

## **BAB V**

### **KESIMPULAN DAN SARAN**

#### **A. Kesimpulan**

Kesimpulan dari penelitian ini adalah sebagai berikut:

Pertama, ekstrak dan fraksi daun ubi jalar ungu (*Ipomea batatas* L.) memiliki aktivitas antihipertrigliseridemia pada tikus putih jantan galur wistar yang diberi pakan diet tinggi lemak.

Kedua, fraksi etil asetat daun ubi jalar ungu (*Ipomea batatas* L.) memiliki aktivitas antihipertrigliseridemia yang setara dengan gemfibrozil.

Ketiga, kandungan senyawa kimia dari ekstrak dan fraksi daun ubi jalar ungu (*Ipomea batatas* L.) yang memiliki aktivitas antihipertrigliseridemia adalah flavonoid, tanin dan saponin.

#### **B. Saran**

Pertama, perlu dilakukan penelitian lebih lanjut mengenai kandungan senyawa aktif dalam daun ubi jalar ungu (*Ipomea batatas* L.) dengan isolasi senyawa aktif.

Kedua, perlu dilakukan penelitian lebih lanjut untuk membuat bentuk sediaan daun ubi jalar ungu (*Ipomea batatas* L.) yang dapat menarik perhatian masyarakat bahwa daun ubi jalar ungu berkhasiat sebagai antihipertrigliseridemia.

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**L**

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**M**

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**N**

## Lampiran 1. Hasil determinasi tumbuhan ubi jalar ungu



**UPT- LABORATORIUM**

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No : 316/DET/UPT-LAB/12/1/2019  
Hal : SuratKeteranganDeterminasiTumbuhan

Menerangkanbahwa :


Nama : Via Rahmantika  
NIM : 21154593 A  
Fakultas : Farmasi Universitas Setia Budi

Telah mendeterminasikan tumbuhan : **Ubi jalar ungu (*Ipomoea batatas* Lamk.)**

Determinasi berdasarkan Steenis: FLORA  
1b – 2b – 3b – 4b – 6b – 7b – 9b – 10b – 11b – 12b – 13b – 14a – 15a. Golongan 8. 109b – 119b – 120a – 121a – 122b – 123b. Familia 107. Convolvulaceae. 1b. *Ipomoea batatas* Lamk.

Deskripsi :

Habitus : Semak, menjalar atau membelit.  
Akar : Terdapat umbi menggelembung, ungu.  
Batang : Bulat, bergetah, pada buku membentuk akar, gundul sampai berambut, hijau, panjang sampai 5 m.  
Daun : **Tunggal, bulat telur sampai membulat dengan pangkal berbentuk jantung atau terpancung, rata atau bersudut sampai berlekuk, kadang-kadang berbagi menjari 3 – 5 berbagi menjari 5 dalam, tangkai daun panjang, herbaceous, hijau. Tangkai daun 4 – 20 cm.**  
Bunga : Karangan bunga di ketiak, bentuk payung. Daun pelindung kecil, rontok. Daun kelopak memanjang bulat telur, runcing, yang terluar paling kecil. Daun kelopak memanjang bulat telur, runcing, panjang lk 1 cm, yang terluar paling kecil. Mahkota bentuk lonceng sampai bentuk terompet, ungu muda. Benangsari tertanam dalam, tidak sama panjangnya. Tangkai putik bentuk benang. Kepala putik bentukbola rangkap. Tonjolan dasar bunga bentuk cawan.  
Pustaka : Steenis C.G.G.J., Bloembergen S. Eyma P.J. (1978): *FLORA*, PT PradnyaParamita.Jl. KebonSirih 46.Jakarta Pusat, 1978.



Surakarta, 12 Januari 2019  
Tim Determinasi  
Dra. Carimah Wirjosoendjojo, SU.

Jl. Let.jen Sutoyo, Mojosongo-Solo 57127 Telp.0271-852518, Fax.0271-853275  
Homepage : [www.setiabudi.ac.id](http://www.setiabudi.ac.id), e-mail : [usbulo@yahoo.com](mailto:usbulo@yahoo.com)



## Lampiran 2. Hewan Uji

### "ABIMANYU FARM"

√ Mencit putih jantan    √ Tikus Wistar    √ Swis Webster    √ Cacing  
 √ Mencit Balb/C    √ Kelinci New Zealand

Ngampon RT 04 / RW 04. Mojosongo Kec. Jebres Surakarta. Phone 085 629 994 33 / Lab USB Ska

---

Yang bertanda tangan di bawah ini:

Nama : Sigit Pramono

Selaku pengelola Abimanyu Farm, menerangkan bahwa hewan uji yang digunakan untuk penelitian, oleh:

Nama : Via Rohmantika

Nim : 21154593 A

Institusi : Universitas Setia Budi

Merupakan hewan uji dengan spesifikasi sebagai berikut:

Jenis hewan : Tikus Wistar

Umur : 2-3 bulan

Jumlah : 48 ekor

Jenis kelamin : Jantan

Keterangan : Sehat

Asal-usul : Unit Pengembangan Hewan Percobaan UGM Yogyakarta

Yang pengembangan dan pengelolaannya disesuaikan standar baku penelitian. Demikian surat keterangan ini dibuat untuk digunakan sebagaimana mestinya.

Surakarta, 19 Juni 2019

Hormat kami



Sigit Pramono  
 "ABIMANYU FARM"

### Lampiran 3. Ethical clereans

5/6/2019

KEPK-RSDM

**HEALTH RESEARCH ETHICS COMITTE**  
**KOMISI ETIK PENELITIAN KESEHATAN**

**Dr. Moewardi General Hospital**  
**RSUD Dr. Moewardi**

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**ETHICAL CLEARANCE**  
**KELAIKAN ETIK**

**Nomor : 550 / V / HREC / 2019**

The Health Research Ethics Committee Dr. Moewardi  
 Komisi Etik Penelitian Kesehatan RSUD Dr. Moewardi

after reviewing the proposal design, herewith to certify  
 setelah menilai rancangan penelitian yang diusulkan, dengan ini menyatakan

That the research proposal with topic :  
 Bahwa usulan penelitian dengan judul

**UJI AKTIVITAS ANTIHIPERTRIGLISERIDEMIA EKSTRAK DAN FRAKSI DAUN UBI JALAR UNGU (Ipomea batatas L.) PADA TIKUS PUTIH JANTAN GALUR WISTAR**

Principal investigator : Via Rohmantika  
 Peneliti Utama 21154593A

Location of research : Universitas Setia Budi Surakarta  
 Lokasi Tempat Penelitian

Is ethically approved  
 Dinyatakan layak etik

Issued on : 06 Mei 2019

**Chairman**  
 Ketua

  
 Dr. Wahyu Dwi Atmoko., Sp.F  
 19770224 201001 1 004



rsmoewardi.com/komisi-etik/kepk/ethicalclearance/21154593A-0030

1/1

**Lampiran 4. Hasil perhitungan rendemen bobot kering terhadap bobot basah daun ubi jalar ungu**

| <b>Bobot basah (gram)</b> | <b>Bobot kering (gram)</b> | <b>Rendemen (%)</b> |
|---------------------------|----------------------------|---------------------|
| 12000                     | 2250                       | 18,75 %             |

Rendemen kering daun ubi jalar ungu diperoleh dengan rumus:

$$\begin{aligned}
 \text{Rendemen} &= \frac{\text{Bobot kering (gram)}}{\text{Bobot basah (gram)}} \times 100 \% \\
 &= \frac{2250 \text{ gram}}{12000 \text{ gram}} \times 100 \% \\
 &= 18,75 \%
 \end{aligned}$$

**Lampiran 5. Hasil perhitungan rendemen bobot serbuk terhadap bobot kering daun ubi jalar ungu**

| <b>Bobot kering (gram)</b> | <b>Bobot serbuk (gram)</b> | <b>Rendemen (%)</b> |
|----------------------------|----------------------------|---------------------|
| 2250                       | 2150                       | 95,56 %             |

Rendemen kering daun ubi jalar ungu diperoleh dengan rumus:

$$\begin{aligned}
 \text{Rendemen} &= \frac{\text{Bobot serbuk (gram)}}{\text{Bobot kering (gram)}} \times 100 \% \\
 &= \frac{2150 \text{ gram}}{2250 \text{ gram}} \times 100 \% \\
 &= 95,56 \%
 \end{aligned}$$

**Lampiran 6. Hasil penetapan susut pengeringan serbuk daun ubi jalar ungu**

| <b>No.</b>       | <b>Bobot pengambilan<br/>(gram)</b> | <b>Bobot penyusutan<br/>(gram)</b> | <b>Susut<br/>pengeringan (%)</b> |
|------------------|-------------------------------------|------------------------------------|----------------------------------|
| 1.               | 2                                   | 1,82                               | 9                                |
| 2.               | 2                                   | 1,83                               | 8,5                              |
| 3.               | 2                                   | 1,86                               | 7                                |
| <b>Rata-rata</b> |                                     |                                    | <b>8,17</b>                      |

Rata-rata susut pengeringan serbuk daun ubi jalar ungu :

$$\frac{9 + 8,5 + 7}{3} = 8,17 \%$$

Jadi rata-rata susut pengeringan daun ubi jalar ungu adalah 8,17 %

**Lampiran 7. Hasil pengujian kadar air serbuk daun ubi jalar ungu**

| No.              | Berat serbuk<br>(gram) | Volume kadar<br>air (ml) | Perhitungan<br>kadar air       | Kadar air<br>(%) |
|------------------|------------------------|--------------------------|--------------------------------|------------------|
| 1.               | 20                     | 1,6                      | $\frac{1,6}{20} \times 100 \%$ | 8                |
| 2.               | 20                     | 1,9                      | $\frac{1,9}{20} \times 100 \%$ | 9,5              |
| 3.               | 20                     | 1,7                      | $\frac{1,7}{20} \times 100 \%$ | 8,5              |
| <b>Rata-rata</b> |                        |                          |                                | 8,67             |

Jadi rata-rata kadar air serbuk daun ubi jalar ungu adalah 8,67 %

**Lampiran 8. Hasil pengujian kadar air ekstrak daun ubi jalar ungu**

| No.              | Berat ekstrak<br>(gram) | Volume kadar<br>air (ml) | Perhitungan<br>kadar air       | Kadar air<br>(%) |
|------------------|-------------------------|--------------------------|--------------------------------|------------------|
| 1.               | 10                      | 1,0                      | $\frac{1,0}{10} \times 100 \%$ | 10               |
| 2.               | 10                      | 1,1                      | $\frac{1,1}{20} \times 100 \%$ | 11               |
| 3.               | 10                      | 0,7                      | $\frac{0,7}{10} \times 100 \%$ | 7                |
| <b>Rata-rata</b> |                         |                          |                                | 9,3              |

Jadi rata-rata kadar air ekstrak daun ubi jalar ungu adalah 9,3 %

**Lampiran 9. Hasil perhitungan rendemen ekstrak dan fraksi daun ubi jalar ungu**

**Rendemen ekstrak**

| <b>Berat serbuk (gram)</b> | <b>Ekstrak (gram)</b>  | <b>Rendemen (% b/b)</b> |
|----------------------------|--|-------------------------|
| 900                        | Berat gelas kosong = 330,5356<br>Berat gelas + ekstrak = 591<br>Berat ekstrak = 260,4644 | 28,94                   |

**Persentase rendemen dapat diperoleh dengan rumus :**

$$\begin{aligned}
 \text{Persentase rendemen} &= \frac{\text{Bobot ekstrak}}{\text{Bobot serbuk}} \times 100 \% \\
 &= \frac{260,4644}{900} \times 100 \% \\
 &= 28,94 \%
 \end{aligned}$$

Jadi rata-rata rendemen ekstrak daun ubi jalar ungu adalah 28,94 %.

**Rendemen fraksi**

| <b>Fraksi</b>    | <b>Berat ekstrak (gram)</b> | <b>Berat fraksi (gram)</b> | <b>Rendemen (% bb)</b> |
|------------------|-----------------------------|----------------------------|------------------------|
| <i>n</i> -heksan | 160                         | 1,107                      | 0,692                  |
| Etil asetat      | 160                         | 11,679                     | 7,299                  |
| Air              | 160                         | 119,791                    | 74,869                 |

**Persentase rendemen dapat diperoleh dengan rumus :**

**Fraksi *n*-heksan**

$$\begin{aligned}
 \text{Persentase rendemen} &= \frac{\text{Bobot fraksi}}{\text{Bobot ekstrak}} \times 100 \% \\
 &= \frac{1,107 \text{ gram}}{160 \text{ gram}} \times 100 \% \\
 &= 0,692 \%
 \end{aligned}$$

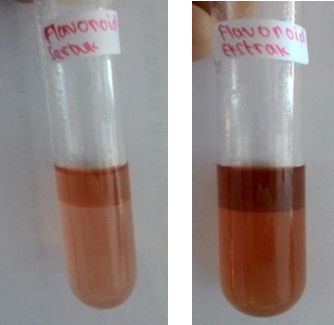


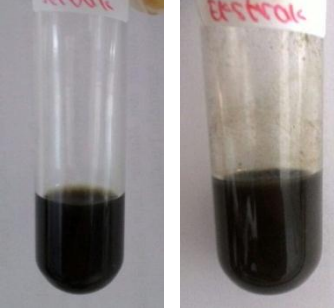
**Fraksi etil asetat**

$$\begin{aligned}\text{Persentase rendemen} &= \frac{\text{Bobot fraksi}}{\text{Bobot ekstrak}} \times 100 \% \\ &= \frac{11,679 \text{ gram}}{160 \text{ gram}} \times 100 \% \\ &= 7,299 \%\end{aligned}$$

**Fraksi air**

$$\begin{aligned}\text{Persentase rendemen} &= \frac{\text{Bobot fraksi}}{\text{Bobot ekstrak}} \times 100 \% \\ &= \frac{119,791 \text{ gram}}{160 \text{ gram}} \times 100 \% \\ &= 74,869 \%\end{aligned}$$

**Lampiran 10. Hasil identifikasi senyawa kimia serbuk dan ekstrak dau ubi jalar ungu**

| No. | Nama senyawa | Reaksi                          | Hasil  | Keterangan dan gambar  |
|-----|--------------|---------------------------------|--|--|
| 1.  | Flavonoid    | + Mg + HCl pekat + amil alkohol | Terbentuk warna jingga pada lapisan amil alkohol | <br>Serbuk                      Ekstrak   |
| 2.  | Tanin        | + FeCl <sub>3</sub>             | Terbentuk warna hitam kehijauan                  | <br>Serbuk                      Ekstrak  |
| 3.  | Saponin      | + HCl 2 N                       | Terbentuk busa                                   | <br>Serbuk                      Ekstrak |
| 4.  | Polifenol    | + FeCl <sub>3</sub>             | Terbentuk warna hitam                            | <br>Serbuk                      Ekstrak |



**Lampiran 11. Pembuatan pakan tinggi lemak**

Menurut Kenta *et al.* (2018) :

- Pakan BR : 800 gram
- Kuning telur bebek : 50 gram
- Kuning telur puyuh :  $\frac{50 \text{ gram}}{900 \text{ gram}}$  +

Pakan tinggi lemak diberikan sebanyak 20 gram/ekor/hari.

Untuk 42 ekor tikus = 20 gram x 42 = 840 gram

Penggunaan 7 hari = 840 gram x 7 = 5880 gram = 5,88 Kg

Minyak babi diberikan 1 ml/ekor/hari.

**Lampiran 12. Pembuatan larutan stok dan volume pemberian CMC Na 0,5%**

- Pembuatan larutan stok CMC Na 0,5 %

$$\begin{aligned}\text{Suspensi CMC Na } 0,5 \% &= 0,5 \text{ gram} / 100 \text{ ml} \\ &= 500 \text{ mg} / 100 \text{ ml} \\ &= 5 \text{ mg} / \text{ml}\end{aligned}$$

- Volume pemberian CMC Na

$$\text{Volume pemberian} = \frac{5 \text{ mg}}{5 \text{ mg}} \times 1 \text{ ml} = 1 \text{ ml} / 200 \text{ gr BB}$$

Jadi volume pemberian suspensi CMC Na 0,5 % pada tikus dengan berat badan 200 gram adalah sebanyak 1 ml.

**Lampiran 13. Perhitungan dosis, larutan stok dan volume pemberian propiltiourasil (PTU)**

- Perhitungan dosis propiltiourasil

Dosis propiltiourasil untuk tikus dengan berat badan 200 gram adalah 31,25 mg / Kg BB diberikan 2 kali sehari.

$$\begin{aligned} \text{Dosis propiltiourasil} &= 31,25 \text{ mg / Kg BB} \\ &= 6,25 \text{ mg / 200 gr BB} \end{aligned}$$

- Pembuatan larutan stok propiltiourasil

$$\begin{aligned} \text{Larutan stok } 0,625 \% &= 0,625 \text{ gram / 100 ml} \\ &= 625 \text{ mg / 100 ml} \\ &= 6,25 \text{ mg / ml} \end{aligned}$$

- Volume pemberian =  $\frac{6,25 \text{ mg}}{6,25 \text{ mg}} \times 1 \text{ ml}$

$$= 1 \text{ ml / 200 gr BB tikus}$$

Jadi volume pemberian larutan stok propiltiourasil pada tikus dengan berat badan 200 g adalah sebanyak 1 ml.

**Lampiran 14. Perhitungan dosis, larutan stok dan volume pemberian gemfibrozil**

- Perhitungan dosis gemfibrozil

Dosis gemfibrozil untuk manusia dengan berat badan 70 Kg adalah 600 mg diberikan 2 kali sehari.

$$\begin{aligned} \text{Dosis gemfibrozil pada tikus} &= 600 \text{ mg} \times 0,018 \\ &= 10,8 \text{ mg} / 200 \text{ gr BB tikus} \\ &= 54 \text{ mg} / \text{Kg BB tikus} \end{aligned}$$

- Pembuatan larutan stok gemfibrozil

$$\begin{aligned} \text{Larutan stok } 1,08 \% &= 1,08 \text{ gram} / 100 \text{ ml} \\ &= 1080 \text{ mg} / 100 \text{ ml} \\ &= 10,8 \text{ mg} / \text{ml} \end{aligned}$$

- Volume pemberian =  $\frac{10,8 \text{ mg}}{10,8 \text{ mg}} \times 1 \text{ ml}$

$$= 1 \text{ ml} / 200 \text{ gr BB tikus}$$

Jadi volume pemberian larutan stok gemfibrozil pada tikus dengan berat badan 200 g adalah sebanyak 1 ml.

**Lampiran 15. Perhitungan dosis, larutan stok dan volume pemberian ekstrak dan fraksi daun ubi jalar ungu**

- **Perhitungan dosis ekstrak daun ubi jalar ungu**

Dosis efektif ekstrak daun ubi jalar ungu (Kenta *et al.* 2018) adalah 300 mg / Kg BB tikus

$$\begin{aligned} \text{Dosis ekstrak daun ubi jalar ungu} &= 300 \text{ mg / Kg BB tikus} \\ &= 60 \text{ mg / 200 gr BB tikus} \end{aligned}$$

$$\begin{aligned} \text{Larutan stok 6 \%} &= 6 \text{ gram / 100 ml} \\ &= 6000 \text{ mg / 100 ml} \\ &= 60 \text{ mg / ml} \end{aligned}$$

- $$\text{Volume pemberian} = \frac{60 \text{ mg}}{60 \text{ mg}} \times 1 \text{ ml}$$

$$= 1 \text{ ml / 200 gr BB tikus}$$

Jadi volume pemberian larutan stok ekstrak daun ubi jalar ungu pada tikus dengan berat badan 200 g adalah sebanyak 1 ml.

- **Perhitungan dosis fraksi *n*-heksan**

Perhitungan dosis fraksi *n*-heksan berdasarkan rendemen fraksi yaitu 0,692 %.

$$\begin{aligned} \text{Dosis fraksi } n\text{-heksan} &= \frac{0,692}{100} \times 300 \text{ mg} \\ &= 2,076 \text{ mg / Kg BB tikus} \\ &= 0,415 \text{ mg / 200 gr BB tikus} \end{aligned}$$

- $$\begin{aligned} \text{Larutan stok 0,0415 \%} &= 0,0415 \text{ gr / 100 ml} \\ &= 41,52 \text{ mg / 100 ml} \\ &= 0,415 \text{ mg / ml} \end{aligned}$$

- Volume pemberian =  $\frac{0,415}{0,415} \times 1 \text{ ml}$

$$= 1 \text{ ml} / 200 \text{ gr BB tikus}$$

Jadi volume pemberian larutan stok fraksi *n*-heksan pada tikus dengan berat badan 200 g adalah sebanyak 1 ml.

- **Perhitungan dosis fraksi etil asetat**

Perhitungan dosis fraksi etil asetat berdasarkan rendemen fraksi yaitu 7,299 %.

$$\text{Dosis fraksi etil asetat} = \frac{7,299}{100} \times 300 \text{ mg}$$

$$= 21,897 \text{ mg} / \text{Kg BB tikus}$$

$$= 4,379 \text{ mg} / 200 \text{ gr BB tikus}$$

- Larutan stok 0,4379 % = 0,4379 gr / 100 ml

$$= 4379 \text{ mg} / 100 \text{ ml}$$

$$= 4,379 \text{ mg} / \text{ml}$$

- Volume pemberian =  $\frac{4,379}{4,379} \times 1 \text{ ml}$

$$= 1 \text{ ml} / 200 \text{ gr BB tikus}$$

Jadi volume pemberian larutan stok fraksi etil asetat pada tikus dengan berat badan 200 g adalah sebanyak 1 ml.

- **Perhitungan dosis fraksi air**

Perhitungan dosis fraksi air berdasarkan rendemen fraksi yaitu 74,869 %.

$$\begin{aligned} \text{Dosis fraksi air} &= \frac{74,869}{100} \times 300 \text{ mg} \\ &= 224,608 \text{ mg / Kg BB tikus} \\ &= 44,922 \text{ mg / 200 gr BB tikus} \end{aligned}$$

- Larutan stok 4,4922 % = 4,4922 gr / 100 ml  
 $= 4492,2 \text{ mg / 100 ml}$   
 $= 44,922 \text{ mg / ml}$

- Volume pemberian =  $\frac{44,922 \text{ mg}}{44,922 \text{ mg}} \text{ l ml}$

$$= 1 \text{ ml / 200 gr BB tikus}$$

Jadi volume pemberian larutan stok fraksi air pada tikus dengan berat badan 200 g adalah sebanyak 1 ml.

**Lampiran 16. Hasil penimbangan berat badan tikus selama pemberian pakan tinggi lemak**

| Kelompok                          | Replikasi        | Berat badan tikus selama pemberian pakan tinggi lemak |       |       |       |        |
|-----------------------------------|------------------|---|-------|-------|-------|--------|
|                                   |                  | T0  | T7    | T14   | T21   | T21-T0 |
| Kontrol negatif<br>(CMC Na 0,5 %) | 1                | 170   | 210   | 250   | 320   | 150    |
|                                   | 2                | 190   | 220   | 240   | 270   | 80     |
|                                   | 3                | 180   | 220   | 250   | 290   | 110    |
|                                   | 4                | 200   | 230   | 260   | 300   | 100    |
|                                   | 5                | 200   | 240   | 270   | 300   | 100    |
|                                   | <b>Rata-rata</b> | 188   | 224   | 254   | 296   | 108    |
|                                   | <b>SD</b>        | 13,04   | 11,40 | 11,40 | 18,17 | 5,13   |
| Kontrol positif<br>(gemfibrozil)  | 1                | 180   | 210   | 230   | 260   | 80     |
|                                   | 2                | 200   | 230   | 270   | 300   | 100    |
|                                   | 3                | 190   | 220   | 250   | 280   | 90     |
|                                   | 4                | 190   | 210   | 240   | 270   | 80     |
|                                   | 5                | 200   | 240   | 260   | 280   | 80     |
|                                   | <b>Rata-rata</b> | 192   | 222   | 250   | 278   | 86     |
|                                   | <b>SD</b>        | 8,37  | 13,04 | 15,81 | 14,83 | 6,47   |
| Ekstrak 300 mg<br>/ Kg BB         | 1                | 200   | 240   | 270   | 300   | 100    |
|                                   | 2                | 190   | 220   | 240   | 260   | 70     |
|                                   | 3                | 180   | 220   | 260   | 300   | 120    |
|                                   | 4                | 190   | 210   | 230   | 250   | 60     |
|                                   | 5                | 190   | 220   | 240   | 260   | 70     |
|                                   | <b>Rata-rata</b> | 190   | 222   | 248   | 274   | 84     |
|                                   | <b>SD</b>        | 7,07  | 10,95 | 16,43 | 24,08 | 17,01  |
| Fraksi n-heksan                   | 1                | 190   | 230   | 250   | 280   | 90     |
|                                   | 2                | 180   | 200   | 210   | 230   | 50     |
|                                   | 3                | 180   | 210   | 240   | 260   | 80     |
|                                   | 4                | 190   | 220   | 240   | 260   | 70     |
|                                   | 5                | 200   | 220   | 230   | 250   | 50     |
|                                   | <b>Rata-rata</b> | 188   | 216   | 234   | 256   | 68     |
|                                   | <b>SD</b>        | 8,37  | 11,40 | 15,17 | 18,17 | 9,80   |
| Fraksi etil asetat                | 1                | 180   | 210   | 240   | 280   | 100    |
|                                   | 2                | 180   | 210   | 240   | 260   | 80     |
|                                   | 3                | 190   | 230   | 260   | 290   | 100    |
|                                   | 4                | 170   | 200   | 240   | 260   | 90     |
|                                   | 5                | 200   | 240   | 270   | 300   | 100    |
|                                   | <b>Rata-rata</b> | 184   | 218   | 250   | 278   | 94     |
|                                   | <b>SD</b>        | 11,40   | 16,43 | 14,14 | 17,89 | 6,49   |
| Fraksi air                        | 1                | 200   | 230   | 270   | 300   | 100    |
|                                   | 2                | 190   | 210   | 230   | 250   | 60     |
|                                   | 3                | 180   | 230   | 260   | 300   | 120    |
|                                   | 4                | 190   | 220   | 240   | 260   | 70     |
|                                   | 5                | 170   | 200   | 230   | 250   | 80     |
|                                   | <b>Rata-rata</b> | 186   | 218   | 246   | 272   | 86     |
|                                   | <b>SD</b>        | 11,40   | 13,04 | 18,17 | 25,88 | 14,48  |



**Lampiran 17. Hasil penimbangan berat badan tikus selama perlakuan dan analisa data**

| Kelompok                            | Replikasi        | Berat badan tikus selama perlakuan |       |       |       |       |       |        |
|-------------------------------------|------------------|------------------------------------|-------|-------|-------|-------|-------|--------|
|                                     |                  | T0                                 | T3    | T6    | T9    | T12   | T15   | T0-T15 |
| Kontrol negatif<br>(hiperlipidemia) | 1                | 320                                | 310   | 300   | 300   | 290   | 300   | 20     |
|                                     | 2                | 270                                | 270   | 260   | 250   | 260   | 270   | 0      |
|                                     | 3                | 290                                | 280   | 270   | 270   | 280   | 280   | 10     |
|                                     | 4                | 300                                | 290   | 280   | 280   | 270   | 280   | 20     |
|                                     | 5                | 300                                | 300   | 290   | 280   | 280   | 270   | 30     |
|                                     | <b>Rata-rata</b> | 296                                | 290   | 280   | 276   | 276   | 270   | 26     |
|                                     | <b>SD</b>        | 18,17                              | 15,81 | 15,81 | 18,17 | 11,40 | 12,25 | 5,92   |
| Kontrol positif<br>(gemfibrozil)    | 1                | 260                                | 250   | 240   | 240   | 220   | 210   | 50     |
|                                     | 2                | 300                                | 280   | 270   | 260   | 240   | 230   | 70     |
|                                     | 3                | 280                                | 270   | 260   | 240   | 230   | 220   | 60     |
|                                     | 4                | 270                                | 260   | 240   | 230   | 220   | 210   | 60     |
|                                     | 5                | 280                                | 260   | 250   | 240   | 220   | 220   | 60     |
|                                     | <b>Rata-rata</b> | 278                                | 264   | 252   | 242   | 226   | 218   | 60     |
|                                     | <b>SD</b>        | 14,83                              | 11,40 | 13,04 | 10,95 | 8,94  | 8,37  | 7,07   |
| Ekstrak 300 mg /<br>Kg BB           | 1                | 300                                | 290   | 270   | 260   | 250   | 240   | 60     |
|                                     | 2                | 260                                | 260   | 240   | 230   | 220   | 200   | 60     |
|                                     | 3                | 300                                | 280   | 270   | 250   | 240   | 230   | 70     |
|                                     | 4                | 250                                | 240   | 230   | 210   | 200   | 190   | 60     |
|                                     | 5                | 260                                | 250   | 240   | 230   | 210   | 210   | 50     |
|                                     | <b>Rata-rata</b> | 274                                | 264   | 250   | 236   | 224   | 214   | 60     |
|                                     | <b>SD</b>        | 24,08                              | 20,73 | 18,71 | 19,49 | 20,74 | 20,74 | 3,35   |
| Fraksi n-heksan                     | 1                | 280                                | 260   | 250   | 240   | 220   | 220   | 60     |
|                                     | 2                | 230                                | 230   | 220   | 210   | 200   | 190   | 40     |
|                                     | 3                | 260                                | 250   | 240   | 240   | 230   | 220   | 40     |
|                                     | 4                | 260                                | 250   | 240   | 240   | 230   | 230   | 30     |
|                                     | 5                | 250                                | 250   | 240   | 230   | 230   | 210   | 40     |
|                                     | <b>Rata-rata</b> | 256                                | 248   | 238   | 232   | 222   | 214   | 42     |
|                                     | <b>SD</b>        | 18,17                              | 10,95 | 10,95 | 13,04 | 13,04 | 15,17 | 3,00   |
| Fraksi etil asetat                  | 1                | 280                                | 270   | 260   | 240   | 240   | 210   | 70     |
|                                     | 2                | 260                                | 250   | 250   | 230   | 220   | 200   | 60     |
|                                     | 3                | 290                                | 270   | 260   | 240   | 230   | 220   | 70     |
|                                     | 4                | 260                                | 250   | 240   | 240   | 230   | 220   | 40     |
|                                     | 5                | 300                                | 280   | 270   | 270   | 250   | 240   | 60     |
|                                     | <b>Rata-rata</b> | 278                                | 264   | 256   | 244   | 234   | 218   | 60     |
|                                     | <b>SD</b>        | 17,89                              | 13,42 | 11,40 | 15,17 | 11,40 | 14,83 | 3,06   |
| Fraksi air                          | 1                | 300                                | 290   | 270   | 240   | 240   | 230   | 70     |
|                                     | 2                | 250                                | 250   | 240   | 230   | 210   | 200   | 50     |
|                                     | 3                | 300                                | 280   | 270   | 250   | 240   | 240   | 60     |
|                                     | 4                | 260                                | 260   | 250   | 240   | 240   | 220   | 40     |
|                                     | 5                | 250                                | 240   | 240   | 230   | 220   | 210   | 40     |
|                                     | <b>Rata-rata</b> | 272                                | 264   | 254   | 238   | 230   | 220   | 52     |
|                                     | <b>SD</b>        | 25,88                              | 20,74 | 15,17 | 8,37  | 14,14 | 15,81 | 10,07  |

## Saphiro-Wilk

### Tests of Normality

|              | Kelompok                       | Kolmogorov-Smirnov <sup>a</sup> |    |       | Shapiro-Wilk |    |      |
|--------------|--------------------------------|---------------------------------|----|-------|--------------|----|------|
|              |                                | Statistic                       | df | Sig.  | Statistic    | df | Sig. |
|              | Kontrol hipertriglisideridemia | ,237                            | 5  | ,200* | ,961         | 5  | ,814 |
|              | Kontrol gemfibrozil            | ,231                            | 5  | ,200* | ,881         | 5  | ,314 |
| Penurunan_BB | Ekstrak 300 mg/Kg BB           | ,300                            | 5  | ,161  | ,883         | 5  | ,325 |
|              | Fraksi n-heksan                | ,372                            | 5  | ,022  | ,828         | 5  | ,135 |
|              | Fraksi etil asetat             | ,300                            | 5  | ,161  | ,833         | 5  | ,146 |
|              | Fraksi air                     | ,221                            | 5  | ,200* | ,902         | 5  | ,421 |

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

## Oneway

### Test of Homogeneity of Variances

Penurunan\_BB

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| ,592             | 5   | 24  | ,706 |

### ANOVA

Penurunan\_BB

|                | Sum of Squares | df | Mean Square | F      | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 7786,667       | 5  | 1557,333    | 13,542 | ,000 |
| Within Groups  | 2760,000       | 24 | 115,000     |        |      |
| Total          | 10546,667      | 29 |             |        |      |

## Post Hoc Test

### Multiple Comparisons

Dependent Variable: Penurunan\_BB

Tukey HSD

| (I) Kelompok                 | (J) Kelompok                 | Mean Difference (I-J) | Std. Error | Sig.  | 95% Confidence Interval |             |
|------------------------------|------------------------------|-----------------------|------------|-------|-------------------------|-------------|
|                              |                              |                       |            |       | Lower Bound             | Upper Bound |
| Kontrol hipertriglisideremia | Kontrol gemfibrozil          | -46,000*              | 6,782      | ,000  | -66,97                  | -25,03      |
|                              | Ekstrak 300 mg/Kg BB         | -44,000*              | 6,782      | ,000  | -64,97                  | -23,03      |
|                              | Fraksi n-heksan              | -26,000*              | 6,782      | ,009  | -46,97                  | -5,03       |
|                              | Fraksi etil asetat           | -44,000*              | 6,782      | ,000  | -64,97                  | -23,03      |
|                              | Fraksi air                   | -36,000*              | 6,782      | ,000  | -56,97                  | -15,03      |
| Kontrol gemfibrozil          | Kontrol hipertriglisideremia | 46,000*               | 6,782      | ,000  | 25,03                   | 66,97       |
|                              | Ekstrak 300 mg/Kg BB         | 2,000                 | 6,782      | 1,000 | -18,97                  | 22,97       |
|                              | Fraksi n-heksan              | 20,000                | 6,782      | ,068  | -,97                    | 40,97       |
|                              | Fraksi etil asetat           | 2,000                 | 6,782      | 1,000 | -18,97                  | 22,97       |
|                              | Fraksi air                   | 10,000                | 6,782      | ,683  | -10,97                  | 30,97       |
| Ekstrak 300 mg/Kg BB         | Kontrol hipertriglisideremia | 44,000*               | 6,782      | ,000  | 23,03                   | 64,97       |
|                              | Kontrol gemfibrozil          | -2,000                | 6,782      | 1,000 | -22,97                  | 18,97       |
|                              | Fraksi n-heksan              | 18,000                | 6,782      | ,123  | -2,97                   | 38,97       |
|                              | Fraksi etil asetat           | ,000                  | 6,782      | 1,000 | -20,97                  | 20,97       |
|                              | Fraksi air                   | 8,000                 | 6,782      | ,842  | -12,97                  | 28,97       |
| Fraksi n-heksan              | Kontrol hipertriglisideremia | 26,000*               | 6,782      | ,009  | 5,03                    | 46,97       |
|                              | Kontrol gemfibrozil          | -20,000               | 6,782      | ,068  | -40,97                  | ,97         |
|                              | Ekstrak 300 mg/Kg BB         | -18,000               | 6,782      | ,123  | -38,97                  | 2,97        |
|                              | Fraksi etil asetat           | -18,000               | 6,782      | ,123  | -38,97                  | 2,97        |
|                              | Fraksi air                   | -10,000               | 6,782      | ,683  | -30,97                  | 10,97       |
| Fraksi etil asetat           | Kontrol hipertriglisideremia | 44,000*               | 6,782      | ,000  | 23,03                   | 64,97       |
|                              | Kontrol gemfibrozil          | -2,000                | 6,782      | 1,000 | -22,97                  | 18,97       |
|                              | Ekstrak 300 mg/Kg BB         | ,000                  | 6,782      | 1,000 | -20,97                  | 20,97       |
|                              | Fraksi n-heksan              | 18,000                | 6,782      | ,123  | -2,97                   | 38,97       |
|                              | Fraksi air                   | 8,000                 | 6,782      | ,842  | -12,97                  | 28,97       |
| Fraksi air                   | Kontrol hipertriglisideremia | 36,000*               | 6,782      | ,000  | 15,03                   | 56,97       |
|                              | Kontrol gemfibrozil          | -10,000               | 6,782      | ,683  | -30,97                  | 10,97       |
|                              | Ekstrak 300 mg/Kg BB         | -8,000                | 6,782      | ,842  | -28,97                  | 12,97       |
|                              | Fraksi n-heksan              | 10,000                | 6,782      | ,683  | -10,97                  | 30,97       |
|                              | Fraksi etil asetat           | -8,000                | 6,782      | ,842  | -28,97                  | 12,97       |

\*. The mean difference is significant at the 0.05 level.

## Homogeneous Subsets

### Penurunan\_BB

Tukey HSD<sup>a</sup>

| Kelompok                       | N | Subset for alpha = 0.05 |       |
|--------------------------------|---|-------------------------|-------|
|                                |   | 1                       | 2     |
| Kontrol hipertriglisideridemia | 5 | 16,00                   |       |
| Fraksi n-heksan                | 5 |                         | 42,00 |
| Fraksi air                     | 5 |                         | 52,00 |
| Ekstrak 300 mg/Kg BB           | 5 |                         | 60,00 |
| Fraksi etil asetat             | 5 |                         | 60,00 |
| Kontrol gemfibrozil            | 5 |                         | 62,00 |
| Sig.                           |   | 1,000                   | ,068  |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5,000.

Lampiran 18. Hasil pengukuran kadar trigliserida serum darah tikus

| Kelompok                      | Replikasi | Kadar trigliserida serum darah (mg/dl) |       |       |       |        |         |         |           |           |
|-------------------------------|-----------|--|-------|-------|-------|--------|---------|---------|-----------|-----------|
|                               |           | T0                                     | T21   | T28   | T35   | T21-T0 | T21-T28 | T21-T35 | % T21-T28 | % T21-T35 |
| Kontrol negatif (CMC Na 0,5%) | 1         | 82                                     | 196   | 190   | 179   | 114    | 6       | 17      | 3,06      | 8,67      |
|                               | 2         | 102                                    | 203   | 195   | 183   | 101    | 8       | 20      | 3,94      | 9,85      |
|                               | 3         | 72                                     | 184   | 179   | 162   | 112    | 5       | 22      | 2,72      | 11,96     |
|                               | 4         | 135                                    | 223   | 211   | 198   | 88     | 12      | 25      | 5,38      | 11,21     |
|                               | 5         | 128                                    | 217   | 205   | 186   | 89     | 12      | 31      | 5,53      | 14,29     |
|                               | Rata-rata | 103,8                                  | 204,6 | 196   | 181,6 | 100,8  | 8,6     | 23      | 4,13      | 11,20     |
|                               | SD        | 27,61                                  | 15,76 | 12,57 | 13,05 | 12,28  | 3,29    | 5,34    | 1,29      | 2,14      |
| Kontrol positif (gemfibrozil) | 1         | 81                                     | 199   | 139   | 90    | 118    | 60      | 109     | 30,15     | 54,77     |
|                               | 2         | 123                                    | 213   | 134   | 81    | 90     | 79      | 132     | 37,09     | 61,97     |
|                               | 3         | 70                                     | 187   | 126   | 76    | 117    | 61      | 111     | 32,62     | 59,36     |
|                               | 4         | 85                                     | 196   | 130   | 89    | 111    | 66      | 107     | 33,67     | 54,59     |
|                               | 5         | 74                                     | 192   | 127   | 75    | 118    | 65      | 117     | 33,85     | 60,94     |
|                               | Rata-rata | 86,6                                   | 197,4 | 131,2 | 82,2  | 110,8  | 66,2    | 115,2   | 33,48     | 58,33     |
|                               | SD        | 21,17                                  | 9,81  | 5,36  | 7,05  | 11,99  | 7,60    | 10,11   | 2,50      | 3,45      |
| Ekstrak 300 mg / Kg BB        | 1         | 77                                     | 187   | 150   | 109   | 110    | 37      | 78      | 19,79     | 41,71     |
|                               | 2         | 75                                     | 195   | 155   | 116   | 120    | 40      | 79      | 20,51     | 40,51     |
|                               | 3         | 114                                    | 219   | 162   | 128   | 105    | 57      | 91      | 26,03     | 41,55     |
|                               | 4         | 111                                    | 207   | 173   | 139   | 96     | 34      | 68      | 16,43     | 32,85     |
|                               | 5         | 90                                     | 194   | 169   | 107   | 104    | 25      | 87      | 12,89     | 44,85     |
|                               | Rata-rata | 93,4                                   | 200,4 | 161,8 | 119,8 | 107    | 38,6    | 80,6    | 19,13     | 40,29     |
|                               | SD        | 18,39                                  | 12,64 | 9,52  | 13,52 | 8,83   | 11,72   | 8,91    | 4,90      | 4,47      |
| Fraksi n-heksan               | 1         | 77                                     | 190   | 165   | 136   | 113    | 25      | 54      | 13,16     | 28,42     |
|                               | 2         | 70                                     | 189   | 158   | 129   | 119    | 31      | 60      | 16,40     | 31,75     |
|                               | 3         | 71                                     | 187   | 151   | 115   | 116    | 36      | 72      | 19,25     | 38,50     |
|                               | 4         | 107                                    | 201   | 174   | 120   | 94     | 27      | 81      | 13,43     | 40,30     |
|                               | 5         | 78                                     | 193   | 168   | 133   | 115    | 25      | 60      | 12,95     | 31,09     |
|                               | Rata-rata | 80,6                                   | 192   | 163,2 | 126,6 | 111,4  | 28,8    | 65,4    | 15,04     | 34,01     |
|                               | SD        | 15,18                                  | 5,48  | 8,93  | 8,85  | 9,96   | 4,71    | 10,90   | 2,74      | 5,11      |
| Fraksi etil asetat            | 1         | 72                                     | 174   | 147   | 82    | 102    | 27      | 92      | 15,52     | 52,87     |
|                               | 2         | 97                                     | 198   | 159   | 101   | 101    | 39      | 97      | 19,70     | 48,99     |
|                               | 3         | 107                                    | 205   | 171   | 115   | 98     | 34      | 90      | 16,59     | 43,90     |
|                               | 4         | 77                                     | 193   | 155   | 93    | 116    | 38      | 100     | 19,69     | 51,81     |
|                               | 5         | 76                                     | 189   | 148   | 89    | 113    | 41      | 100     | 21,69     | 52,91     |
|                               | Rata-rata | 85,8                                   | 191,8 | 156   | 96    | 106    | 35,8    | 95,8    | 18,64     | 50,10     |
|                               | SD        | 15,32                                  | 11,61 | 9,75  | 12,65 | 7,97   | 5,54    | 4,60    | 2,53      | 3,81      |
| Fraksi air                    | 1         | 131                                    | 236   | 187   | 143   | 105    | 49      | 93      | 20,76     | 39,41     |
|                               | 2         | 77                                     | 198   | 172   | 131   | 121    | 26      | 67      | 13,13     | 33,84     |
|                               | 3         | 84                                     | 187   | 162   | 140   | 103    | 25      | 47      | 13,37     | 25,13     |
|                               | 4         | 60                                     | 174   | 150   | 122   | 114    | 24      | 52      | 13,79     | 29,89     |
|                               | 5         | 67                                     | 180   | 161   | 134   | 113    | 19      | 46      | 10,56     | 25,56     |
|                               | Rata-rata | 83,8                                   | 195   | 166,4 | 134   | 111,2  | 28,6    | 61      | 14,32     | 30,76     |
|                               | SD        | 27,94                                  | 24,60 | 13,90 | 8,22  | 7,29   | 11,72   | 19,76   | 3,82      | 5,99      |

**Lampiran 19. Hasil analisa data kadar trigliserida serum darah tikus hari ke 7 selama perlakuan**

**Saphiro-Wilk**

| Tests of Normality |                                  |                                 |    |                   |              |    |      |
|--------------------|----------------------------------|---------------------------------|----|-------------------|--------------|----|------|
|                    | Kelompok                         | Kolmogorov-Smirnov <sup>a</sup> |    |                   | Shapiro-Wilk |    |      |
|                    |                                  | Statistic                       | df | Sig.              | Statistic    | df | Sig. |
|                    | Kontrol negatif                  | ,163                            | 5  | ,200 <sup>*</sup> | ,980         | 5  | ,935 |
|                    | Kontrol positif<br>(gemfibrozil) | ,189                            | 5  | ,200 <sup>*</sup> | ,929         | 5  | ,593 |
| Kadar_TG           | Dosis ekstrak 300 mg/kg          | ,175                            | 5  | ,200 <sup>*</sup> | ,960         | 5  | ,810 |
|                    | Dosis fraksi n-heksan            | ,180                            | 5  | ,200 <sup>*</sup> | ,983         | 5  | ,949 |
|                    | Dosis fraksi etil asetat         | ,194                            | 5  | ,200 <sup>*</sup> | ,911         | 5  | ,474 |
|                    | Dosis fraksi air                 | ,224                            | 5  | ,200 <sup>*</sup> | ,960         | 5  | ,809 |

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

**Oneway**

**Test of Homogeneity of Variances**

Kadar\_TG

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| ,824             | 5   | 24  | ,545 |

**ANOVA**

Kadar\_TG

|                | Sum of Squares | df | Mean Square | F      | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 10801,767      | 5  | 2160,353    | 20,084 | ,000 |
| Within Groups  | 2581,600       | 24 | 107,567     |        |      |
| Total          | 13383,367      | 29 |             |        |      |

## Post Hoc Test

### Multiple Comparisons

Dependent Variable: Kadar\_TG

Tukey HSD

| (I) Kelompok                  | (J) Kelompok                  | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|-------------------------------|-------------------------------|-----------------------|------------|------|-------------------------|-------------|
|                               |                               |                       |            |      | Lower Bound             | Upper Bound |
| Kontrol negatif               | Kontrol positif (gemfibrozil) | 64,800*               | 6,559      | ,000 | 44,52                   | 85,08       |
|                               | Dosis ekstrak 300 mg/kg       | 34,200*               | 6,559      | ,000 | 13,92                   | 54,48       |
|                               | Dosis fraksi n-heksan         | 32,800*               | 6,559      | ,001 | 12,52                   | 53,08       |
|                               | Dosis fraksi etil asetat      | 40,000*               | 6,559      | ,000 | 19,72                   | 60,28       |
|                               | Dosis fraksi air              | 29,600*               | 6,559      | ,002 | 9,32                    | 49,88       |
| Kontrol positif (gemfibrozil) | Kontrol negatif               | -64,800*              | 6,559      | ,000 | -85,08                  | -44,52      |
|                               | Dosis ekstrak 300 mg/kg       | -30,600*              | 6,559      | ,001 | -50,88                  | -10,32      |
|                               | Dosis fraksi n-heksan         | -32,000*              | 6,559      | ,001 | -52,28                  | -11,72      |
|                               | Dosis fraksi etil asetat      | -24,800*              | 6,559      | ,010 | -45,08                  | -4,52       |
|                               | Dosis fraksi air              | -35,200*              | 6,559      | ,000 | -55,48                  | -14,92      |
| Dosis ekstrak 300 mg/kg       | Kontrol negatif               | -34,200*              | 6,559      | ,000 | -54,48                  | -13,92      |
|                               | Kontrol positif (gemfibrozil) | 30,600*               | 6,559      | ,001 | 10,32                   | 50,88       |
|                               | Dosis fraksi n-heksan         | -1,400                | 6,559      | 1,00 | -21,68                  | 18,88       |
|                               | Dosis fraksi etil asetat      | 5,800                 | 6,559      | ,947 | -14,48                  | 26,08       |
|                               | Dosis fraksi air              | -4,600                | 6,559      | ,980 | -24,88                  | 15,68       |
| Dosis fraksi n-heksan         | Kontrol negatif               | -32,800*              | 6,559      | ,001 | -53,08                  | -12,52      |
|                               | Kontrol positif (gemfibrozil) | 32,000*               | 6,559      | ,001 | 11,72                   | 52,28       |
|                               | Dosis ekstrak 300 mg/kg       | 1,400                 | 6,559      | 1,00 | -18,88                  | 21,68       |
|                               | Dosis fraksi etil asetat      | 7,200                 | 6,559      | ,878 | -13,08                  | 27,48       |
|                               | Dosis fraksi air              | -3,200                | 6,559      | ,996 | -23,48                  | 17,08       |
| Dosis fraksi etil asetat      | Kontrol negatif               | -40,000*              | 6,559      | ,000 | -60,28                  | -19,72      |
|                               | Kontrol positif (gemfibrozil) | 24,800*               | 6,559      | ,010 | 4,52                    | 45,08       |
|                               | Dosis ekstrak 300 mg/kg       | -5,800                | 6,559      | ,947 | -26,08                  | 14,48       |
|                               | Dosis fraksi n-heksan         | -7,200                | 6,559      | ,878 | -27,48                  | 13,08       |
|                               | Dosis fraksi air              | -10,400               | 6,559      | ,615 | -30,68                  | 9,88        |
| Dosis fraksi air              | Kontrol negatif               | -29,600*              | 6,559      | ,002 | -49,88                  | -9,32       |
|                               | Kontrol positif (gemfibrozil) | 35,200*               | 6,559      | ,000 | 14,92                   | 55,48       |
|                               | Dosis ekstrak 300 mg/kg       | 4,600                 | 6,559      | ,980 | -15,68                  | 24,88       |
|                               | Dosis fraksi n-heksan         | 3,200                 | 6,559      | ,996 | -17,08                  | 23,48       |
|                               | Dosis fraksi etil asetat      | 10,400                | 6,559      | ,615 | -9,88                   | 30,68       |

\*. The mean difference is significant at the 0.05 level.

## Homogeneous Subsets

### Kadar\_TG

Tukey HSD<sup>a</sup>

| Kelompok                      | N | Subset for alpha = 0.05 |        |        |
|-------------------------------|---|-------------------------|--------|--------|
|                               |   | 1                       | 2      | 3      |
| Kontrol positif (gemfibrozil) | 5 | 131,20                  |        |        |
| Dosis fraksi etil asetat      | 5 |                         | 156,00 |        |
| Dosis ekstrak 300 mg/kg       | 5 |                         | 161,80 |        |
| Dosis fraksi n-heksan         | 5 |                         | 163,20 |        |
| Dosis fraksi air              | 5 |                         | 166,40 |        |
| Kontrol negatif               | 5 |                         |        | 196,00 |
| Sig.                          |   | 1,000                   | ,615   | 1,000  |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5,000.



**Lampiran 20. Hasil analisa data persentase penurunan kadar trigliserida serum darah tikus hari ke-7 selama perlakuan**

**Saphiro-Wilk**

| Tests of Normality |                        |                                 |    |       |              |    |      |
|--------------------|------------------------|---------------------------------|----|-------|--------------|----|------|
|                    | Kelompok               | Kolmogorov-Smirnov <sup>a</sup> |    |       | Shapiro-Wilk |    |      |
|                    |                        | Statistic                       | df | Sig.  | Statistic    | df | Sig. |
| Penurunan_T<br>G   | Kontrol negatif CMC Na | ,234                            | 5  | ,200* | ,881         | 5  | ,312 |
|                    | Kontrol gemfibrozil    | ,241                            | 5  | ,200* | ,963         | 5  | ,828 |
|                    | Ekstrak 300 mg/Kg BB   | ,189                            | 5  | ,200* | ,982         | 5  | ,945 |
|                    | Fraksi n-heksan        | ,321                            | 5  | ,101  | ,821         | 5  | ,119 |
|                    | Fraksi etil asetat     | ,262                            | 5  | ,200* | ,924         | 5  | ,558 |
|                    | Fraksi air             | ,355                            | 5  | ,038  | ,827         | 5  | ,132 |

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

**Oneway**

**Test of Homogeneity of Variances**

Penurunan\_TG

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 1,105            | 5   | 24  | ,384 |

**ANOVA**

Penurunan\_TG

|                | Sum of Squares | df | Mean Square | F      | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 2270,987       | 5  | 454,197     | 45,110 | ,000 |
| Within Groups  | 241,647        | 24 | 10,069      |        |      |
| Total          | 2512,634       | 29 |             |        |      |

## Post Hoc Test

### Multiple Comparisons

Dependent Variable: Penurunan\_TG

Tukey HSD

| (I) Kelompok           | (J) Kelompok           | Mean Difference (I-J) | Std. Error | Sig.  | 95% Confidence Interval |             |
|------------------------|------------------------|-----------------------|------------|-------|-------------------------|-------------|
|                        |                        |                       |            |       | Lower Bound             | Upper Bound |
| Kontrol negatif CMC Na | Kontrol gemfibrozil    | -29,35000*            | 2,00685    | ,000  | -35,5550                | -23,1450    |
|                        | Ekstrak 300 mg/Kg BB   | -15,00400*            | 2,00685    | ,000  | -21,2090                | -8,7990     |
|                        | Fraksi n-heksan        | -10,91200*            | 2,00685    | ,000  | -17,1170                | -4,7070     |
|                        | Fraksi etil asetat     | -14,51200*            | 2,00685    | ,000  | -20,7170                | -8,3070     |
|                        | Fraksi air             | -10,19600*            | 2,00685    | ,000  | -16,4010                | -3,9910     |
| Kontrol gemfibrozil    | Kontrol negatif CMC Na | 29,35000*             | 2,00685    | ,000  | 23,1450                 | 35,5550     |
|                        | Ekstrak 300 mg/Kg BB   | 14,34600*             | 2,00685    | ,000  | 8,1410                  | 20,5510     |
|                        | Fraksi n-heksan        | 18,43800*             | 2,00685    | ,000  | 12,2330                 | 24,6430     |
|                        | Fraksi etil asetat     | 14,83800*             | 2,00685    | ,000  | 8,6330                  | 21,0430     |
|                        | Fraksi air             | 19,15400*             | 2,00685    | ,000  | 12,9490                 | 25,3590     |
| Ekstrak 300 mg/Kg BB   | Kontrol negatif CMC Na | 15,00400*             | 2,00685    | ,000  | 8,7990                  | 21,2090     |
|                        | Kontrol gemfibrozil    | -14,34600*            | 2,00685    | ,000  | -20,5510                | -8,1410     |
|                        | Fraksi n-heksan        | 4,09200               | 2,00685    | ,351  | -2,1130                 | 10,2970     |
|                        | Fraksi etil asetat     | ,49200                | 2,00685    | 1,000 | -5,7130                 | 6,6970      |
|                        | Fraksi air             | 4,80800               | 2,00685    | ,197  | -1,3970                 | 11,0130     |
| Fraksi n-heksan        | Kontrol negatif CMC Na | 10,91200*             | 2,00685    | ,000  | 4,7070                  | 17,1170     |
|                        | Kontrol gemfibrozil    | -18,43800*            | 2,00685    | ,000  | -24,6430                | -12,2330    |
|                        | Ekstrak 300 mg/Kg BB   | -4,09200              | 2,00685    | ,351  | -10,2970                | 2,1130      |
|                        | Fraksi etil asetat     | -3,60000              | 2,00685    | ,488  | -9,8050                 | 2,6050      |
|                        | Fraksi air             | ,71600                | 2,00685    | ,999  | -5,4890                 | 6,9210      |
| Fraksi etil asetat     | Kontrol negatif CMC Na | 14,51200*             | 2,00685    | ,000  | 8,3070                  | 20,7170     |
|                        | Kontrol gemfibrozil    | -14,83800*            | 2,00685    | ,000  | -21,0430                | -8,6330     |
|                        | Ekstrak 300 mg/Kg BB   | -,49200               | 2,00685    | 1,000 | -6,6970                 | 5,7130      |
|                        | Fraksi n-heksan        | 3,60000               | 2,00685    | ,488  | -2,6050                 | 9,8050      |
|                        | Fraksi air             | 4,31600               | 2,00685    | ,296  | -1,8890                 | 10,5210     |
| Fraksi air             | Kontrol negatif CMC Na | 10,19600*             | 2,00685    | ,000  | 3,9910                  | 16,4010     |
|                        | Kontrol gemfibrozil    | -19,15400*            | 2,00685    | ,000  | -25,3590                | -12,9490    |
|                        | Ekstrak 300 mg/Kg BB   | -4,80800              | 2,00685    | ,197  | -11,0130                | 1,3970      |
|                        | Fraksi n-heksan        | -,71600               | 2,00685    | ,999  | -6,9210                 | 5,4890      |
|                        | Fraksi etil asetat     | -4,31600              | 2,00685    | ,296  | -10,5210                | 1,8890      |

\*. The mean difference is significant at the 0.05 level.

## Homogeneous Subsets

### Penurunan\_TG

Tukey HSD<sup>a</sup>

| Kelompok               | N | Subset for alpha = 0.05 |         |         |
|------------------------|---|-------------------------|---------|---------|
|                        |   | 1                       | 2       | 3       |
| Kontrol negatif CMC Na | 5 | 4,1260                  |         |         |
| Fraksi air             | 5 |                         | 14,3220 |         |
| Fraksi n-heksan        | 5 |                         | 15,0380 |         |
| Fraksi etil asetat     | 5 |                         | 18,6380 |         |
| Ekstrak 300 mg/Kg BB   | 5 |                         | 19,1300 |         |
| Kontrol gemfibrozil    | 5 |                         |         | 33,4760 |
| Sig.                   |   | 1,000                   | ,197    | 1,000   |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5,000.

**Lampiran 21. Hasil analisa data kadar trigliserida serum darah tikus hari ke-14 selama perlakuan**

**Saphiro-Wilk**

| Tests of Normality |                                  |                                 |    |       |              |    |      |
|--------------------|----------------------------------|---------------------------------|----|-------|--------------|----|------|
|                    | Kelompok                         | Kolmogorov-Smirnov <sup>a</sup> |    |       | Shapiro-Wilk |    |      |
|                    |                                  | Statistic                       | df | Sig.  | Statistic    | df | Sig. |
|                    | Kontrol negatif                  | ,221                            | 5  | ,200* | ,963         | 5  | ,831 |
|                    | Kontrol positif<br>(gemfibrozil) | ,233                            | 5  | ,200* | ,864         | 5  | ,244 |
| Kadar_TG           | Dosis ekstrak 300 mg/kg          | ,211                            | 5  | ,200* | ,915         | 5  | ,496 |
|                    | Dosis fraksi n-heksan            | ,207                            | 5  | ,200* | ,933         | 5  | ,618 |
|                    | Dosis fraksi etil asetat         | ,194                            | 5  | ,200* | ,963         | 5  | ,831 |
|                    | Dosis fraksi air                 | ,167                            | 5  | ,200* | ,964         | 5  | ,833 |

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

**Oneway**

**Test of Homogeneity of Variances**

Kadar\_TG

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| ,668             | 5   | 24  | ,651 |

**ANOVA**

Kadar\_TG

|                | Sum of Squares | df | Mean Square | F      | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 29854,967      | 5  | 5970,993    | 50,566 | ,000 |
| Within Groups  | 2834,000       | 24 | 118,083     |        |      |
| Total          | 32688,967      | 29 |             |        |      |

## Post Hoc Test

### Multiple Comparisons

Dependent Variable: Kadar\_TG

Tukey HSD

| (I) Kelompok                  | (J) Kelompok                  | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|-------------------------------|-------------------------------|-----------------------|------------|------|-------------------------|-------------|
|                               |                               |                       |            |      | Lower Bound             | Upper Bound |
| Kontrol negatif               | Kontrol positif (gemfibrozil) | 99,400 <sup>*</sup>   | 6,873      | ,000 | 78,15                   | 120,65      |
|                               | Dosis ekstrak 300 mg/kg       | 61,800 <sup>*</sup>   | 6,873      | ,000 | 40,55                   | 83,05       |
|                               | Dosis fraksi n-heksan         | 55,000 <sup>*</sup>   | 6,873      | ,000 | 33,75                   | 76,25       |
|                               | Dosis fraksi etil asetat      | 85,600 <sup>*</sup>   | 6,873      | ,000 | 64,35                   | 106,85      |
|                               | Dosis fraksi air              | 47,600 <sup>*</sup>   | 6,873      | ,000 | 26,35                   | 68,85       |
| Kontrol positif (gemfibrozil) | Kontrol negatif               | -99,400 <sup>*</sup>  | 6,873      | ,000 | -120,65                 | -78,15      |
|                               | Dosis ekstrak 300 mg/kg       | -37,600 <sup>*</sup>  | 6,873      | ,000 | -58,85                  | -16,35      |
|                               | Dosis fraksi n-heksan         | -44,400 <sup>*</sup>  | 6,873      | ,000 | -65,65                  | -23,15      |
|                               | Dosis fraksi etil asetat      | -13,800 <sup>*</sup>  | 6,873      | ,367 | -35,05                  | 7,45        |
|                               | Dosis fraksi air              | -51,800 <sup>*</sup>  | 6,873      | ,000 | -73,05                  | -30,55      |
| Dosis ekstrak 300 mg/kg       | Kontrol negatif               | -61,800 <sup>*</sup>  | 6,873      | ,000 | -83,05                  | -40,55      |
|                               | Kontrol positif (gemfibrozil) | 37,600 <sup>*</sup>   | 6,873      | ,000 | 16,35                   | 58,85       |
|                               | Dosis fraksi n-heksan         | -6,800 <sup>*</sup>   | 6,873      | ,917 | -28,05                  | 14,45       |
|                               | Dosis fraksi etil asetat      | 23,800 <sup>*</sup>   | 6,873      | ,022 | 2,55                    | 45,05       |
|                               | Dosis fraksi air              | -14,200 <sup>*</sup>  | 6,873      | ,337 | -35,45                  | 7,05        |
| Dosis fraksi n-heksan         | Kontrol negatif               | -55,000 <sup>*</sup>  | 6,873      | ,000 | -76,25                  | -33,75      |
|                               | Kontrol positif (gemfibrozil) | 44,400 <sup>*</sup>   | 6,873      | ,000 | 23,15                   | 65,65       |
|                               | Dosis ekstrak 300 mg/kg       | 6,800 <sup>*</sup>    | 6,873      | ,917 | -14,45                  | 28,05       |
|                               | Dosis fraksi etil asetat      | 30,600 <sup>*</sup>   | 6,873      | ,002 | 9,35                    | 51,85       |
|                               | Dosis fraksi air              | -7,400 <sup>*</sup>   | 6,873      | ,886 | -28,65                  | 13,85       |
| Dosis fraksi etil asetat      | Kontrol negatif               | -85,600 <sup>*</sup>  | 6,873      | ,000 | -106,85                 | -64,35      |
|                               | Kontrol positif (gemfibrozil) | 13,800 <sup>*</sup>   | 6,873      | ,367 | -7,45                   | 35,05       |
|                               | Dosis ekstrak 300 mg/kg       | -23,800 <sup>*</sup>  | 6,873      | ,022 | -45,05                  | -2,55       |
|                               | Dosis fraksi n-heksan         | -30,600 <sup>*</sup>  | 6,873      | ,002 | -51,85                  | -9,35       |
|                               | Dosis fraksi air              | -38,000 <sup>*</sup>  | 6,873      | ,000 | -59,25                  | -16,75      |
| Dosis fraksi air              | Kontrol negatif               | -47,600 <sup>*</sup>  | 6,873      | ,000 | -68,85                  | -26,35      |
|                               | Kontrol positif (gemfibrozil) | 51,800 <sup>*</sup>   | 6,873      | ,000 | 30,55                   | 73,05       |
|                               | Dosis ekstrak 300 mg/kg       | 14,200 <sup>*</sup>   | 6,873      | ,337 | -7,05                   | 35,45       |
|                               | Dosis fraksi n-heksan         | 7,400 <sup>*</sup>    | 6,873      | ,886 | -13,85                  | 28,65       |
|                               | Dosis fraksi etil asetat      | 38,000 <sup>*</sup>   | 6,873      | ,000 | 16,75                   | 59,25       |

\*. The mean difference is significant at the 0.05 level.

## Homogeneous Subsets

### Kadar\_TG

Tukey HSD<sup>a</sup>

| Kelompok                      | N | Subset for alpha = 0.05 |        |        |
|-------------------------------|---|-------------------------|--------|--------|
|                               |   | 1                       | 2      | 3      |
| Kontrol positif (gemfibrozil) | 5 | 82,20                   |        |        |
| Dosis fraksi etil asetat      | 5 | 96,00                   |        |        |
| Dosis ekstrak 300 mg/kg       | 5 |                         | 119,80 |        |
| Dosis fraksi n-heksan         | 5 |                         | 126,60 |        |
| Dosis fraksi air              | 5 |                         | 134,00 |        |
| Kontrol negatif               | 5 |                         |        | 181,60 |
| Sig.                          |   | ,367                    | ,337   | 1,000  |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5,000.

**Lampiran 22. Hasil analisa data persentase penurunan kadar trigliserida serum darah tikus hari ke-14 selama perlakuan**

**Saphiro-Wilk**

|              |                             | Tests of Normality              |    |                   |              |    |      |
|--------------|-----------------------------|---------------------------------|----|-------------------|--------------|----|------|
|              |                             | Kolmogorov-Smirnov <sup>a</sup> |    |                   | Shapiro-Wilk |    |      |
|              | Kelompok                    | Statistic                       | df | Sig.              | Statistic    | df | Sig. |
| Penurunan_TG | Kontrol negatif CMC Na      | ,161                            | 5  | ,200 <sup>*</sup> | ,982         | 5  | ,944 |
|              | Kontrol positif gemfibrozil | ,248                            | 5  | ,200 <sup>*</sup> | ,856         | 5  | ,213 |
|              | Ekstrak 300 mg/Kg BB        | ,319                            | 5  | ,106              | ,856         | 5  | ,215 |
|              | Fraksi n-heksan             | ,271                            | 5  | ,200 <sup>*</sup> | ,897         | 5  | ,391 |
|              | Fraksi etil asetat          | ,273                            | 5  | ,200 <sup>*</sup> | ,824         | 5  | ,126 |
|              | Fraksi air                  | ,207                            | 5  | ,200 <sup>*</sup> | ,918         | 5  | ,517 |

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

**Oneway**

**Test of Homogeneity of Variances**

Penurunan\_TG

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 1,413            | 5   | 24  | ,255 |

**ANOVA**

Penurunan\_TG

|                | Sum of Squares | df | Mean Square | F      | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 6747,926       | 5  | 1349,585    | 71,579 | ,000 |
| Within Groups  | 452,506        | 24 | 18,854      |        |      |
| Total          | 7200,432       | 29 |             |        |      |

## Post Hoc Test

### Multiple Comparisons

Dependent Variable: Penurunan\_TG

Tukey HSD

| (I) Kelompok                | (J) Kelompok                | Mean Difference (I-J)  | Std. Error | Sig. | 95% Confidence Interval |             |
|-----------------------------|-----------------------------|------------------------|------------|------|-------------------------|-------------|
|                             |                             |                        |            |      | Lower Bound             | Upper Bound |
| Kontrol negatif CMC Na      | Kontrol positif gemfibrozil | -47,13000 <sup>*</sup> | 2,74623    | ,000 | -55,6211                | -38,6389    |
|                             | Ekstrak 300 mg/Kg BB        | -29,09800 <sup>*</sup> | 2,74623    | ,000 | -37,5891                | -20,6069    |
|                             | Fraksi n-heksan             | -22,81600 <sup>*</sup> | 2,74623    | ,000 | -31,3071                | -14,3249    |
|                             | Fraksi etil asetat          | -38,90000 <sup>*</sup> | 2,74623    | ,000 | -47,3911                | -30,4089    |
|                             | Fraksi air                  | -19,57000 <sup>*</sup> | 2,74623    | ,000 | -28,0611                | -11,0789    |
| Kontrol positif gemfibrozil | Kontrol negatif CMC Na      | 47,13000 <sup>*</sup>  | 2,74623    | ,000 | 38,6389                 | 55,6211     |
|                             | Ekstrak 300 mg/Kg BB        | 18,03200 <sup>*</sup>  | 2,74623    | ,000 | 9,5409                  | 26,5231     |
|                             | Fraksi n-heksan             | 24,31400 <sup>*</sup>  | 2,74623    | ,000 | 15,8229                 | 32,8051     |
|                             | Fraksi etil asetat          | 8,23000 <sup>*</sup>   | 2,74623    | ,061 | -,2611                  | 16,7211     |
|                             | Fraksi air                  | 27,56000 <sup>*</sup>  | 2,74623    | ,000 | 19,0689                 | 36,0511     |
| Ekstrak 300 mg/Kg BB        | Kontrol negatif CMC Na      | 29,09800 <sup>*</sup>  | 2,74623    | ,000 | 20,6069                 | 37,5891     |
|                             | Kontrol positif gemfibrozil | -18,03200 <sup>*</sup> | 2,74623    | ,000 | -26,5231                | -9,5409     |
|                             | Fraksi n-heksan             | 6,28200 <sup>*</sup>   | 2,74623    | ,238 | -2,2091                 | 14,7731     |
|                             | Fraksi etil asetat          | -9,80200 <sup>*</sup>  | 2,74623    | ,017 | -18,2931                | -1,3109     |
|                             | Fraksi air                  | 9,52800 <sup>*</sup>   | 2,74623    | ,022 | 1,0369                  | 18,0191     |
| Fraksi n-heksan             | Kontrol negatif CMC Na      | 22,81600 <sup>*</sup>  | 2,74623    | ,000 | 14,3249                 | 31,3071     |
|                             | Kontrol positif gemfibrozil | -24,31400 <sup>*</sup> | 2,74623    | ,000 | -32,8051                | -15,8229    |
|                             | Ekstrak 300 mg/Kg BB        | -6,28200 <sup>*</sup>  | 2,74623    | ,238 | -14,7731                | 2,2091      |
|                             | Fraksi etil asetat          | -16,08400 <sup>*</sup> | 2,74623    | ,000 | -24,5751                | -7,5929     |
|                             | Fraksi air                  | 3,24600 <sup>*</sup>   | 2,74623    | ,841 | -5,2451                 | 11,7371     |
| Fraksi etil asetat          | Kontrol negatif CMC Na      | 38,90000 <sup>*</sup>  | 2,74623    | ,000 | 30,4089                 | 47,3911     |
|                             | Kontrol positif gemfibrozil | -8,23000 <sup>*</sup>  | 2,74623    | ,061 | -16,7211                | ,2611       |
|                             | Ekstrak 300 mg/Kg BB        | 9,80200 <sup>*</sup>   | 2,74623    | ,017 | 1,3109                  | 18,2931     |
|                             | Fraksi n-heksan             | 16,08400 <sup>*</sup>  | 2,74623    | ,000 | 7,5929                  | 24,5751     |
|                             | Fraksi air                  | 19,33000 <sup>*</sup>  | 2,74623    | ,000 | 10,8389                 | 27,8211     |
| Fraksi air                  | Kontrol negatif CMC Na      | 19,57000 <sup>*</sup>  | 2,74623    | ,000 | 11,0789                 | 28,0611     |
|                             | Kontrol positif gemfibrozil | -27,56000 <sup>*</sup> | 2,74623    | ,000 | -36,0511                | -19,0689    |
|                             | Ekstrak 300 mg/Kg BB        | -9,52800 <sup>*</sup>  | 2,74623    | ,022 | -18,0191                | -1,0369     |
|                             | Fraksi n-heksan             | -3,24600 <sup>*</sup>  | 2,74623    | ,841 | -11,7371                | 5,2451      |
|                             | Fraksi etil asetat          | -19,33000 <sup>*</sup> | 2,74623    | ,000 | -27,8211                | -10,8389    |

\*. The mean difference is significant at the 0.05 level.



## Homogeneous Subsets

### Penurunan\_TG

Tukey HSD<sup>a</sup>

| Kelompok                    | N | Subset for alpha = 0.05 |         |         |         |
|-----------------------------|---|-------------------------|---------|---------|---------|
|                             |   | 1                       | 2       | 3       | 4       |
| Kontrol negatif CMC Na      | 5 | 11,1960                 |         |         |         |
| Fraksi air                  | 5 |                         | 30,7660 |         |         |
| Fraksi n-heksan             | 5 |                         | 34,0120 | 34,0120 |         |
| Ekstrak 300 mg/Kg BB        | 5 |                         |         | 40,2940 |         |
| Fraksi etil asetat          | 5 |                         |         |         | 50,0960 |
| Kontrol positif gemfibrozil | 5 |                         |         |         | 58,3260 |
| Sig.                        |   | 1,000                   | ,841    | ,238    | ,061    |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5,000.

**Lampiran 23. Foto tanaman daun ubi jalar ungu dan serbuk kering daun ubi jalar ungu**



**Tanaman ubi jalar ungu**



**Daun ubi jalar ungu segar**



**Oven**

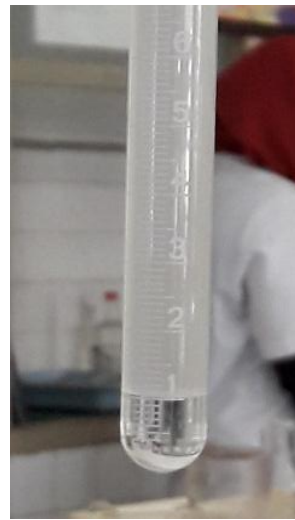


**Ayakan mesh 40**



**Serbuk kering daun ubi jalar ungu**

**Lampiran 24. Foto penetapan kadar air**



**Lampiran 25. Foto penetapan susut pengeringan****Moisture balance**



**Lampiran 26. Foto proses pembuatan ekstrak etanol daun ubi jalar ungu****Botol maserasi****Penyaringan kain flanel****Penyaringan dengan  
kertas saring****Evaporator**



**Oven**



**Ekstrak kental**



**Ekstraksi cair-cair**



**Lampiran 27. Foto proses pembuatan larutan stok**



**Timbangan analitik**



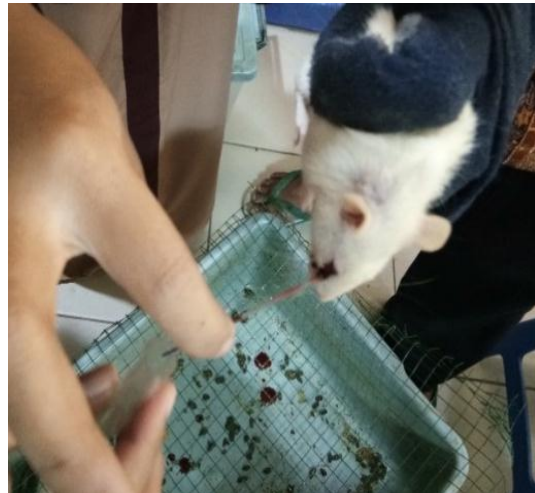
**Mortir, stamper, gelas ukur 100 ml, batang pengaduk, cawan, kaca arlo**



**Lampiran 28. Foto perlakuan hewan uji dan pengukuran kadar trigliserida**



**Tikus putih jantan galur wistar**



**Pengambilan darah tikus**



**Darah tikus**



**Sentrifuge**



**Serum darah**



**Reagen trigliserida**



**Spektrofotometer**



## Lampiran 29. Foto prosedur kerja pengukuran kadar trigliserida

**DiaSys**

### Triglycerides FS\*

Diagnostic reagent for quantitative in vitro determination of triglycerides in serum or plasma on photometric systems

**Order Information**

| Cat. No.         | Kit size | Kit size                      |
|------------------|----------|-------------------------------|
| 1 5710 99 10 021 | R        | 5 x 25 mL + 1 x 3 mL Standard |
| 1 5710 99 10 026 | R        | 6 x 100 mL                    |
| 1 5710 99 10 023 | R        | 1 x 1000 mL                   |
| 1 5710 99 10 704 | R        | 8 x 50 mL                     |
| 1 5710 99 10 717 | R        | 6 x 100 mL                    |
| 1 5710 99 10 917 | R        | 10 x 60 mL                    |
| 1 5700 99 10 030 | R        | 6 x 3 mL Standard             |

**Summary [1,2]**

Triglycerides are esters of glycerol with three fatty acids and are the most abundant naturally occurring lipids. They are transported in plasma bound to apolipoproteins forming very low density lipoproteins (VLDL) and chylomicrons. Measurement of triglycerides is used in screening of the lipid status to detect atherosclerotic risks and in monitoring of lipid lowering measures. Studies have shown that elevated triglyceride concentrations combined with increased low density lipoprotein (LDL) concentrations constitute an especially high risk for coronary heart disease (CHD). High triglyceride levels also occur in various diseases of liver, kidneys and pancreas.

**Method**

Colorimetric enzymatic test using glycerol-3-phosphate-oxidase (GPO)

**Principle**

Determination of triglycerides after enzymatic splitting with lipoprotein lipase. Indicator is quinoneimine which is generated from 4-aminoantipyrine and 4-chlorophenol by hydrogen peroxide under the catalytic action of peroxidase.

Triglycerides  $\xrightarrow{LPL}$  Glycerol + fatty acid

Glycerol + ATP  $\xrightarrow{GK}$  Glycerol-3-phosphate + ADP

Glycerol-3-phosphate + O<sub>2</sub>  $\xrightarrow{GPO}$  Dihydroxyacetone phosphate + H<sub>2</sub>O<sub>2</sub>

2 H<sub>2</sub>O<sub>2</sub> + Aminoantipyrine + 4-Chlorophenol  $\xrightarrow{POD}$  Quinoneimine + HCl + 4 H<sub>2</sub>O

**Reagent**

**Components and Concentrations**

|                              |        |                        |
|------------------------------|--------|------------------------|
| Good's buffer                | pH 7.2 | 50 mmol/L              |
| 4-Chlorophenol               |        | 4 mmol/L               |
| ATP                          |        | 2 mmol/L               |
| Mg <sup>2+</sup>             |        | 15 mmol/L              |
| Glycerokinase                | (GK)   | ≥ 0.4 kU/L             |
| Peroxidase                   | (POD)  | ≥ 2 kU/L               |
| Lipoprotein lipase           | (LPL)  | ≥ 2 kU/L               |
| 4-Aminoantipyrine            |        | 0.5 mmol/L             |
| Glycerol-3-phosphate-oxidase | (GPO)  | ≥ 0.5 kU/L             |
| Standard:                    |        | 200 mg/dL (2.3 mmol/L) |

**Storage Instructions and Reagent Stability**

Reagent and standard are stable up to the end of the indicated month of expiry, if stored at 2–8°C, protected from light and contamination is avoided. Do not freeze the reagent!

**Note:** It has to be mentioned, that the measurement is not influenced by occasionally occurring color changes, as long as the absorbance of the reagent is < 0.3 at 546 nm.

**Warnings and Precautions**

- The reagent contains sodium azide (0.05 g/L) as preservative. Do not swallow. Avoid contact with skin and mucous membranes.
- The reagent contains biological material. Handle the product as potentially infectious according to universal precautions and good laboratory practice.
- In very rare cases, samples of patients with gammopathy might give falsified results [6].
- N-acetylcysteine (NAC), acetaminophen and metformin medication leads to falsely low results in patient samples. Please refer to the safety data sheets and take the necessary precautions for the use of laboratory reagents. For diagnostic purposes, the results should always be assessed with the patient's medical history, clinical examinations and other findings.
- For professional use only!

**Waste Management**

Please refer to local legal requirements.

**Reagent Preparation**

The reagent and the standard are ready to use.

**Materials required but not provided**

NaCl solution 9 g/L  
General laboratory equipment

**Specimen**

Serum, heparin plasma or EDTA plasma

Stability [4]

|                   |            |
|-------------------|------------|
| 2 days            | at 20–25°C |
| 7 days            | at 4–8°C   |
| at least one year | at –20°C   |

Discard contaminated specimens. Freeze only once!

**Assay Procedure**

Application sheets for automated systems are available on request.

|              |                       |
|--------------|-----------------------|
| Wavelength   | 500 nm, Hg 546 nm     |
| Optical path | 1 cm                  |
| Temperature  | 20–25°C/37°C          |
| Measurement  | Against reagent blank |

|  | Blank   | Sample or standard |
|--|---------|--------------------|
| Sample or standard                                   | -       | 10 µL              |
| Dist. water  | 10 µL   | -                  |
| Reagent  | 1000 µL | 1000 µL            |
| Mix, incubate 20 min. at 20–25°C or 10 min. at 37°C. |         |                    |
| Read absorbance against the blank within 60 min.     |         |                    |

**Calculation**

With standard or calibrator

$$\text{Triglycerides [mg/dL]} = \frac{A_{\text{Sample}}}{A_{\text{Std/Cal}}} \times \text{Conc. Std/Cal [mg/dL]}$$

To correct for free glycerol, subtract 10 mg/dL (0.11 mmol/L) from the triglycerides value calculated above.

**Conversion factor**

$$\text{Triglycerides [mg/dL]} \times 0.01126 = \text{Triglycerides [mmol/L]}$$

\*FLUK

Triglycerides FS – Page 1



**Calibrators and Controls**

For the calibration of automated photometric systems, DiaSys TruCal U calibrator is recommended. The assigned method gas TruCal U have been made traceable to the reference method gas chromatography-isotope dilution mass spectrometry (GC-IDMS). DiaSys TruLab N and P or TruLab L controls should be assayed for internal quality control. Each laboratory should establish corrective action in case of deviations in control recovery.

|                  | Cat. No.         | Kit size  |
|------------------|------------------|-----------|
| TruCal U         | 5 9100 99 10 083 | 20 x 3 mL |
|                  | 5 9100 99 10 084 | 6 x 3 mL  |
| TruLab N         | 5 9000 99 10 082 | 20 x 5 mL |
|                  | 5 9000 99 10 081 | 6 x 5 mL  |
| TruLab P         | 5 9050 99 10 082 | 6 x 3 mL  |
|                  | 5 9050 99 10 081 | 3 x 3 mL  |
| TruLab L Level 1 | 5 9020 99 10 081 | 3 x 3 mL  |
| TruLab L Level 2 | 5 9030 99 10 085 | 3 x 3 mL  |

**Performance Characteristics**

**Measuring range**

The test has been developed to determine triglyceride concentrations within a measuring range from 2 – 1000 mg/dL (0.02 – 11.3 mmol/L). When values exceed this range, samples should be diluted 1 + 4 with NaCl solution (9 g/L) and the result multiplied by 5.

**Specificity/Interferences**

No interferences were observed by ascorbic acid up to 3 mg/dL, conjugated bilirubin up to 30 mg/dL by unconjugated bilirubin up to 9 mg/dL, and hemoglobin up to 500 mg/dL. For further information on interfering substances refer to Young DS [5].

**Sensitivity/Limit of Detection**

The lower limit of detection is 2 mg/dL.

**Precision (at 37°C)**

| Intra-assay precision<br>n = 20 | Mean<br>[mg/dL] | SD<br>[mg/dL] | CV<br>[%] |
|---------------------------------|-----------------|---------------|-----------|
| Sample 1                        | 55.5            | 0.301         | 0.54      |
| Sample 2                        | 212             | 1.69          | 0.80      |
| Sample 3                        | 447             | 3.09          | 0.69      |

| Inter-assay precision<br>n = 20 | Mean<br>[mg/dL] | SD<br>[mg/dL] | CV<br>[%] |
|---------------------------------|-----------------|---------------|-----------|
| Sample 1                        | 88.9            | 0.795         | 0.89      |
| Sample 2                        | 235             | 3.61          | 1.54      |

**Method Comparison**

A comparison of DiaSys Triglycerides FS (y) with a commercially available test (x) using 95 samples gave following results.  
y = 0.969 x - 0.092 mg/dL, r = 0.9999

**Reference Range [2]**

Desirable < 200 mg/dL (fasting) (2.3 mmol/L)  
Borderline high 200 – 400 mg/dL (2.3 – 4.5 mmol/L)  
Elevated > 400 mg/dL (4.5 mmol/L)

Each laboratory should check if the reference ranges are transferable to its own patient population and determine own reference ranges if necessary.

**Clinical Interpretation [3]**

Epidemiological studies have observed that a combination of plasma triglycerides > 180 mg/dL (> 2.0 mmol/L) and HDL-Borderline levels (> 200 mg/dL) predict a high risk of CHD association with other risk factors for CHD.

**Literature**

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