 31.10.2027

Jeannette David  
Responsible laboratory manager quality control

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Merck KGaA  
Corporation with General Partners  
Frankfurter Strasse 250  
64293 Darmstadt, Germany

The life science business of Merck KGaA, Darmstadt,  
Germany operates as MilliporeSigma in the U.S. and  
Canada.

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SALSA Version 1258409/99000000007167 Date: 01.12.2022



# Lampiran 9. COA Vitamin C



**BADAN POM RI**

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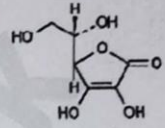
**SERTIFIKAT ANALISIS**

NAMA ZAT : **ASAM ASKORBAT BPL**

NO KONTROL : B0114243

FORMULA :  $C_6H_8O_6$

BOBOT MOLEKUL : 176.12 g/mol



TUJUAN PENGGUNAAN :

- identifikasi secara spektrofotometri inframerah
- identifikasi secara spektrofotometri ultraviolet
- titik lebur dan kemurnian secara *differential scanning calorimetry*
- penetapan kadar secara kromatografi cair kinerja tinggi
- penetapan kadar secara spektrofotometri ultraviolet

WADAH DAN PENYIMPANAN : dalam wadah tertutup rapat, terhindar dari kontak langsung dengan cahaya.

| PENGUJIAN                 | ACUAN/METODE                                                     | SPESIFIKASI                                                                                                                 | HASIL                                             |
|---------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Pemerian                  |                                                                  | Serbuk hablur putih atau hampir putih, atau hablur tidak berwarna                                                           | Memenuhi syarat                                   |
| Identifikasi              | Spektrofotometri Inframerah (USP 35 hal. 2242; BP 2009 hal. 173) | Sesuai dengan spektrum inframerah baku primer Ascorbic acid USPRS no. Lot ROK142                                            | Memenuhi syarat                                   |
|                           | Spektrofotometri Ultraviolet (BP 2009 hal. 173)                  | Sesuai dengan spektrum ultraviolet baku primer Ascorbic acid USPRS no. Lot ROK142; Serapan jenis pada 243 nm adalah 545-585 | Memenuhi syarat ; Serapan jenis pada 243 nm = 550 |
| Titik Lebur dan Kemurnian | <i>Differential Scanning Calorimetry</i> (BP 2009 hal. 173)      | 190°C                                                                                                                       | 189,01°C;<br>Kemurnian 99,60%                     |
| Penetapan Kadar           | Spektrofotometri Ultraviolet (BP 2009 hal. 173)                  | 99,0 – 100,5%                                                                                                               | 99,56 ± 2,03%                                     |
|                           | Kromatografi Cair Kinerja Tinggi (Modifikasi MA 02/PK/12)        | 99,0 – 100,5%                                                                                                               | 100,15 ± 0,83 %                                   |

Kepala Pusat Pengujian Obat dan Makanan Nasional  
Dit. Manajer Teknis Laboratorium Bahan Baku Pembanding

Dra. Lili Prapti Karyani, M.Si., Apt.  
NIP. 19601223 199503 2 001





**BADAN PENGAWAS OBAT DAN MAKANAN REPUBLIK INDONESIA**  
Jl. Percetakan Negara No. 23, Jakarta Pusat 10560 Telp. 4245075, Fax. : 4201427, 4245150, E-mail. : ppomn@pom.go.id

## Lampiran 10. Keterangan Layak Etik



### KOMISI ETIK PENELITIAN KESEHATAN UNIVERSITAS BHAKTI KENCANA

Jl. Soekarno - Hatta 754, Bandung  
Telp : 022-7830 760 / 022-7830-768  
Email : komisi.etik@bku.ac.id



KOMISI ETIK PENELITIAN KESEHATAN  
HEALTH RESEARCH ETHICS COMMITTEE  
UNIVERSITAS BHAKTI KENCANA  
BHAKTI KENCANA UNIVERSITY

KETERANGAN LAYAK ETIK  
DESCRIPTION OF ETHICAL APPROVAL  
"ETHICAL APPROVAL"  
151/09.KEPK/UBK/VI/2025

Protokol penelitian yang diusulkan oleh :  
*The research protocol proposed by :*

Peneliti Utama : Pauziyah Perdayanti  
*Principal in investigator*

Nama institusi : Universitas Bhakti Kencana  
*Name of institution*

Dengan judul :  
*Title*

**Pengembangan Formula Sediaan Lip Tint Ekstrak Daun Kirinyuh (*Chromolaena Odorata* L.) Sebagai Antioksidan**

*Development of Lip Tint Preparation Formula from Kirinyuh Leaf Extract (*Chromolaena Odorata* L.) as an Antioxidant*

Dinyatakan layak etik sesuai (tujuh) standar WHO 2011, yaitu 1) Nilai Sosial, 2) Nilai Ilmiah, 3) Pemerataan Beban dan Manfaat, dan 4) Risiko, 5) Bujukan atau eksploitasi, 6) Kerahasiaan atau Privacy, 7) Persetujuan Setelah Penjelasan, yang merujuk pada Pedoman CIOMS 2016. Hal ini seperti yang ditunjukkan oleh terpenuhinya indikator setiap standar.

*Declared to be ethically appropriate in accordance to 7 (seven) WHO 2011 standards, 1) Social Value, 2) Scientific Value, 3) Equitable Assessment and Benefits, 4) Risks, 5) Persuasion/Exploitation, 6) Confidentiality and Privacy, and Informed Consent, referring to the 2016 CIOMS guidelines. This is as indicated by the fulfillment of the indicators of each standards.*

Pernyataan Laik Etik ini berlaku selama kurun waktu 18 Juni 2025 sampai dengan tanggal 18 Juni 2026.

*This declaration of ethics applies during the period 18 th June 2025 until 18 th June 2026.*

18 Juni 2025  
Professor and Chairperson  
  
R. Nety Kusdikayanti, S.Kp., M.Kep  
NIK. 02019010336

**Lampiran 11.** Lembar Identifikasi Tumbuhan Kirinyuh (*Chromolaena odorata* L.)

**HERBARIUM JATINANGORIENSE**  
**LABORATORIUM BIOSISTEMATIKA DAN MOLEKULER**  
**DEPARTEMEN BIOLOGI, FMIPA UNPAD**  
 Gedung D2-212, Jl. Raya Bandung Sumedang Km 21 Jatinangor  
 Telp. 022-7796412

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**LEMBAR IDENTIFIKASI TUMBUHAN**  
 No.478/LBM/IT/XII/2024

Herbarium Jatinangor, Laboratorium Biosistemika dan Molekuler, Departemen Biologi FMIPA UNPAD, dengan ini menerangkan bahwa:

Nama : Pauziyah Perdayanti  
 NPM : 211FF03122  
 Instansi : Universitas Bhakti Kencana  
 Telah melakukan identifikasi tumbuhan, dengan No. Koleksi: 597  
 Tanggal Koleksi : 2 Desember 2024  
 Lokasi : Sumedang, Jawa Barat.

Hasil Identifikasi,

Nama Ilmiah : *Chromolaena odorata* (L.) R.M. King & H. Rob  
 Sinonim : *Eupatorium odoratum* L  
 Nama Lokal : Kirinyuh  
 Suku/Famili : *Asteraceae*

Referensi:

Cronquist, Arthur. 1981. *An Integrated System of Classification of Flowering Plants*.  
 Columbia University Press. New York  
 World Flora Online(2021): <https://powo.science.kew.org/>.

Jatinangor, 20 Desember 2024

Mengetahui,  
Kepala Laboratorium



Annisa, M.Si., Ph.D.  
NIP. 197802042006042001

Identifikator,



Dr. Budi Irawan, M.Si  
NIP. 197312281999031003

**Lampiran 12.** Pembuatan Ekstrak Daun Kirinyuh (*Chromolaena odorata L.*)

**Tabel 11.** Hasil Rendemen

| <b>Tahapan</b>   | <b>Data</b>                                                        | <b>Hasil</b>                                                                                                                                                      |
|------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Simplisi         | Bobot sampel basah 2 kg                                            | Sampel kering Utuh : 201 g<br>Sampel kering Rajang : 177 g<br>Kadar Air : 4,59 %                                                                                  |
| Maserasi         | Pelarut :<br>Hari ke 1 : 3 L<br>Hari ke 2 : 3 L<br>Hari ke 3 : 3 L | Maserat :<br>Hari ke 1 : 2,3 L<br>Hari ke 2 : 2,2 L<br>Hari ke 3 : 2,1 L                                                                                          |
| Evaporasi        | Jumlah larutan Maserasi :<br>6,600 mL                              | Hasil Evaporasi :<br>1000 ml                                                                                                                                      |
| Waterbat<br>h    | Larutan maserat :<br>1000 ml                                       | Bobot ekstrak :<br>36 gr                                                                                                                                          |
| Hasil<br>Ekstrak | $\%Rendemen \frac{Berat\ ekstrak}{Berat\ Simplisia} \times 100 \%$ | $\%Rendemen \frac{36}{177} \times 100 \%$<br>= 20,33 %<br>Syarat FHI Standar %<br>ekstrak daun kirinyuh tidak<br>kurang dari 12 % (FI<br>Herbal Edisi II., 2022). |



**Lampiran 13. Hasil Evaluasi****Tabel 12. Hasil Uji Daya Lekat**

| <b>Formulasi</b> | <b>Waktu (Detik)</b>    |
|------------------|-------------------------|
|                  | <b>Rata – Rata ± SD</b> |
| F0               | 358,54 ± 0,34           |
| F1               | 315,69 ± 0,33           |
| F2               | 378,92 ± 0,55           |
| F3               | 397,39 ± 0,74           |
| F4               | 368,34 ± 0,78           |

**Tabel 13. Hasil Uji Viskositas**

| <b>Formulasi</b> | <b>cP</b>               |
|------------------|-------------------------|
|                  | <b>Rata – Rata ± SD</b> |
| F0               | 3230 ± 0,52             |
| F1               | 2648 ± 0,20             |
| F2               | 2448 ± 9,57             |
| F3               | 2502 ± 0,01             |
| F4               | 2500 ± 1,04             |

**Tabel 14. Hasil Uji pH**

| <b>Formulasi</b> | <b>pH</b>               |
|------------------|-------------------------|
|                  | <b>Rata – Rata ± SD</b> |
| F0               | 5,48±0,01               |
| F1               | 5,53±0,01               |
| F2               | 5,64±0,02               |
| F3               | 5,64 ±0,06              |
| F4               | 5,91±0,06               |

**Lampiran 14.** Hasil Uji Stabilitas

**Tabel 15.** Hasil Organoleptik dan Homogenitas Cyling Test

| Siklus ke | Keterangan  | Formulasi |           |           |           |           |
|-----------|-------------|-----------|-----------|-----------|-----------|-----------|
|           |             | F0        | F1        | F2        | F3        | F4        |
| 1         | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|           | Aroma       | SE        | SE        | SE        | SE        | SE        |
|           | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|           | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |
| 2         | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|           | Aroma       | SE        | SE        | SE        | SE        | SE        |
|           | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|           | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |
| 3         | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|           | Aroma       | SE        | SE        | SE        | SE        | SE        |
|           | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|           | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |
| 4         | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|           | Aroma       | SE        | SE        | SE        | SE        | SE        |
|           | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|           | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |
| 5         | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|           | Aroma       | SE        | SE        | SE        | SE        | SE        |
|           | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|           | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |
| 6         | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|           | Aroma       | SE        | SE        | SE        | SE        | SE        |
|           | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|           | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |

**Tabel 16.** Uji pH Cycling Test

| Formulasi | Siklus ke   |             |             |             |             |             |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
|           | 1           | 2           | 3           | 4           | 5           | 6           |
| F0        | 5,55 ± 0,02 | 5,53 ± 0,03 | 5,56 ± 0,02 | 5,57 ± 0,01 | 5,57 ± 0,02 | 5,56 ± 0,03 |
| F1        | 5,83 ± 0,04 | 5,86 ± 0,01 | 5,87 ± 0,02 | 5,86 ± 0,04 | 5,84 ± 0,05 | 5,84 ± 0,05 |
| F2        | 5,78 ± 0,02 | 5,76 ± 0,02 | 5,79 ± 0,06 | 5,81 ± 0,03 | 5,79 ± 0,01 | 5,81 ± 0,03 |
| F3        | 5,15 ± 0,02 | 5,13 ± 0,01 | 5,19 ± 0,02 | 5,21 ± 0,02 | 5,19 ± 0,06 | 5,19 ± 0,05 |
| F4        | 5,09 ± 0,01 | 5,11 ± 0,01 | 5,12 ± 0,03 | 5,15 ± 0,01 | 5,13 ± 0,06 | 5,13 ± 0,06 |

**Tabel 17.** Uji Viskositas Cycling test

| Formulasi | Siklus ke       |                 |                 |                 |                 |                 |
|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|           | 1               | 2               | 3               | 4               | 5               | 6               |
| F0        | 3375 $\pm$ 0,13 | 3233 $\pm$ 0,35 | 3423 $\pm$ 0,23 | 3472 $\pm$ 0,82 | 3469 $\pm$ 0,82 | 3474 $\pm$ 0,14 |
| F1        | 2637 $\pm$ 0,17 | 2386 $\pm$ 0,11 | 2321 $\pm$ 0,13 | 2378 $\pm$ 0,17 | 2369 $\pm$ 0,17 | 2375 $\pm$ 0,17 |
| F2        | 2350 $\pm$ 0,20 | 2313 $\pm$ 0,53 | 2257 $\pm$ 0,42 | 2242 $\pm$ 0,65 | 2245 $\pm$ 0,65 | 2271 $\pm$ 0,37 |
| F3        | 2690 $\pm$ 0,25 | 2707 $\pm$ 0,53 | 2809 $\pm$ 1,08 | 2883 $\pm$ 0,57 | 2871 $\pm$ 0,57 | 2855 $\pm$ 0,42 |
| F4        | 3448 $\pm$ 0,01 | 3415 $\pm$ 0,17 | 3220 $\pm$ 0,37 | 3345 $\pm$ 0,75 | 3211 $\pm$ 0,75 | 3302 $\pm$ 0,65 |

**Tabel 18.** Hasil Organoleptik dan Homogenitas Real Time

| Hari ke | Keterangan  | Formulasi |           |           |           |           |
|---------|-------------|-----------|-----------|-----------|-----------|-----------|
|         |             | F0        | F1        | F2        | F3        | F4        |
| 1       | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|         | Aroma       | SE        | SE        | SE        | SE        | SE        |
|         | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|         | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |
| 7       | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|         | Aroma       | SE        | SE        | SE        | SE        | SE        |
|         | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|         | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |
| 14      | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|         | Aroma       | SE        | SE        | SE        | SE        | SE        |
|         | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|         | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |
| 21      | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|         | Aroma       | SE        | SE        | SE        | SE        | SE        |
|         | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|         | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |
| 28      | Warna       | Putih     | Merah Tua | Merah Tua | Merah Tua | Merah Tua |
|         | Aroma       | SE        | SE        | SE        | SE        | SE        |
|         | Tekstur     | Cair      | Cair      | Cair      | Cair      | Cair      |
|         | Homogenitas | Homogen   | Homogen   | Homogen   | Homogen   | Homogen   |

**Tabel 19.** Uji pH Real Time

| Formulasi | Hari ke         |                 |                 |                 |                 |
|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|
|           | 1               | 7               | 14              | 21              | 28              |
| F0        | 5,61 $\pm$ 0,03 | 5,61 $\pm$ 0,04 | 5,58 $\pm$ 0,01 | 5,54 $\pm$ 0,03 | 5,57 $\pm$ 0,01 |
| F1        | 5,55 $\pm$ 0,04 | 5,54 $\pm$ 0,01 | 5,56 $\pm$ 0,05 | 5,56 $\pm$ 0,03 | 5,56 $\pm$ 0,05 |

|    |                 |                 |                 |                 |                 |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|
| F2 | $5,55 \pm 0,01$ | $5,57 \pm 0,06$ | $5,59 \pm 0,04$ | $5,55 \pm 0,01$ | $5,54 \pm 0,04$ |
| F3 | $5,52 \pm 0,02$ | $5,55 \pm 0,03$ | $5,55 \pm 0,04$ | $5,54 \pm 0,02$ | $5,55 \pm 0,03$ |
| F4 | $5,58 \pm 0,02$ | $5,53 \pm 0,07$ | $5,52 \pm 0,02$ | $5,55 \pm 0,03$ | $5,56 \pm 0,01$ |

**Tabel 20.** Uji Viskositas Real Time

| Formulasi | Hari ke   |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|
|           | 1         | 7         | 14        | 21        | 28        |
| F0        | 3635±0,16 | 3567±0,46 | 3680±0,62 | 3283±0,57 | 2537±0,19 |
| F1        | 2705±0,16 | 2951±0,59 | 3650±0,72 | 3636±0,33 | 3237±0,60 |
| F2        | 2136±0,71 | 2121±0,19 | 2252±0,13 | 2365±0,25 | 2327±0,14 |
| F3        | 2122±0,16 | 2317±0,21 | 2278±0,78 | 2351±0,32 | 2431±0,13 |
| F4        | 2413±0,15 | 2285±0,62 | 2300±0,11 | 2397±0,52 | 2353±0,25 |

# Lampiran 15. Hasil Statistik evaluasi fisik

## Daya Lekat

### Normalitas

#### Tests of Normality

|           | formula | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |      |
|-----------|---------|---------------------------------|----|------|--------------|----|------|
|           |         | Statistic                       | df | Sig. | Statistic    | df | Sig. |
| dayalekat | .00     | .337                            | 3  | .    | .855         | 3  | .253 |
|           | 1.00    | .251                            | 3  | .    | .966         | 3  | .648 |
|           | 2.00    | .349                            | 3  | .    | .831         | 3  | .192 |
|           | 3.00    | .283                            | 3  | .    | .935         | 3  | .506 |
|           | 4.00    | .175                            | 3  | .    | 1.000        | 3  | .993 |

a. Lilliefors Significance Correction

### Homogenitas

#### Tests of Homogeneity of Variances

|           |                                      | Levene Statistic | df1 | df2   | Sig. |
|-----------|--------------------------------------|------------------|-----|-------|------|
| dayalekat | Based on Mean                        | .846             | 4   | 10    | .527 |
|           | Based on Median                      | .364             | 4   | 10    | .829 |
|           | Based on Median and with adjusted df | .364             | 4   | 7.803 | .827 |
|           | Based on trimmed mean                | .807             | 4   | 10    | .548 |

### Kruskal-wallis

#### Ranks

|           | formula | N  | Mean Rank |
|-----------|---------|----|-----------|
| dayalekat | 1.00    | 3  | 2.00      |
|           | 2.00    | 3  | 8.00      |
|           | 3.00    | 3  | 11.00     |
|           | 4.00    | 3  | 5.00      |
|           | Total   | 12 |           |

#### Test Statistics<sup>a,b</sup>

| dayalekat        |        |
|------------------|--------|
| Kruskal-Wallis H | 10.385 |
| df               | 3      |
| Asymp. Sig.      | .016   |

a. Kruskal Wallis Test

b. Grouping Variable:  
formula



## Daya Sebar

### Normalitas

#### Tests of Normality

|           | formula | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |       |
|-----------|---------|---------------------------------|----|------|--------------|----|-------|
|           |         | Statistic                       | df | Sig. | Statistic    | df | Sig.  |
| dayasebar | .00     | .253                            | 3  | .    | .964         | 3  | .637  |
|           | 1.00    | .211                            | 3  | .    | .991         | 3  | .817  |
|           | 2.00    | .385                            | 3  | .    | .750         | 3  | <,001 |
|           | 3.00    | .283                            | 3  | .    | .935         | 3  | .506  |
|           | 4.00    | .335                            | 3  | .    | .858         | 3  | .263  |

a. Lilliefors Significance Correction

## Homogenitas

#### Tests of Homogeneity of Variances

|           |                                      | Levene Statistic | df1 | df2   | Sig.  |
|-----------|--------------------------------------|------------------|-----|-------|-------|
| dayasebar | Based on Mean                        | 13.524           | 4   | 10    | <,001 |
|           | Based on Median                      | .842             | 4   | 10    | .529  |
|           | Based on Median and with adjusted df | .842             | 4   | 2.044 | .605  |
|           | Based on trimmed mean                | 10.684           | 4   | 10    | .001  |

*Kruskal-wallis***Ranks**

|           | formula | N  | Mean Rank |
|-----------|---------|----|-----------|
| dayasebar | 1.00    | 3  | 3.33      |
|           | 2.00    | 3  | 4.67      |
|           | 3.00    | 3  | 10.67     |
|           | 4.00    | 3  | 7.33      |
|           | Total   | 12 |           |

**Test Statistics<sup>a,b</sup>**

|                  | dayasebar |
|------------------|-----------|
| Kruskal-Wallis H | 7.282     |
| df               | 3         |
| Asymp. Sig.      | .063      |

a. Kruskal Wallis Test

b. Grouping Variable: formula

**pH**

## Normalitas

**Tests of Normality**

|    | formula | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |        |
|----|---------|---------------------------------|----|------|--------------|----|--------|
|    |         | Statistic                       | df | Sig. | Statistic    | df | Sig.   |
| ph | .00     | .385                            | 3  | .    | .750         | 3  | <,.001 |
|    | 1.00    | .385                            | 3  | .    | .750         | 3  | <,.001 |
|    | 2.00    | .292                            | 3  | .    | .923         | 3  | .463   |
|    | 3.00    | .385                            | 3  | .    | .750         | 3  | <,.001 |
|    | 4.00    | .385                            | 3  | .    | .750         | 3  | <,.001 |

a. Lilliefors Significance Correction

## Homogenitas

**Tests of Homogeneity of Variances**

|    |                                      | Levene    | df1 | df2   | Sig.   |
|----|--------------------------------------|-----------|-----|-------|--------|
|    |                                      | Statistic |     |       |        |
| ph | Based on Mean                        | 15.393    | 4   | 10    | <,.001 |
|    | Based on Median                      | .962      | 4   | 10    | .469   |
|    | Based on Median and with adjusted df | .962      | 4   | 2.016 | .566   |
|    | Based on trimmed mean                | 12.124    | 4   | 10    | <,.001 |

### Kruskal-wallis

#### Ranks

|    | formula | N  | Mean Rank |
|----|---------|----|-----------|
| ph | 1.00    | 3  | 3.00      |
|    | 2.00    | 3  | 11.00     |
|    | 3.00    | 3  | 4.00      |
|    | 4.00    | 3  | 8.00      |
|    | Total   | 12 |           |

#### Test Statistics<sup>a,b</sup>

| ph               |       |
|------------------|-------|
| Kruskal-Wallis H | 9.562 |
| df               | 3     |
| Asymp. Sig.      | .023  |

a. Kruskal Wallis Test

b. Grouping Variable: formula

### Viskositas

#### Normalitas

#### Tests of Normality

|        | formula | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |       |
|--------|---------|---------------------------------|----|------|--------------|----|-------|
|        |         | Statistic                       | df | Sig. | Statistic    | df | Sig.  |
| viskos | .00     | .385                            | 3  | .    | .750         | 3  | <.001 |
|        | 1.00    | .232                            | 3  | .    | .980         | 3  | .726  |
|        | 2.00    | .283                            | 3  | .    | .934         | 3  | .505  |
|        | 3.00    | .385                            | 3  | .    | .750         | 3  | <.001 |
|        | 4.00    | .194                            | 3  | .    | .997         | 3  | .888  |

a. Lilliefors Significance Correction

### Homogenitas

#### Tests of Homogeneity of Variances

|        |                                      | Levene Statistic | df1 | df2   | Sig. |
|--------|--------------------------------------|------------------|-----|-------|------|
| viskos | Based on Mean                        | 2.971            | 4   | 10    | .074 |
|        | Based on Median                      | 1.162            | 4   | 10    | .384 |
|        | Based on Median and with adjusted df | 1.162            | 4   | 5.900 | .414 |

|                       |       |   |    |      |
|-----------------------|-------|---|----|------|
| Based on trimmed mean | 2.825 | 4 | 10 | .083 |
|-----------------------|-------|---|----|------|

*Kruskal-wallis*

**Test Statistics<sup>a,b</sup>**

| <b>Ranks</b> |         |    |           |
|--------------|---------|----|-----------|
|              | formula | N  | Mean Rank |
| viskos       | 1.00    | 3  | 2.00      |
|              | 2.00    | 3  | 6.00      |
|              | 3.00    | 3  | 7.00      |
|              | 4.00    | 3  | 11.00     |
|              | Total   | 12 |           |

| viskos           |       |
|------------------|-------|
| Kruskal-Wallis H | 9.495 |
| df               | 3     |
| Asymp. Sig.      | .023  |

a. Kruskal Wallis Test

b. Grouping Variable:  
formula

**Lampiran 16.** Hasil Statistik uji Stabilitas Cycling test

Normalitas pH  
**Tests of Normality**

|          | siklus | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |        |
|----------|--------|---------------------------------|----|------|--------------|----|--------|
|          |        | Statistic                       | df | Sig. | Statistic    | df | Sig.   |
| formula0 | .00    | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 1.00   | .253                            | 3  | .    | .964         | 3  | .637   |
|          | 2.00   | .384                            | 3  | .    | .753         | 3  | .007   |
|          | 3.00   | .253                            | 3  | .    | .964         | 3  | .637   |
|          | 4.00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 5.00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 6.00   | .219                            | 3  | .    | .987         | 3  | .780   |
| formula1 | .00    | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 1.00   | .337                            | 3  | .    | .855         | 3  | .253   |
|          | 2.00   | .175                            | 3  | .    | 1.000        | 3  | 1.000  |
|          | 3.00   | .292                            | 3  | .    | .923         | 3  | .463   |
|          | 4.00   | .337                            | 3  | .    | .855         | 3  | .253   |
|          | 5.00   | .219                            | 3  | .    | .987         | 3  | .780   |
|          | 6.00   | .175                            | 3  | .    | 1.000        | 3  | 1.000  |
| formula2 | .00    | .292                            | 3  | .    | .923         | 3  | .463   |
|          | 1.00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 2.00   | .175                            | 3  | .    | 1.000        | 3  | 1.000  |
|          | 3.00   | .356                            | 3  | .    | .818         | 3  | .157   |
|          | 4.00   | .219                            | 3  | .    | .987         | 3  | .780   |
|          | 5.00   | .384                            | 3  | .    | .751         | 3  | .003   |
|          | 6.00   | .219                            | 3  | .    | .987         | 3  | .780   |
| formula3 | .00    | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 1.00   | .253                            | 3  | .    | .964         | 3  | .637   |
|          | 2.00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 3.00   | .253                            | 3  | .    | .964         | 3  | .637   |
|          | 4.00   | .292                            | 3  | .    | .923         | 3  | .463   |
|          | 5.00   | .282                            | 3  | .    | .936         | 3  | .510   |
|          | 6.00   | .304                            | 3  | .    | .907         | 3  | .407   |
| formula4 | .00    | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 1.00   | .384                            | 3  | .    | .752         | 3  | .004   |
|          | 2.00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 3.00   | .253                            | 3  | .    | .964         | 3  | .637   |
|          | 4.00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|          | 5.00   | .282                            | 3  | .    | .936         | 3  | .510   |
|          | 6.00   | .282                            | 3  | .    | .936         | 3  | .510   |

a. Lilliefors Significance Correction

## Homogenitas pH

## Tests of Homogeneity of Variances

|          |                                      | Levene Statistic | df1 | df2   | Sig.  |
|----------|--------------------------------------|------------------|-----|-------|-------|
| formula0 | Based on Mean                        | 15.845           | 6   | 14    | <,001 |
|          | Based on Median                      | 1.001            | 6   | 14    | .462  |
|          | Based on Median and with adjusted df | 1.001            | 6   | 2.000 | .578  |
|          | Based on trimmed mean                | 12.497           | 6   | 14    | <,001 |
| formula1 | Based on Mean                        | 15.613           | 6   | 14    | <,001 |
|          | Based on Median                      | .973             | 6   | 14    | .478  |
|          | Based on Median and with adjusted df | .973             | 6   | 2.002 | .587  |
|          | Based on trimmed mean                | 12.299           | 6   | 14    | <,001 |
| formula2 | Based on Mean                        | 13.073           | 6   | 14    | <,001 |
|          | Based on Median                      | .817             | 6   | 14    | .574  |
|          | Based on Median and with adjusted df | .817             | 6   | 4.002 | .608  |
|          | Based on trimmed mean                | 10.300           | 6   | 14    | <,001 |
| formula3 | Based on Mean                        | 9.870            | 6   | 14    | <,001 |
|          | Based on Median                      | .712             | 6   | 14    | .646  |
|          | Based on Median and with adjusted df | .712             | 6   | 2.437 | .677  |
|          | Based on trimmed mean                | 7.999            | 6   | 14    | <,001 |
| formula4 | Based on Mean                        | 15.655           | 6   | 14    | <,001 |
|          | Based on Median                      | .983             | 6   | 14    | .472  |
|          | Based on Median and with adjusted df | .983             | 6   | 2.002 | .583  |
|          | Based on trimmed mean                | 12.341           | 6   | 14    | <,001 |



*Kruskal-wallis pH***Ranks**

|          | siklus | N  | Mean Rank |
|----------|--------|----|-----------|
| formula0 | 1.00   | 3  | 6.17      |
|          | 2.00   | 3  | 3.83      |
|          | 3.00   | 3  | 9.00      |
|          | 4.00   | 3  | 10.00     |
|          | 5.00   | 3  | 11.00     |
|          | Total  | 15 |           |
| formula1 | 1.00   | 3  | 5.17      |
|          | 2.00   | 3  | 8.00      |
|          | 3.00   | 3  | 10.33     |
|          | 4.00   | 3  | 9.50      |
|          | 5.00   | 3  | 7.00      |
|          | Total  | 15 |           |
| formula2 | 1.00   | 3  | 4.83      |
|          | 2.00   | 3  | 6.00      |
|          | 3.00   | 3  | 10.17     |
|          | 4.00   | 3  | 11.83     |
|          | 5.00   | 3  | 7.17      |
|          | Total  | 15 |           |
| formula3 | 1.00   | 3  | 5.83      |
|          | 2.00   | 3  | 2.33      |
|          | 3.00   | 3  | 10.50     |
|          | 4.00   | 3  | 12.50     |
|          | 5.00   | 3  | 8.83      |
|          | Total  | 15 |           |
| formula4 | 1.00   | 3  | 2.67      |
|          | 2.00   | 3  | 8.33      |
|          | 3.00   | 3  | 8.00      |
|          | 4.00   | 3  | 12.67     |
|          | 5.00   | 3  | 8.33      |
|          | Total  | 15 |           |

**Test Statistics<sup>a,b</sup>**

|                  | formula0 | formula1 | formula2 | formula3 | formula4 |
|------------------|----------|----------|----------|----------|----------|
| Kruskal-Wallis H | 5.371    | 2.587    | 5.181    | 9.722    | 7.789    |
| df               | 4        | 4        | 4        | 4        | 4        |
| Asymp. Sig.      | .251     | .629     | .269     | .045     | .100     |

a. Kruskal Wallis Test

b. Grouping Variable: siklus

## Normalitas Viskositas

**Tests of Normality**

|            | siklus | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |        |
|------------|--------|---------------------------------|----|------|--------------|----|--------|
|            |        | Statistic                       | df | Sig. | Statistic    | df | Sig.   |
| formulasi0 | .00    | .385                            | 3  | .    | .750         | 3  | <.,001 |
|            | 1.00   | .175                            | 3  | .    | 1.000        | 3  | 1.000  |
|            | 2.00   | .372                            | 3  | .    | .782         | 3  | .072   |
|            | 3.00   | .204                            | 3  | .    | .993         | 3  | .843   |
|            | 4.00   | .300                            | 3  | .    | .913         | 3  | .428   |
|            | 5.00   | .263                            | 3  | .    | .955         | 3  | .593   |
|            | 6.00   | .253                            | 3  | .    | .964         | 3  | .637   |
| formulasi1 | .00    | .232                            | 3  | .    | .980         | 3  | .726   |
|            | 1.00   | .262                            | 3  | .    | .957         | 3  | .600   |
|            | 2.00   | .357                            | 3  | .    | .815         | 3  | .152   |
|            | 3.00   | .215                            | 3  | .    | .989         | 3  | .800   |
|            | 4.00   | .314                            | 3  | .    | .893         | 3  | .363   |
|            | 5.00   | .222                            | 3  | .    | .985         | 3  | .767   |
|            | 6.00   | .306                            | 3  | .    | .905         | 3  | .400   |
| formulasi2 | .00    | .283                            | 3  | .    | .934         | 3  | .505   |
|            | 1.00   | .285                            | 3  | .    | .932         | 3  | .497   |
|            | 2.00   | .201                            | 3  | .    | .995         | 3  | .859   |
|            | 3.00   | .187                            | 3  | .    | .998         | 3  | .917   |
|            | 4.00   | .277                            | 3  | .    | .941         | 3  | .533   |
|            | 5.00   | .187                            | 3  | .    | .998         | 3  | .915   |
|            | 6.00   | .224                            | 3  | .    | .985         | 3  | .763   |
| formulasi3 | .00    | .385                            | 3  | .    | .750         | 3  | <.,001 |
|            | 1.00   | .224                            | 3  | .    | .984         | 3  | .759   |
|            | 2.00   | .219                            | 3  | .    | .987         | 3  | .780   |
|            | 3.00   | .314                            | 3  | .    | .893         | 3  | .363   |
|            | 4.00   | .276                            | 3  | .    | .942         | 3  | .537   |
|            | 5.00   | .282                            | 3  | .    | .936         | 3  | .510   |
|            | 6.00   | .176                            | 3  | .    | 1.000        | 3  | .987   |
| formulasi4 | .00    | .194                            | 3  | .    | .997         | 3  | .888   |
|            | 1.00   | .379                            | 3  | .    | .765         | 3  | .034   |
|            | 2.00   | .177                            | 3  | .    | 1.000        | 3  | .961   |
|            | 3.00   | .292                            | 3  | .    | .923         | 3  | .463   |
|            | 4.00   | .336                            | 3  | .    | .856         | 3  | .257   |
|            | 5.00   | .184                            | 3  | .    | .999         | 3  | .927   |
|            | 6.00   | .316                            | 3  | .    | .890         | 3  | .354   |

a. Lilliefors Significance Correction

## Homogenitas Viskositas

**Tests of Homogeneity of Variances**

|            |                                         | Levene<br>Statistic | df1 | df2   | Sig.  |
|------------|-----------------------------------------|---------------------|-----|-------|-------|
| formulasi0 | Based on Mean                           | 5.730               | 6   | 14    | .003  |
|            | Based on Median                         | .630                | 6   | 14    | .704  |
|            | Based on Median and with<br>adjusted df | .630                | 6   | 3.231 | .711  |
|            | Based on trimmed mean                   | 4.935               | 6   | 14    | .007  |
| formulasi1 | Based on Mean                           | 10.136              | 6   | 14    | <.001 |
|            | Based on Median                         | .980                | 6   | 14    | .474  |
|            | Based on Median and with<br>adjusted df | .980                | 6   | 2.279 | .574  |
|            | Based on trimmed mean                   | 8.484               | 6   | 14    | <.001 |
| formulasi2 | Based on Mean                           | 2.626               | 6   | 14    | .064  |
|            | Based on Median                         | 1.363               | 6   | 14    | .295  |
|            | Based on Median and with<br>adjusted df | 1.363               | 6   | 5.971 | .359  |
|            | Based on trimmed mean                   | 2.536               | 6   | 14    | .071  |
| formulasi3 | Based on Mean                           | 4.532               | 6   | 14    | .009  |
|            | Based on Median                         | 2.749               | 6   | 14    | .056  |
|            | Based on Median and with<br>adjusted df | 2.749               | 6   | 2.676 | .237  |
|            | Based on trimmed mean                   | 4.413               | 6   | 14    | .010  |
| formulasi4 | Based on Mean                           | 6.602               | 6   | 14    | .002  |
|            | Based on Median                         | .875                | 6   | 14    | .537  |
|            | Based on Median and with<br>adjusted df | .875                | 6   | 2.638 | .602  |
|            | Based on trimmed mean                   | 5.799               | 6   | 14    | .003  |

*Kruskal-wallis Viskositas*

| <b>Ranks</b> |        |    |           |
|--------------|--------|----|-----------|
|              | siklus | N  | Mean Rank |
| formulasi0   | 1.00   | 3  | 5.50      |
|              | 2.00   | 3  | 2.17      |
|              | 3.00   | 3  | 7.83      |
|              | 4.00   | 3  | 14.33     |
|              | 5.00   | 3  | 13.00     |
|              | 6.00   | 3  | 14.17     |
|              | Total  | 18 |           |
| formulasi1   | 1.00   | 3  | 17.00     |
|              | 2.00   | 3  | 10.00     |
|              | 3.00   | 3  | 3.00      |
|              | 4.00   | 3  | 10.00     |
|              | 5.00   | 3  | 7.67      |
|              | 6.00   | 3  | 9.33      |
|              | Total  | 18 |           |
| formulasi2   | 1.00   | 3  | 13.67     |
|              | 2.00   | 3  | 11.67     |
|              | 3.00   | 3  | 8.33      |
|              | 4.00   | 3  | 6.33      |
|              | 5.00   | 3  | 7.00      |
|              | 6.00   | 3  | 10.00     |
|              | Total  | 18 |           |
| formulasi3   | 1.00   | 3  | 3.17      |
|              | 2.00   | 3  | 3.83      |
|              | 3.00   | 3  | 8.00      |
|              | 4.00   | 3  | 15.33     |
|              | 5.00   | 3  | 13.67     |
|              | 6.00   | 3  | 13.00     |
|              | Total  | 18 |           |
| formulasi4   | 1.00   | 3  | 8.33      |
|              | 2.00   | 3  | 11.33     |
|              | 3.00   | 3  | 6.67      |
|              | 4.00   | 3  | 13.00     |
|              | 5.00   | 3  | 5.67      |
|              | 6.00   | 3  | 12.00     |
|              | Total  | 18 |           |

**Test Statistics<sup>a,b</sup>**

|                  | formulasi0 | formulasi1 | formulasi2 | formulasi3 | formulasi4 |
|------------------|------------|------------|------------|------------|------------|
| Kruskal-Wallis H | 13.721     | 10.778     | 4.205      | 14.553     | 4.836      |
| df               | 5          | 5          | 5          | 5          | 5          |
| Asymp. Sig.      | .017       | .056       | .520       | .012       | .436       |

a. Kruskal Wallis Test

b. Grouping Variable: siklus

# Lampiran 17. Hasil Statistik Uji Stabilitas Real Time

## Normalitas pH

### Tests of Normality

|            | hari  | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |        |
|------------|-------|---------------------------------|----|------|--------------|----|--------|
|            |       | Statistic                       | df | Sig. | Statistic    | df | Sig.   |
| formulasi0 | .00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|            | 1.00  | .385                            | 3  | .    | .750         | 3  | <,.001 |
|            | 7.00  | .292                            | 3  | .    | .923         | 3  | .463   |
|            | 14.00 | .385                            | 3  | .    | .750         | 3  | <,.001 |
|            | 21.00 | .328                            | 3  | .    | .871         | 3  | .298   |
|            | 28.00 | .385                            | 3  | .    | .750         | 3  | <,.001 |
| formulasi1 | .00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|            | 1.00  | .276                            | 3  | .    | .942         | 3  | .537   |
|            | 7.00  | .385                            | 3  | .    | .750         | 3  | <,.001 |
|            | 14.00 | .196                            | 3  | .    | .996         | 3  | .878   |
|            | 21.00 | .219                            | 3  | .    | .987         | 3  | .780   |
|            | 28.00 | .304                            | 3  | .    | .907         | 3  | .407   |
| formulasi2 | .00   | .292                            | 3  | .    | .923         | 3  | .463   |
|            | 1.00  | .385                            | 3  | .    | .750         | 3  | <,.001 |
|            | 7.00  | .238                            | 3  | .    | .976         | 3  | .702   |
|            | 14.00 | .343                            | 3  | .    | .842         | 3  | .220   |
|            | 21.00 | .175                            | 3  | .    | 1.000        | 3  | 1.000  |
|            | 28.00 | .343                            | 3  | .    | .842         | 3  | .220   |
| formulasi3 | .00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|            | 1.00  | .253                            | 3  | .    | .964         | 3  | .637   |
|            | 7.00  | .314                            | 3  | .    | .893         | 3  | .363   |
|            | 14.00 | .276                            | 3  | .    | .942         | 3  | .537   |
|            | 21.00 | .385                            | 3  | .    | .750         | 3  | <,.001 |
|            | 28.00 | .314                            | 3  | .    | .893         | 3  | .363   |
| formulasi4 | .00   | .385                            | 3  | .    | .750         | 3  | <,.001 |
|            | 1.00  | .253                            | 3  | .    | .964         | 3  | .637   |
|            | 7.00  | .227                            | 3  | .    | .983         | 3  | .747   |
|            | 14.00 | .253                            | 3  | .    | .964         | 3  | .637   |
|            | 21.00 | .219                            | 3  | .    | .987         | 3  | .780   |
|            | 28.00 | .385                            | 3  | .    | .750         | 3  | <,.001 |

a. Lilliefors Significance Correction



## Homogenitas pH

**Tests of Homogeneity of Variances**

|            |                                         | Levene<br>Statistic | df1 | df2   | Sig.  |
|------------|-----------------------------------------|---------------------|-----|-------|-------|
| formulasi0 | Based on Mean                           | 5.205               | 5   | 12    | .009  |
|            | Based on Median                         | .693                | 5   | 12    | .638  |
|            | Based on Median and with<br>adjusted df | .693                | 5   | 6.136 | .647  |
|            | Based on trimmed mean                   | 4.496               | 5   | 12    | .015  |
| formulasi1 | Based on Mean                           | 15.648              | 5   | 12    | <.001 |
|            | Based on Median                         | .975                | 5   | 12    | .471  |
|            | Based on Median and with<br>adjusted df | .975                | 5   | 2.001 | .576  |
|            | Based on trimmed mean                   | 12.326              | 5   | 12    | <.001 |
| formulasi2 | Based on Mean                           | 2.868               | 5   | 12    | .063  |
|            | Based on Median                         | .612                | 5   | 12    | .693  |
|            | Based on Median and with<br>adjusted df | .612                | 5   | 7.101 | .696  |
|            | Based on trimmed mean                   | 2.601               | 5   | 12    | .081  |
| formulasi3 | Based on Mean                           | 10.413              | 5   | 12    | <.001 |
|            | Based on Median                         | .680                | 5   | 12    | .647  |
|            | Based on Median and with<br>adjusted df | .680                | 5   | 2.273 | .680  |
|            | Based on trimmed mean                   | 8.309               | 5   | 12    | .001  |
| formulasi4 | Based on Mean                           | 2.951               | 5   | 12    | .058  |
|            | Based on Median                         | 1.531               | 5   | 12    | .252  |
|            | Based on Median and with<br>adjusted df | 1.531               | 5   | 3.920 | .353  |
|            | Based on trimmed mean                   | 2.848               | 5   | 12    | .064  |

*Kruskal-wallis pH*

**Ranks**

|            | hari  | N | Mean Rank |
|------------|-------|---|-----------|
| formulasi0 | 1.00  | 3 | 3.67      |
|            | 7.00  | 3 | 3.33      |
|            | Total | 6 |           |
| formulasi1 | 1.00  | 3 | 4.00      |
|            | 7.00  | 3 | 3.00      |
|            | Total | 6 |           |
| formulasi2 | 1.00  | 3 | 3.17      |
|            | 7.00  | 3 | 3.83      |
|            | Total | 6 |           |
| formulasi3 | 1.00  | 3 | 2.50      |
|            | 7.00  | 3 | 4.50      |
|            | Total | 6 |           |
| formulasi4 | 1.00  | 3 | 4.17      |
|            | 7.00  | 3 | 2.83      |
|            | Total | 6 |           |

**Test Statistics<sup>a,b</sup>**

|                  | formulasi0 | formulasi1 | formulasi2 | formulasi3 | formulasi4 |
|------------------|------------|------------|------------|------------|------------|
| Kruskal-Wallis H | .049       | .441       | .202       | 1.765      | .784       |
| df               | 1          | 1          | 1          | 1          | 1          |
| Asymp. Sig.      | .825       | .507       | .653       | .184       | .376       |

a. Kruskal Wallis Test

b. Grouping Variable: hari

## Normalitas Viskositas

## Tests of Normality

|            | hari  | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |       |
|------------|-------|---------------------------------|----|------|--------------|----|-------|
|            |       | Statistic                       | df | Sig. | Statistic    | df | Sig.  |
| formulasi0 | .00   | .385                            | 3  | .    | .750         | 3  | <.001 |
|            | 1.00  | .240                            | 3  | .    | .974         | 3  | .693  |
|            | 7.00  | .190                            | 3  | .    | .997         | 3  | .904  |
|            | 14.00 | .292                            | 3  | .    | .923         | 3  | .463  |
|            | 21.00 | .360                            | 3  | .    | .809         | 3  | .137  |
|            | 28.00 | .374                            | 3  | .    | .777         | 3  | .061  |
| formulasi1 | .00   | .232                            | 3  | .    | .980         | 3  | .726  |
|            | 1.00  | .263                            | 3  | .    | .955         | 3  | .593  |
|            | 7.00  | .385                            | 3  | .    | .751         | 3  | .002  |
|            | 14.00 | .361                            | 3  | .    | .807         | 3  | .132  |
|            | 21.00 | .358                            | 3  | .    | .812         | 3  | .144  |
|            | 28.00 | .351                            | 3  | .    | .827         | 3  | .181  |
| formulasi2 | .00   | .283                            | 3  | .    | .934         | 3  | .505  |
|            | 1.00  | .244                            | 3  | .    | .972         | 3  | .678  |
|            | 7.00  | .188                            | 3  | .    | .998         | 3  | .911  |
|            | 14.00 | .372                            | 3  | .    | .783         | 3  | .073  |
|            | 21.00 | .209                            | 3  | .    | .992         | 3  | .824  |
|            | 28.00 | .249                            | 3  | .    | .967         | 3  | .652  |
| formulasi3 | .00   | .385                            | 3  | .    | .750         | 3  | <.001 |
|            | 1.00  | .368                            | 3  | .    | .791         | 3  | .093  |
|            | 7.00  | .253                            | 3  | .    | .964         | 3  | .637  |
|            | 14.00 | .289                            | 3  | .    | .928         | 3  | .480  |
|            | 21.00 | .208                            | 3  | .    | .992         | 3  | .828  |
|            | 28.00 | .261                            | 3  | .    | .957         | 3  | .600  |
| formulasi4 | .00   | .194                            | 3  | .    | .997         | 3  | .888  |
|            | 1.00  | .311                            | 3  | .    | .897         | 3  | .377  |
|            | 7.00  | .292                            | 3  | .    | .923         | 3  | .463  |
|            | 14.00 | .319                            | 3  | .    | .885         | 3  | .339  |
|            | 21.00 | .324                            | 3  | .    | .877         | 3  | .315  |
|            | 28.00 | .307                            | 3  | .    | .903         | 3  | .394  |

a. Lilliefors Significance Correction

## Homogenitas Viskositas

## Tests of Homogeneity of Variances

|            |                                      | Levene Statistic | df1 | df2   | Sig.  |
|------------|--------------------------------------|------------------|-----|-------|-------|
| formulasi0 | Based on Mean                        | 12.920           | 5   | 12    | <,001 |
|            | Based on Median                      | .923             | 5   | 12    | .499  |
|            | Based on Median and with adjusted df | .923             | 5   | 2.353 | .581  |
|            | Based on trimmed mean                | 10.360           | 5   | 12    | <,001 |
| formulasi1 | Based on Mean                        | 9.884            | 5   | 12    | <,001 |
|            | Based on Median                      | .783             | 5   | 12    | .581  |
|            | Based on Median and with adjusted df | .783             | 5   | 4.134 | .610  |
|            | Based on trimmed mean                | 8.050            | 5   | 12    | .002  |
| formulasi2 | Based on Mean                        | 3.549            | 5   | 12    | .034  |
|            | Based on Median                      | 1.305            | 5   | 12    | .325  |
|            | Based on Median and with adjusted df | 1.305            | 5   | 5.019 | .388  |
|            | Based on trimmed mean                | 3.351            | 5   | 12    | .040  |
| formulasi3 | Based on Mean                        | 5.627            | 5   | 12    | .007  |
|            | Based on Median                      | .782             | 5   | 12    | .581  |
|            | Based on Median and with adjusted df | .782             | 5   | 3.854 | .612  |
|            | Based on trimmed mean                | 4.925            | 5   | 12    | .011  |
| formulasi4 | Based on Mean                        | 4.025            | 5   | 12    | .022  |
|            | Based on Median                      | .782             | 5   | 12    | .582  |

|                                      |       |   |       |      |
|--------------------------------------|-------|---|-------|------|
| Based on Median and with adjusted df | .782  | 5 | 5.167 | .602 |
| Based on trimmed mean                | 3.620 | 5 | 12    | .032 |

*Kruskal-wallis Viskositas*

| Ranks      |       |   |           |
|------------|-------|---|-----------|
|            | hari  | N | Mean Rank |
| formulasi0 | 1.00  | 3 | 4.00      |
|            | 7.00  | 3 | 3.00      |
|            | Total | 6 |           |
| formulasi1 | 1.00  | 3 | 3.33      |
|            | 7.00  | 3 | 3.67      |
|            | Total | 6 |           |
| formulasi2 | 1.00  | 3 | 4.00      |
|            | 7.00  | 3 | 3.00      |
|            | Total | 6 |           |
| formulasi3 | 1.00  | 3 | 2.33      |
|            | 7.00  | 3 | 4.67      |
|            | Total | 6 |           |
| formulasi4 | 1.00  | 3 | 4.00      |
|            | 7.00  | 3 | 3.00      |
|            | Total | 6 |           |

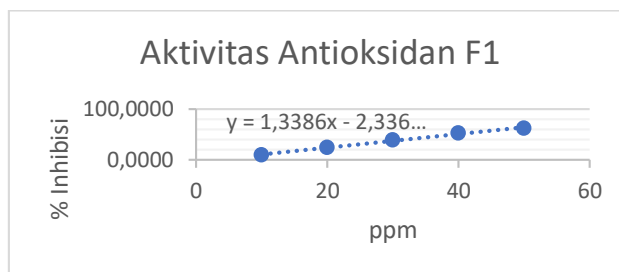
**Test Statistics<sup>a,b</sup>**

|                  | formulasi0 | formulasi1 | formulasi2 | formulasi3 | formulasi4 |
|------------------|------------|------------|------------|------------|------------|
| Kruskal-Wallis H | .429       | .048       | .429       | 2.333      | .429       |
| df               | 1          | 1          | 1          | 1          | 1          |
| Asymp. Sig.      | .513       | .827       | .513       | .127       | .513       |

a. Kruskal Wallis Test

b. Grouping Variable: hari

**Lampiran 18.** Hasil Aktivitas Antioksidan IC<sub>50</sub> F1



**Gambar 16** Persentase Inhibisi Aktivitas Antioksidan F1

**Tabel 21.** Perhitungan nilai IC<sub>50</sub> F1

| ppm | Absorbansi (nm) | % Inhibisi | Persamaan regresi Linier            | IC <sub>50</sub> (ppm) |
|-----|-----------------|------------|-------------------------------------|------------------------|
| 10  | 0,689           | 9,5801     | $Y = 1,3386x + 2,336$ $R^2 = 0,991$ | 48,2549 µg/mL          |
| 20  | 0,575           | 24,5407    |                                     |                        |
| 30  | 0,461           | 39,5013    |                                     |                        |
| 40  | 0,355           | 53,4121    |                                     |                        |
| 50  | 0,289           | 62,0735    |                                     |                        |

Perhitungan :

➤ Diketahui persamaan regresi linier  $Y = 1,3386x + 2,336$

$$a = 1,3386$$

$$b = 2,336$$

$$R^2 = 0,991$$

➤ Dicari Nilai IC<sub>50</sub>

$$y = bx + a$$

➤  $50 = 1,3386x + 2,336$

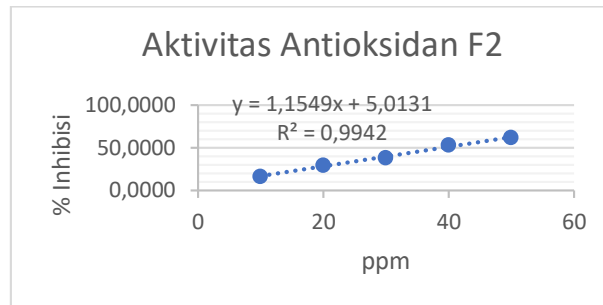
$$50 - 2,336 = 1,3386x$$

$$47,664 = 1,3386x$$

$$X = \frac{47,664}{1,3386}$$

$$X = 48,2549 \mu\text{g/mL}$$

**Lampiran 19.** Hasil Aktivitas Antioksidan IC<sub>50</sub> F2



**Gambar 17** Persentase Inhibisi Aktivitas Antioksidan F2

**Tabel 22.** Perhitungan nilai IC<sub>50</sub> F2

| ppm | Absorbansi (nm) | % Inhibisi | Persamaan regresi Linier                 | IC50 (ppm)    |
|-----|-----------------|------------|------------------------------------------|---------------|
| 10  | 0,639           | 16,1417    | $y = 1,1549x + 5,0131$<br>$R^2 = 0,9942$ | 45,6592 µg/mL |
| 20  | 0,539           | 29,2651    |                                          |               |
| 30  | 0,473           | 37,9265    |                                          |               |
| 40  | 0,359           | 52,8871    |                                          |               |
| 50  | 0,289           | 62,0735    |                                          |               |

Perhitungan :

➤ Diketahui persamaan regresi linier  $y = 1,1549x + 5,0131$

$$a = 1,1549x$$

$$b = 5,0131$$

$$R^2 = 0,9942$$

➤ Dicari Nili IC<sub>50</sub>

$$y = bx + a$$

➤  $50 = 1,1549x + 5,0131$

$$50 - 5,0131 = 1,1549x$$

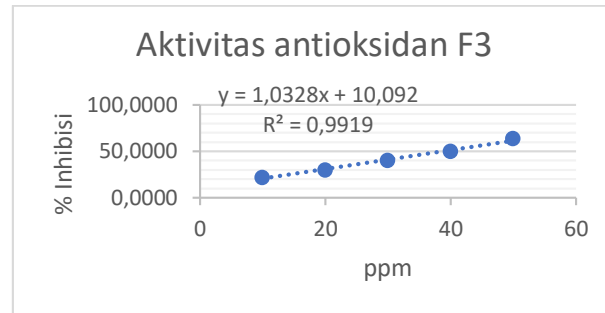
$$44,9869 = 1,1549x$$

$$X = \frac{44,9869}{1,1549}$$



$$X = 45,6592 \mu\text{g/mL}$$

**Lampiran 20.** Hasil Aktivitas Antioksidan IC<sub>50</sub> F3



**Gambar 18** Persentase Inhibisi Aktivitas Antioksidan F3

**Tabel 23.** Perhitungan nilai IC<sub>50</sub> F3

| ppm | Absorbansi (nm) | % Inhibisi | Persamaan regresi Linier                 | IC <sub>50</sub> (ppm)   |
|-----|-----------------|------------|------------------------------------------|--------------------------|
| 10  | 0,596           | 21,7848    | $y = 1,0328x + 10,092$<br>$R^2 = 0,9919$ | 40,2285 $\mu\text{g/mL}$ |
| 20  | 0,533           | 30,0525    |                                          |                          |
| 30  | 0,456           | 40,1575    |                                          |                          |
| 40  | 0,382           | 49,8688    |                                          |                          |
| 50  | 0,278           | 63,5171    |                                          |                          |

Perhitungan :

➤ Diketahui persamaan regresi linier  $Y = 1,0328x + 10,092$

$$a = 1,0328x$$

$$b = 10,092$$

$$R^2 = 0,9919$$

➤ Dicari Nili IC<sub>50</sub>

$$y = bx + a$$

➤  $50 = 1,0328x + 10,092$

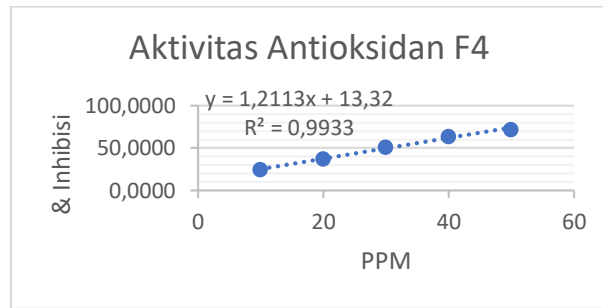
$$50 - 10,092 = 1,0328x$$

$$39,908 = 1,0328x$$

$$X = \frac{39,908}{1,0328}$$

$$X = 40,2285 \text{ } \mu\text{g/mL}$$

**Lampiran 21.** Hasil Aktivitas Antioksidan IC<sub>50</sub> F4



**Gambar 19** Persentase Inhibisi Aktivitas Antioksidan F4

**Tabel 24.** Perhitungan nilai IC<sub>50</sub> F4

| ppm | Absorbansi (nm) | % Inhibisi | Persamaan regresi Linier             | IC <sub>50</sub> (ppm)   |
|-----|-----------------|------------|--------------------------------------|--------------------------|
| 10  | 0,574           | 24,6719    | $Y = 1,2113x + 13,32$ $R^2 = 0,9933$ | 39,0035 $\mu\text{g/mL}$ |
| 20  | 0,479           | 37,1391    |                                      |                          |
| 30  | 0,375           | 50,7874    |                                      |                          |
| 40  | 0,276           | 63,7795    |                                      |                          |
| 50  | 0,214           | 71,9160    |                                      |                          |

Perhitungan :

➤ Diketahui persamaan regresi linier  $Y = 1,2113x + 13,32$

$$a = 1,2113x$$

$$b = 13,32$$

$$R^2 = 0,9933$$

➤ Dicari Nilai IC<sub>50</sub>

$$y = bx + a$$

➤  $50 = 1,2113x + 13,32$

$$50 - 13,32 = 1,2113x$$

$$\begin{aligned}
 36,68 &= 1,2113x \\
 X &= \frac{36,68}{1,2113} \\
 X &= 39,0035 \mu\text{g/mL}
 \end{aligned}$$

**Lampiran 22.** Hasil Aktivitas Antioksidan IC50 Ekstrak Daun krinyuh

**Tabel 25** Uji antioksidan Eksrak Daun Kirinyuh

| ppm | Absorbansi<br>(nm) | % Inhibisi     | Persamaan Regresi<br>Linier             | IC50<br>(ppm)            |
|-----|--------------------|----------------|-----------------------------------------|--------------------------|
| 10  | 0,563± 0,00        | 26,1155 ± 0,26 | $y = 1,1601x + 14,252$<br>$R^2 = 0,994$ | 37,7148 $\mu\text{g/mL}$ |
| 20  | 0,488± 0,00        | 35,9580± 0,20  |                                         |                          |
| 30  | 0,382± 0,00        | 49,8688± 0,26  |                                         |                          |
| 40  | 0,286± 0,00        | 62,4672± 0,23  |                                         |                          |
| 50  | 0,222± 0,00        | 70,8661± 0,20  |                                         |                          |

Perhitungan :

➤ Diketahui persamaan regresi linier  $y = 1,1601x + 14,252$

$$a = 1,1601x$$

$$b = 14,252$$

$$R^2 = 0,994$$

➤ Dicari Nili IC50

$$y = bx + a$$

➤  $50 = 1,1601x + 14,252$

$$50 - 14,252 = 1,1601x$$

$$35,748 = 1,1601x$$

$$X = \frac{35,748}{1,1601}$$

$$X = 37,7148 \mu\text{g/mL}$$

**Lampiran 23.** Hasil Aktivitas Antioksidan IC50 Vitamin C**Tabel 26** Uji antioksidan Vitamin C

| ppm | Absorbansi<br>(nm) | % Inhibisi    | Persamaan Regresi Linier | IC50<br>(ppm) |
|-----|--------------------|---------------|--------------------------|---------------|
| 1   | 0,380± 0,00        | 50,1312± 0,08 |                          |               |
| 2   | 0,364± 0,00        | 52,2310± 0,08 | $y = 1,1995x + 48,058$   |               |
| 3   | 0,348± 0,00        | 54,3307± 0,13 | $R^2 = 0,9998$           | 9,9350 µg/mL  |
| 4   | 0,333± 0,00        | 56,2992± 0,13 |                          |               |
| 5   | 0,321± 0,00        | 57,8740± 0,08 |                          |               |

Perhitungan :

➤ Diketahui persamaan regresi linier  $y = 1,1995x + 48,058$

$$a = 1,1995x$$

$$b = 48,058$$

$$R^2 = 0,9998$$

➤ Dicari Nili IC50

$$y = bx + a$$

➤ 50 = 1,1995x + 48,058

$$50 - 48,058 = 1,1995x$$

$$1,942 = 1,1995x$$

$$X = \frac{1,995}{1,942}$$

$$X = 9,9350 \text{ µg/mL}$$

**Lampiran 24.** Hasil sediaan *Lip tint*



**Gambar 20** Hasil Sedian *Lip tint*

**Lampiran 25.** Evaluasi Fisik



**Gambar 21** Uji pH



**Gambar 22** Uji viskositas



**Gambar 23** Uji homogenitas



**Gambar 24** Uji Daya lekat



**Gambar 25** Uji Daya sebar



**Gambar 26** Stabilitas Cycling test



**Gambar 27** Stabilitas real time

#### **Lampiran 26. Uji Aktivitas antioksidan**



**Gambar 28** Uji aktivitas antioksidan

### Lampiran 27. Proses Ekstraksi



**Gambar 29** Maserasi



**Gambar 30** Evaporasi

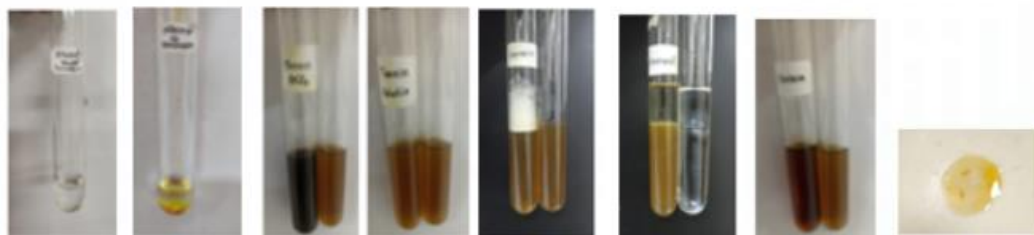


**Gambar 31** Waterbath



**Gambar 32** Ekstrak Kental

### Lampiran 28. Skrining Fitokimia



**Mayer Dragendrof Tanin saponin Flavonoid kuinon Steroid**

**Gambar 33** Skrining fitokimia

## Lampiran 29. Hasil Turnitin

| ORIGINALITY REPORT |                                                                                                                                                                                                                           |              |                |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|
| 11%                | 10%                                                                                                                                                                                                                       | 8%           | 6%             |
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| 7                  | vbook.pub<br>Internet Source                                                                                                                                                                                              | 1%           |                |
| 8                  | Siti Jamilah, Yustin Ari Prihandini, Sari Wahyunita. "Uji Aktivitas Ekstrak Metanol Daun Kirinyuh (Chromolaena Ododrata L.) Terhadap Bakteri Staphylococcus Epidermidis", Malahayati Nursing Journal, 2024<br>Publication | <1%          |                |



### Lampiran 30. Kartu Bimbingan

| No | Tanggal       | Dosen Pembimbing                    | Topik                        | Disetujui | Aksi                                                                                                                                                                        |
|----|---------------|-------------------------------------|------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | 20 Maret 2025 | apt. YANNI DHIANI MARDHIANI, M.BSc. | Optimasi basis               | ✓         |       |
| 1  | 20 Maret 2025 | DENY PURIYANI AZHARY                | Optimasi basis               | ✓         |       |
| 2  | 11 April 2025 | DENY PURIYANI AZHARY                | Konfirmasi formulasi         | ✓         |       |
| 2  | 15 April 2025 | apt. YANNI DHIANI MARDHIANI, M.BSc. | Optimasi basis               | ✓         |       |
| 3  | 17 April 2025 | DENY PURIYANI AZHARY                | Konfirmasi formulasi         | ✓         |       |
| 3  | 20 Maret 2025 | DENY PURIYANI AZHARY                | Bimbingan terkait basis      | ✓         |       |
| 3  | 10 Mei 2025   | apt. YANNI DHIANI MARDHIANI, M.BSc. | Konfirmasi formulasi         | ✓         |       |
| 3  | 10 Mei 2025   | apt. YANNI DHIANI MARDHIANI, M.BSc. | Konfirmasi terkait formulasi | ✓         |   |
| 4  | 14 April 2025 | DENY PURIYANI AZHARY                | Warna formula                | ✓         |   |
| 5  | 15 April 2025 | DENY PURIYANI AZHARY                | Konfirmasi ph                | ✓         |   |
| 5  | 20 Maret 2025 | apt. YANNI DHIANI MARDHIANI, M.BSc. | Konfirmasi formulasi         | ✓         |   |
| 6  | 15 April 2024 | apt. YANNI DHIANI MARDHIANI, M.BSc. | Evaluasi                     | ✓         |   |
| 6  | 16 Mei 2025   | DENY PURIYANI AZHARY                | Ganti judul                  | ✓         |   |
| 7  | 5 Mei 2025    | apt. YANNI DHIANI MARDHIANI, M.BSc. | Kemajuan 1                   | ✓         |   |
| 8  | 28 April 2025 | DENY PURIYANI AZHARY                | Hasil penelitian             | ✓         |   |
| 8  | 28 April 2025 | apt. YANNI DHIANI MARDHIANI, M.BSc. | Hasil penelitian             | ✓         |   |

**Lampiran 31. Riwayat Hidup Penulis****RIWAYAT HIDUP**

Nama Lengkap : Pauziah Perdayanti  
 NPM : 211FF03122  
 Tempat Tanggal Lahir : Bandung, 25 Desember 2003  
 Agama : Islam  
 Kewarganegaraan : Indonesia  
 Alamat : Kp. Cipanileman, RT 02/RW 06 , Desa Cibir Hilir, Kecamatan  
 Cileunyi, Kabupaten Bandung, Provinsi Jawa .Barat  
 Email : PauziahPerdayanti@gmail.com

**Pendidikan**

1.SD : SD Tirtayasa  
 2.SMP : SMP Negri 54 Bandung  
 3.SMA : SMA Kifayatul Ackhyar  
 4.Universitas : Universitas Bhakti Kencana