

BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

Berdasarkan hasil penelitian ini dapat disimpulkan:

Pertama, ekstrak etanolik herba kate mas (*Euphorbia heterophylla* L.) mempunyai pengaruh dalam penurunan kadar LDL serum darah tikus yang diberi diet tinggi lemak.

Kedua, ekstrak etanolik herba kate mas (*Euphorbia heterophylla* L.) dosis 100 mg/kg BB atau 20 mg/200 g BB merupakan dosis paling efektif dalam menurunkan kadar LDL serum darah tikus yang diberi diet tinggi lemak setara dengan kontrol positif simvastatin dosis 0,36 mg/ 200 kg BB tikus.

B. Saran

Perlu dilakukan penelitian lebih lanjut, pertama perlu adanya penelitian lebih lanjut mengenai herba kate mas dan kandungan kimia di dalamnya dengan melakukan isolasi zat aktif murni yang dilanjutkan dengan pengujian aktivitasnya terhadap efek hiperkolesterolemia.

Kedua, perlu adanya penelitian lebih lanjut untuk mengetahui toksisitas senyawa yang terdapat pada ekstrak etanolik herba kate mas.

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Lampiran 1. Surat keterangan determinasi



No : 058/DET/UPT-LAB/06/IV/2013
Hal : Surat Keterangan Determinasi Tumbuhan

Menerangkan bahwa :

Nama : Titis Kartikasari
NIM : 15092787A
Fakultas : Farmasi Universitas Setia Budi

Telah mendeterminasikan tumbuhan : **Katemas (*Euphorbia heterophylla* L)**

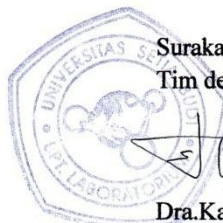
Determinasi berdasarkan Backer : Flora of Java

1b – 2b – 3b – 4b – 12b – 13b – 14b – 17b – 18b – 19b – 20b – 21b – 22b – 23b – 24b – 25b –
26b – 27a – 28b – 29b – 30b – 31b – 32b – 74a – 75b – 76a – 77a – 78a – 79b – 80a – 81b – 86b
– 87b – 97a – 98b – 99b – 100b – 143b – 147b – 156a. 99. Familia Euphorbiaceae. 1a – 2b – 59.
Euphorbia. 1b – 6a – 7a – 8a. *Euphorbia heterophylla* L.

Deskripsi:

Habitus : Semak, tinggi dapat mencapai 1 meter.
Batang : Bulat, berwarna hijau, masif, beruas-ruas.
Daun : Tunggal, tersebar, bentuk jorong, ujung meruncing, pangkal meruncing, tepi rata, panjang 5,5 – 9 cm, lebar 1,9 – 2,6 cm, tangkai daun pipih & berwarna hijau, panjang ± 1,5 cm, permukaan atas halus, permukaan bawah kasar, tulang daun menyirip, berwarna hijau.
Bunga : Majemuk, bentuk payung, terletak di ujung batang, tangkai silindris, panjang 1 – 2 cm, berwarna hijau, mahkota berwarna kuning.
Akar : Tunggang, berwarna putih kotor.

Pustaka : Backer C.A. & Brink R.C.B. (1965): *Flora of Java* (Spermatophytes only).
N.V.P. Noordhoff – Groningen – The Netherlands.



Surakarta, 08 April 2013
Tim determinasi

Dra.Kartinah Wirjosoendjojo, SU.

Lampiran 2. Surat keterangan pembelian hewan uji

"ABIMANYU FARM"

√ Mencit putih jantan √ Tikus Wistar √ Swis Webster √ Cacing √ Mencit Jepang √ Kelinci New Zealand
Ngampon RT 04 / RW 04. Mojosongo Kec. Jebres Surakarta. Phone 085 629 994 33 / Lab USB Ska

Menerangkan dengan sebenarnya bahwa Tikus Wistar yang dibeli oleh:

Nama : Titis Kartikasari
Alamat : Universitas Setia Budi Surakarta
Fakultas : Farmasi
Nim : 15092787 A
Keperluan : Praktikum Penelitian
Tanggal : 16 April 2013
Jenis : Tikus Wistar
Kelamin : Tikus Wistar Jantan
Umur : ± 3 - 4 bulan
Jumlah : 56 ekor jantan

Atas kerja samanya, kami mengucapkan terima kasih dan mohon maaf jika dalam pelayanannya banyak kekurangan.

Surakarta, 23 Mei 2013

Hormat kami



ABIMANYU FARM

Sigit Pramono

Lampiran 3. Prosedur pengujian LDL



LDL Precipitant

Precipitation reagent for in vitro determination of LDL-Cholesterol with the CHOD-PAP method by photometric systems

Order Information

| Cat. No. | Kit size |
|------------------|---------------------------------|
| 1 4330 99 83 885 | 250 mL Precipitation reagent |
| 1 1350 99 83 021 | R 5 x 25 mL + 1 x 3 mL Standard |
| 1 1350 99 83 026 | R 6 x 100 mL |
| 1 1350 99 83 023 | R 1 x 1000 mL |
| 1 1300 99 83 030 | 6 x 3 mL Standard |

Principle

Low density lipoproteins (LDL) are precipitated by addition of heparin. High density lipoproteins (HDL) and very low density lipoproteins (VLDL) remain in the supernatant after centrifugation and are measured enzymatically by the CHOD-PAP method. The concentration of LDL cholesterol is calculated as the difference of total cholesterol and cholesterol in the supernatant.

Reagents

Concentrations of the reagents

| | |
|----------------|-------------|
| Heparin | 100 000 U/L |
| Sodium citrate | 64 mmol/L |

Storage instructions and reagent stability

The precipitant is stable up to the end of the indicated month of expiry, if stored at 2 - 8 °C and contamination is avoided. The standard is stable up to the end of the indicated month of expiry, if stored at 2 - 25 °C.

Warnings and precautions

Please refer to the safety data sheets and take the necessary precautions for the use of laboratory reagents.

Waste management

Please refer to local legal requirements.

Reagent Preparation

The precipitant is ready to use.

Material required but not provided

NaCl-Solution 9 g/L
General laboratory equipment

Specimen

Serum

| | | | |
|----------------|----------|----|------------|
| Stability [5]: | 7 days | at | 20 - 25 °C |
| | 7 days | at | 4 - 8 °C |
| | 3 months | at | -20 °C |

Discard contaminated specimens!

Assay procedure

Precipitation

| | |
|--|---------|
| Sample | 100 µL |
| Precipitating reagent | 1000 µL |
| Mix and incubate for 15 min. at room temperature, then centrifuge for 20 min. at 2500 g. Within one hour after centrifugation transfer of 100 µL of the clear supernatant to the reaction solution for the determination of cholesterol. | |

The cholesterol standard has to be diluted 1 + 10 with NaCl (9 g/L). After dilution the standard is treated like the supernatant.

Cholesterol determination

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

| | Standard | Sample |
|--|----------|---------|
| Supernatant | - | 100 µL |
| Standard | 100 µL | - |
| Cholesterol reagent | 1000 µL | 1000 µL |
| Mix and incubate 10 min. at room temperature or 5 min at 37 °C, read absorbance of the sample for the standard within 45 min. against reagent blank. | | |

Calculation

Cholesterol in supernatant

$$\text{Cholesterol in supernatant [mg/dL]} = \frac{\Delta E \text{ Sample}}{\Delta E \text{ Standard}} \cdot \text{Conc. Standard [mg/dL]}$$

The standard concentration is the concentration of the total cholesterol in the cholesterol standard solution.

LDL Cholesterol

$$\text{LDL-Cholesterol [mg/dL]} = \text{total cholesterol [mg/dL]} - \text{Cholesterol in the supernatant [mg/dL]}$$

Controls

For internal quality control TruLab N and P or TruLab L controls should be assayed with each batch of samples.

| | Cat. No. | Kit size |
|----------|------------------|-----------|
| TruLab N | 5 9000 99 83 062 | 20 x 5 mL |
| | 5 9000 99 83 061 | 6 x 5 mL |
| TruLab P | 5 9050 99 83 062 | 20 x 5 mL |
| | 5 9050 99 83 061 | 6 x 5 mL |
| TruLab L | 5 9020 99 83 065 | 3 x 3 mL |

Lampiran 4. Herba kate mas (*Euphorbia heterophylla* L.)



Gambar 1. Tanaman kate mas

Lampiran 5. Serbuk kate mas dan simvastatin

Gambar 2a. Serbuk kate mas



Gambar 2b. Serbuk simvastatin

Lampiran 6. Alat *moisture balance* dan pembuatan serbuk



Gambar 3a. Moisture balance



Gambar 3b. Ayakan



Gambar 3c. Alat penggiling

Lampiran 7. Alat Pembuat ekstrak



Gambar 4a. Botol maserasi



Gambar 4b. Corong Buchner



Gambar 4c. Evaporator

Lampiran 8. Ekstrak herba kate mas dan sediaan uji

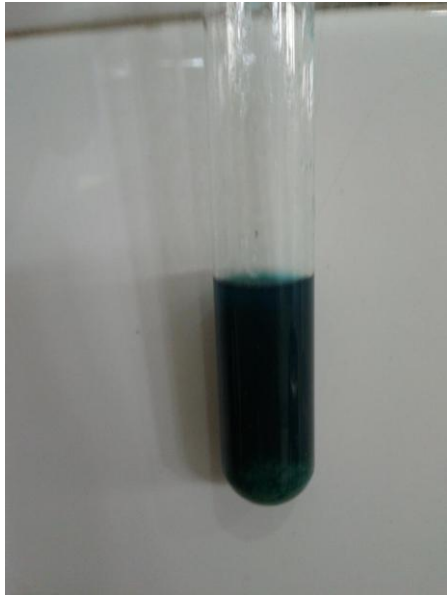
Gambar 5a. Ekstrak etanolik kate mas



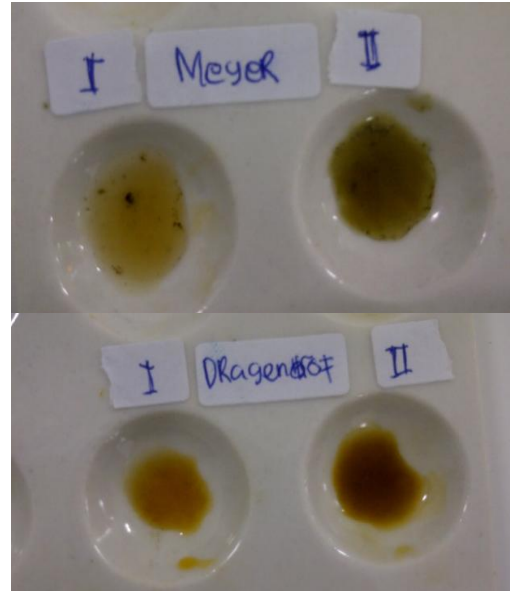
Gambar 5b. sediaan kate mas

Lampiran 9. Hasil identifikasi kandungan kimia serbuk dan ekstrak herba kate mas

A. Hasil identifikasi serbuk herba kate mas



Gambar 6a. Uji Tanin



Gambar 6c. Uji Alkaloid



Gambar 6c. Uji Flavonoid



Gambar 6d. Uji Saponin

B. Hasil identifikasi ekstrak herba kate mas



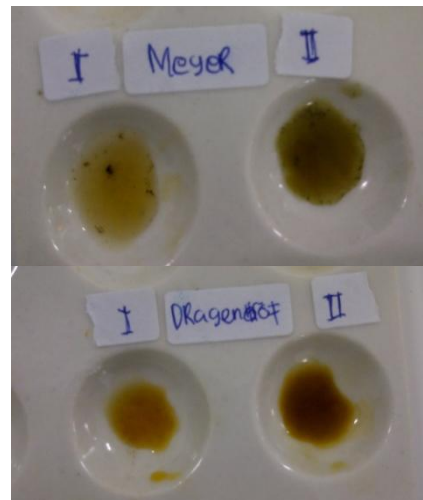
Identifikasi flavonoid



Identifikasi tanin



Identifikasi saponin



Identifikasi alkaloid

Lampiran 10. Hewan uji dan pengambilan darah



Gambar 7. Pengambilan darah tikus

Lampiran 11. Alat pengukuran kadar LDL

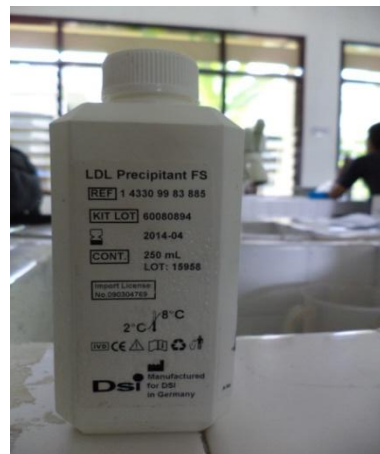
Gambar 8a. Alat sentrifuge

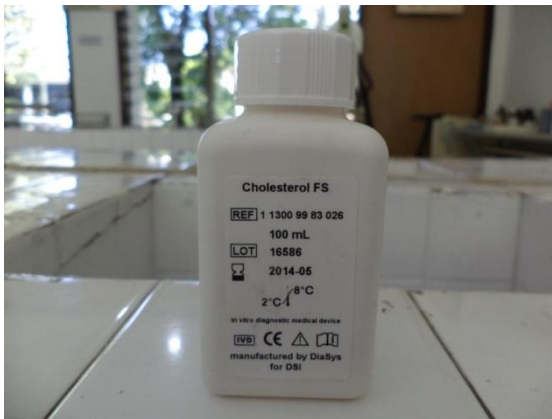


Gambar 8b. mixture



Gambar 8c. Mikropipette

Gambar 8d. Reagen LDL *precipitant*



Gambar 8e. Reagen kolesterol



Gambar 8f. Standart kolesterol



Gambar 8g. Fotometer StarDust

Lampiran 12. Perhitungan rendemen hasil pembuatan serbuk kate mas**(*Euphorbia heterophylla* L.)**

| Berat basah (gram) | Berat kering (gram) | Prosentase (% b/b) |
|--------------------|---------------------|--------------------|
| 15000 | 3650 | 24,3 % |

$$\begin{aligned}\text{Rendemen} &= \frac{\text{bobot kering (gram)}}{\text{bobot basah (gram)}} \times 100\% \\ &= \frac{3650 \text{ gram}}{15000 \text{ gram}} \times 100\% \\ &= 24,3 \%\end{aligned}$$

Lampiran 13. Perhitungan rendemen hasil pembuatan ekstrak etanol herba kate mas (*Euphorbia heterophylla* L.)

| Bobot serbuk (gram) | Bobot ekstrak (gram) | Rendemen (% b/b) |
|---------------------|----------------------|------------------|
| 2400 | 187,75 | 7,82 |

$$\begin{aligned}\text{Rendemen} &= \frac{\text{bobot ekstrak (gram)}}{\text{bobot serbuk (gram)}} \times 100\% \\ &= \frac{187,75 \text{ gram}}{2400 \text{ gram}} \times 100\% \\ &= 7,82 \%\end{aligned}$$

Lampiran 14. Perhitungan penetapan susut pengeringan sebuk herba kate mas (*Euphorbia heterophylla* L.)

| Simplisia | Penimbangan | Susut pengeringan (%) |
|------------------|--------------------|------------------------------|
| Herba kate mas | 2,0 gram | 6 |
| | 2,0 gram | 5 |
| | 2,0 gram | 5,5 |
| Rata-rata | | 5,5 |

$$\begin{aligned} \text{Rata-rata penetapan susut pengeringan serbuk herba kate mas} &= \frac{6\% + 5\% + 5,5\%}{5} \\ &= 5,5\% < 10\% \end{aligned}$$

Perhitungan penetapan susut pengeringan ekstrak kental herba kate mas

| Simplisia | Penimbangan (gram) | Susut pengeringan (%) |
|--|---------------------------|------------------------------|
| Ekstrak kental herba kate mas (<i>Euphorbia heterophylla</i> L.) | 2,00 | 1 |
| | 2,00 | 1,5 |
| | 2,00 | 0,5 |
| Rata-rata | | 1 |

$$\begin{aligned} \text{Rata-rata penetapan susut pengeringan ekstrak kental} &= \frac{1\% + 1,5\% + 0,5\%}{3} \\ &= 1\% \end{aligned}$$

Lampiran 15. Pembuatan larutan stock CMC

Suspensi CMC 0,1% = 0,1 g / 100 ml

= 100 mg / 100 ml

Ditimbang 100 mg CMC dilarutkan dengan air suling sampai 100 ml

Lampiran 16. Penentuan dosis sediaan untuk obat simvastatin

Untuk obat simvastatin 20 mg konversi dosis ke manusia yang berat badannya 70 kg terhadap tikus yang berat badannya 200 gram = 0,018 (D.R. Laurence 1964).

$$\text{Pemakaian untuk 1 hari} = 1 \times 20 \text{ mg} = 20 \text{ mg}$$

$$\text{Dosis tikus} = 20 \text{ mg} \times 0,018 = 0,36 \text{ mg}/200 \text{ g BB tikus}$$

$$\begin{aligned} \text{Larutan stock } 0,036\% &= 0,036 \text{ g}/100 \text{ ml} \\ &= 36 \text{ mg}/100 \text{ ml} \\ &= 0,36 \text{ mg}/\text{ml} \end{aligned}$$

Bobot tiap tablet yang berisi 20 mg simvastatin adalah 0,199 g

$$\begin{aligned} \text{Peengambilan serbuk} &= \frac{\text{dosis tikus}}{\text{dosis simvastatin}} \times \text{bobot tablet} \\ &= \frac{0,36}{20} \times 0,199 \text{ g} \\ &= \frac{0,36}{20} \times 199 \text{ mg} \\ &= 3,583 \text{ mg} \end{aligned}$$

Menggerus 1 tablet simvastatin dan diambil sejumlah 3,583 mg kemudian dilarutkan dalam suspensi CMC 0,1% sampai volume 100 ml, dan selanjutnya digunakan sebagai larutan stock.

$$\begin{aligned} \text{Volume pemberian} &= \frac{0,36}{0,36} \times 1 \text{ ml} \\ &= 1 \text{ ml} \end{aligned}$$

Lampiran 17. Perhitungan volume pemberian ekstrak herba kate mas

Dosis yang telah teruji berdasarkan berdasarkan penelitian sebelumnya pada penggunaan *Euphorbia hirta* untuk tikus hiperlipidemia adalah 400 mg/kg BB.

A. Dosis 100 mg / kg BB atau 20 mg/ 200 g BB tikus

$$\begin{aligned} \text{Larutan stock } 2 \% &= 2 \text{ g} / 100 \text{ ml} \\ &= 2000 \text{ mg} / 100 \text{ ml} \\ &= 20 \text{ mg} / \text{ml} \\ \text{Volume pemberian} &= \frac{20 \text{ mg}}{20 \text{ mg}} \times 1 \text{ ml} \\ &= 1 \text{ ml} \end{aligned}$$

Melarutkan CMC 0,1% dengan air suling ad 100 ml, kemudian menimbang ekstrak kental herba kate mas 2 g di larutkan dengan suspensi CMC sedikit demi sedikit dan setelah larut masukkan dalam labu takar 100 ml sampai tanda batas.

B. Dosis 200 mg / kg BB atau 40 mg/ 200 g BB tikus

$$\begin{aligned} \text{Larutan stock } 4 \% &= 4 \text{ g} / 100 \text{ ml} \\ &= 4000 \text{ mg} / 100 \text{ ml} \\ &= 40 \text{ mg} / \text{ml} \\ \text{Volume pemberian} &= \frac{40 \text{ mg}}{40 \text{ mg}} \times 1 \text{ ml} \\ &= 1 \text{ ml} \end{aligned}$$

Melarutkan CMC 0,1% dengan air suling ad 100 ml, kemudian menimbang ekstrak kental herba kate mas 4 g di larutkan dengan suspensi CMC sedikit demi sedikit dan setelah larut masukkan dalam labu takar 100 ml sampai tanda batas.

C. Dosis 400 mg / kg BB atau 80 mg/ 200 g BB tikus

$$\begin{aligned} \text{Larutan stock } 8 \% &= 8 \text{ g} / 100 \text{ ml} \\ &= 8000 \text{ mg} / 100 \text{ ml} \\ &= 80 \text{ mg} / \text{ml} \\ \text{Volume pemberian} &= \frac{80 \text{ mg}}{80 \text{ mg}} \times 1 \text{ ml} \\ &= 1 \text{ ml} \end{aligned}$$

Melarutkan CMC 0,1% dengan air suling ad 100 ml, kemudian menimbang ekstrak kental herba kate mas 8 g di larutkan dengan larutan CMC sedikit demi sedikit dan setelah larut masukkan dalam labu takar 100 ml sampai tanda batas.

D. Dosis 600 mg / kg BB atau 120 mg/ 200 g BB tikus

$$\begin{aligned} \text{Larutan stock } 12 \% &= 12 \text{ g} / 100 \text{ ml} \\ &= 12000 \text{ mg} / 100 \text{ ml} \\ &= 120 \text{ mg} / \text{ml} \end{aligned}$$

$$\begin{aligned} \text{Volume pemberian} &= \frac{120 \text{ mg}}{120 \text{ mg}} \times 1 \text{ ml} \\ &= 1 \text{ ml} \end{aligned}$$

Melarutkan CMC 0,1% dengan air suling ad 100 ml, kemudian menimbang ekstrak kental herba kate mas 12 g di larutkan dengan larutan CMC sedikit demi sedikit dan setelah larut masukkan dalam labu takar 100 ml sampai tanda batas.

E. Dosis 800 mg / kg BB atau 160 mg/ 200 g BB tikus

$$\begin{aligned} \text{Larutan stock 16 \%} &= 16 \text{ g / 100 ml} \\ &= 16000 \text{ mg / 100 ml} \\ &= 160 \text{ mg / ml} \end{aligned}$$

$$\begin{aligned} \text{Volume pemberian} &= \frac{160 \text{ mg}}{160 \text{ mg}} \times 1 \text{ ml} \\ &= 1 \text{ ml} \end{aligned}$$

Melarutkan CMC 0,1% dengan air suling ad 100 ml, kemudian menimbang ekstrak kental herba kate mas 16 g di larutkan dengan larutan CMC sedikit demi sedikit dan setelah larut masukkan dalam labu takar 100 ml sampai tanda batas.

| Tikus perlakuan | BB rata-rata (g) | Dosis | Vol. pemberian |
|------------------------|-------------------------|---------------|-----------------------|
| Kelompok I | 199,2 | 100 mg/ kg BB | 0,996 ml |
| Kelompok II | 199,4 | 200 mg/ kg BB | 0,9997 ml |
| Kelompok III | 199 | 400 mg/ kg BB | 0,995 ml |
| Kelompok IV | 200 | 600 mg/ kg BB | 1 ml |
| Kelompok V | 199 | 800 mg/ kg BB | 0,995 ml |

Lampiran 18. Hasil pengukuran kadar LDL serum darah tikus

| Kelompok | hari ke-0 (mg/dl) | hari ke-7 (mg/dl) | hari ke-21 (mg/dl) | Selisih hari ke-0 dan hari ke-7 | Selisih hari ke-7 dan hari ke-21 |
|-----------|----------------------------|---------------------------------|----------------------------|---------------------------------------|--|
| Normal | 22 21 22 39 29 | 42 43 26 28 39 | 33 40 30 30 32 | 20 22 4 -11 10 | 9 3 -4 -2 7 |
| Rata-rata | 26,6± 7,64 | 35,6± 8,02 | 33±4,12 | 9 ± 13,38 | 2,6 ± 5,59 |
| Negatif | 51 47 30 37 32 | 106 111 115 118 118 | 72 90 83 91 84 | 55 64 85 81 86 | 34 21 32 27 34 |
| Rata-rata | 39,4± 9,24 | 113,6± 5,13 | 84± 7,58 | 74,2±13,92 | 29,6± 5,59 |
| Positif | 31 54 57 28 32 | 94 86 83 135 69 | 34 33 33 31 31 | 63 32 26 107 37 | 60 53 50 104 38 |
| Rata-rata | 40,4± 13,90 | 94,2± 24,95 | 32,4±1,34 | 53 ± 33,32 | 61 ± 25,32 |
| Dosis I | 23 33 31 21 30 | 105 98 108 76 54 | 31 30 33 26 21 | 82 65 77 55 24 | 74 68 75 50 33 |
| Rata-rata | 27,6± 5,27 | 88,2± 22,85 | 28,2± 4,76 | 60,6 ± 23,0 | 60 ± 18,12 |
| Dosis II | 65 22 22 27 35 | 114 118 102 102 105 | 41 36 39 49 37 | 49 96 80 75 70 | 73 82 63 53 68 |
| Rata-rata | 34,2± 18,02 | 107,6± 7,36 | 40,4±5,18 | 74 ± 17,04 | 67,8±10,85 |
| Dosis III | 41 42 23 32 26 | 103 107 109 89 111 | 41 32 31 22 36 | 62 65 86 57 85 | 62 75 78 67 75 |
| Rata-rata | 32,8± 8,58 | 103,8± 8,79 | 32,4±7,02 | 71 ± 13,55 | 71,4 ± 6,66 |
| Dosis IV | 39 37 20 34 18 | 67 95 109 107 109 | 23 23 21 25 22 | 28 58 89 73 91 | 44 72 88 82 87 |

| | | | | | |
|-----------|------------|-------------|-----------|-------------|-------------|
| Rata-rata | 29,6± 9,86 | 97,4± 17,97 | 22,8±1,48 | 67,8± 25,96 | 74,6± 18,24 |
| Dosis V | 25 | 104 | 23 | 79 | 81 |
| | 56 | 108 | 25 | 52 | 83 |
| | 28 | 102 | 22 | 74 | 80 |
| | 63 | 93 | 21 | 30 | 72 |
| | 30 | 96 | 30 | 66 | 66 |
| Rata-rata | 40,4±17,70 | 100,6±6,07 | 24,2±3,56 | 60,2± 19,73 | 76,4± 7,16 |

Lampiran 19. Hasil statistik kadar LDL awal (T0)

NPar Tests

Descriptive Statistics

| | N | Mean | Std. Deviation | Minimum | Maximum |
|----|----|-------|----------------|---------|---------|
| T0 | 40 | 33.88 | 12.229 | 18 | 65 |

One-Sample Kolmogorov-Smirnov Test

| | | T0 |
|----------------------------------|----------------|--------|
| N | | 40 |
| Normal Parameters ^{a,b} | Mean | 33.88 |
| | Std. Deviation | 12.229 |
| Most Extreme Differences | Absolute | .161 |
| | Positive | .161 |
| | Negative | -.103 |
| Kolmogorov-Smirnov Z | | 1.018 |
| Asymp. Sig. (2-tailed) | | .251 |

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-----------|----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| | | | | | normal | 5 | | |
| negatif | 5 | 39.40 | 9.236 | 4.130 | 27.93 | 50.87 | 30 | 51 |
| positif | 5 | 40.40 | 13.903 | 6.218 | 23.14 | 57.66 | 28 | 57 |
| Dosis I | 5 | 27.60 | 5.273 | 2.358 | 21.05 | 34.15 | 21 | 33 |
| Dosis II | 5 | 34.20 | 18.019 | 8.059 | 11.83 | 56.57 | 22 | 65 |
| Dosis III | 5 | 32.80 | 8.585 | 3.839 | 22.14 | 43.46 | 23 | 42 |
| Dosis IV | 5 | 29.60 | 9.864 | 4.411 | 17.35 | 41.85 | 18 | 39 |
| Dosis V | 5 | 40.40 | 17.700 | 7.916 | 18.42 | 62.38 | 25 | 63 |
| Total | 40 | 33.88 | 12.229 | 1.934 | 29.96 | 37.79 | 18 | 65 |

Test of Homogeneity of Variances

T0

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 2.709 | 7 | 32 | .052 |

ANOVA

T0

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|-------|------|
| Between Groups | 1137.575 | 7 | 162.511 | 1.108 | .382 |
| Within Groups | 4694.800 | 32 | 146.713 | | |
| Total | 5832.375 | 39 | | | |

Post Hoc Tests

Homogeneous Subsets

T0

Student-Newman-Keuls^a

| Kelompok perlakuan | N | Subset for alpha = 0.05 |
|--------------------|---|----------------------------|
| | | 1 |
| normal | 5 | 26.60 |
| Dosis I | 5 | 27.60 |
| Dosis IV | 5 | 29.60 |
| Dosis III | 5 | 32.80 |
| Dosis II | 5 | 34.20 |
| negatif | 5 | 39.40 |
| positif | 5 | 40.40 |
| Dosis V | 5 | 40.40 |
| Sig. | | .624 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5.000.

Lampiran 20. Hasil statistik peningkatan kadar LDL setelah pemberian diet tinggi lemak

NPar Tests

Descriptive Statistics

| | N | Mean | Std. Deviation | Minimum | Maximum |
|-----|----|-------|----------------|---------|---------|
| LDL | 40 | 58.73 | 27.865 | -11 | 107 |

One-Sample Kolmogorov-Smirnov Test

| | | LDL |
|----------------------------------|----------------|--------|
| N | | 40 |
| Normal Parameters ^{a,b} | Mean | 58.73 |
| | Std. Deviation | 27.865 |
| Most Extreme Differences | Absolute | .122 |
| | Positive | .081 |
| | Negative | -.122 |
| Kolmogorov-Smirnov Z | | .771 |
| Asymp. Sig. (2-tailed) | | .593 |

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

LDL

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-----------|----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| normal | 5 | 9.00 | 13.379 | 5.983 | -7.61 | 25.61 | -11 | 22 |
| negatif | 5 | 74.20 | 13.918 | 6.224 | 56.92 | 91.48 | 55 | 86 |
| positif | 5 | 53.00 | 33.324 | 14.903 | 11.62 | 94.38 | 26 | 107 |
| Dosis I | 5 | 60.60 | 23.007 | 10.289 | 32.03 | 89.17 | 24 | 82 |
| Dosis II | 5 | 74.00 | 17.044 | 7.622 | 52.84 | 95.16 | 49 | 96 |
| Dosis III | 5 | 71.00 | 13.546 | 6.058 | 54.18 | 87.82 | 57 | 86 |
| Dosis IV | 5 | 67.80 | 25.956 | 11.608 | 35.57 | 100.03 | 28 | 91 |
| Dosis V | 5 | 60.20 | 19.728 | 8.823 | 35.70 | 84.70 | 30 | 79 |
| Total | 40 | 58.73 | 27.865 | 4.406 | 49.81 | 67.64 | -11 | 107 |

Test of Homogeneity of Variances

LDL

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 1.183 | 7 | 32 | .340 |

ANOVA

LDL

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|-------|------|
| Between Groups | 16084.375 | 7 | 2297.768 | 5.179 | .001 |
| Within Groups | 14197.600 | 32 | 443.675 | | |
| Total | 30281.975 | 39 | | | |

Post Hoc Tests

Homogeneous Subsets

LDL

Student-Newman-Keuls^a

| kelompok perlakuan | N | Subset for alpha = 0.05 | |
|--------------------|---|-------------------------|-------|
| | | 1 | 2 |
| normal | 5 | 9.00 | |
| positif | 5 | | 53.00 |
| Dosis V | 5 | | 60.20 |
| Dosis I | 5 | | 60.60 |
| Dosis IV | 5 | | 67.80 |
| Dosis III | 5 | | 71.00 |
| Dosis II | 5 | | 74.00 |
| negatif | 5 | | 74.20 |
| Sig. | | 1.000 | .688 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5.000.

Lampiran 21. Hasil statistik penurunan kadar LDL setelah perlakuan herba kate mas

NPar Tests

Descriptive Statistics

| | N | Mean | Std. Deviation | Minimum | Maximum |
|-----|----|-------|----------------|---------|---------|
| LDL | 35 | 62.97 | 20.197 | 21 | 104 |

One-Sample Kolmogorov-Smirnov Test

| | | LDL |
|----------------------------------|----------------|--------|
| N | | 35 |
| Normal Parameters ^{a,b} | Mean | 62.97 |
| | Std. Deviation | 20.197 |
| Most Extreme Differences | Absolute | .131 |
| | Positive | .096 |
| | Negative | -.131 |
| Kolmogorov-Smirnov Z | | .775 |
| Asymp. Sig. (2-tailed) | | .585 |

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

LDL

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-----------|----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| negatif | 5 | 29.60 | 5.595 | 2.502 | 22.65 | 36.55 | 21 | 34 |
| positif | 5 | 61.00 | 25.318 | 11.323 | 29.56 | 92.44 | 38 | 104 |
| Dosis I | 5 | 60.00 | 18.125 | 8.106 | 37.50 | 82.50 | 33 | 75 |
| Dosis II | 5 | 67.80 | 10.849 | 4.852 | 54.33 | 81.27 | 53 | 82 |
| Dosis III | 5 | 71.40 | 6.656 | 2.977 | 63.14 | 79.66 | 62 | 78 |
| Dosis IV | 5 | 74.60 | 18.243 | 8.158 | 51.95 | 97.25 | 44 | 88 |
| Dosis V | 5 | 76.40 | 7.162 | 3.203 | 67.51 | 85.29 | 66 | 83 |
| Total | 35 | 62.97 | 20.197 | 3.414 | 56.03 | 69.91 | 21 | 104 |

Test of Homogeneity of Variances

LDL

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 1.839 | 6 | 28 | .127 |

ANOVA

LDL

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|-------|------|
| Between Groups | 7681.371 | 6 | 1280.229 | 5.793 | .001 |
| Within Groups | 6187.600 | 28 | 220.986 | | |
| Total | 13868.971 | 34 | | | |

Post Hoc Tests

Homogeneous Subsets

LDL

Student-Newman-Keuls^a

| kelompok perlakuan | N | Subset for alpha = 0.05 | |
|--------------------|---|-------------------------|-------|
| | | 1 | 2 |
| negatif | 5 | 29.60 | |
| Dosis I | 5 | | 60.00 |
| positif | 5 | | 61.00 |
| Dosis II | 5 | | 67.80 |
| Dosis III | 5 | | 71.40 |
| Dosis IV | 5 | | 74.60 |
| Dosis V | 5 | | 76.40 |
| Sig. | | 1.000 | .516 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5.000.

Lampiran 22. Hasil statistik kadar LDL (T2)

NPar Tests

Descriptive Statistics

| | N | Mean | Std. Deviation | Minimum | Maximum |
|----|----|-------|----------------|---------|---------|
| T2 | 40 | 37.17 | 19.194 | 21 | 91 |

One-Sample Kolmogorov-Smirnov Test

| | | T2 |
|----------------------------------|----------------|--------|
| N | | 40 |
| Normal Parameters ^{a,b} | Mean | 37.17 |
| | Std. Deviation | 19.194 |
| Most Extreme Differences | Absolute | .271 |
| | Positive | .271 |
| | Negative | -.200 |
| Kolmogorov-Smirnov Z | | 1.714 |
| Asymp. Sig. (2-tailed) | | .055 |

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-----------|----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| | | | | | | | | |
| normal | 5 | 33.00 | 4.123 | 1.844 | 27.88 | 38.12 | 30 | 40 |
| negatif | 5 | 84.00 | 7.583 | 3.391 | 74.58 | 93.42 | 72 | 91 |
| positif | 5 | 32.40 | 1.342 | .600 | 30.73 | 34.07 | 31 | 34 |
| Dosis I | 5 | 28.20 | 4.764 | 2.131 | 22.28 | 34.12 | 21 | 33 |
| Dosis II | 5 | 40.40 | 5.177 | 2.315 | 33.97 | 46.83 | 36 | 49 |
| Dosis III | 5 | 32.40 | 7.021 | 3.140 | 23.68 | 41.12 | 22 | 41 |
| Dosis IV | 5 | 22.80 | 1.483 | .663 | 20.96 | 24.64 | 21 | 25 |
| Dosis V | 5 | 24.20 | 3.564 | 1.594 | 19.78 | 28.62 | 21 | 30 |
| Total | 40 | 37.17 | 19.194 | 3.035 | 31.04 | 43.31 | 21 | 91 |

Test of Homogeneity of Variances

T2

| Levene Statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 1.364 | 7 | 32 | .254 |

ANOVA

T2

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 13607.775 | 7 | 1943.968 | 81.851 | .000 |
| Within Groups | 760.000 | 32 | 23.750 | | |
| Total | 14367.775 | 39 | | | |

Post Hoc Tests

Homogeneous Subsets

T2

Student-Newman-Keuls^a

| kelompok perlakuan | N | Subset for alpha = 0.05 | | | |
|--------------------|---|-------------------------|-------|-------|-------|
| | | 1 | 2 | 3 | 4 |
| Dosis IV | 5 | 22.80 | | | |
| Dosis V | 5 | 24.20 | 24.20 | | |
| Dosis I | 5 | 28.20 | 28.20 | | |
| positif | 5 | | 32.40 | 32.40 | |
| Dosis III | 5 | | 32.40 | 32.40 | |
| normal | 5 | | 33.00 | 33.00 | |
| Dosis II | 5 | | | 40.40 | |
| negatif | 5 | | | | 84.00 |
| Sig. | | .202 | .054 | .064 | 1.000 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5.000.