

## **BAB V**

### **KESIMPULAN DAN SARAN**

#### **A. Kesimpulan**

Kesimpulan yang dapat diperoleh dari penelitian ini adalah sebagai berikut:

1. Infus daun kersen dapat meningkatkan aktivitas diuretik pada tikus putih jantan galur wistar.
2. Peningkatan kadar infus daun kersen berpengaruh terhadap volume urin untuk dosis yang paling efektif 24% b/v.

#### **B. Saran**

1. Perlu dilakukan penelitian lebih lanjut tentang senyawa apa saja yang berperan dalam diuretik.
2. Perlu dilakukan penelitian lebih lanjut untuk mengetahui efek samping pada penggunaan infus daun kersen dalam penggunaan jangka panjang.

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## Lampiran 1. Surat keterangan identifikasi



No : 208/DET/UPT-LAB/08/1/2015  
Hal : Surat Keterangan Determinasi Tumbuhan

Menerangkan bahwa :

Nama : Mooriena Dianingtyas  
NIM : 15120894 B  
Fakultas : Farmasi Universitas Setia Budi

Telah mendeterminasikan tumbuhan : **Talok/Kersen (*Muntingia calabura L.*)**

Determinasi berdasarkan Steenis: FLORA

1b – 2b – 3b – 4b – 6b – 7b – 9b – 10b – 11b – 12b – 13b – 15a. Golongan 8 – 109b – 119b – 120b – 128b – 129b – 135b – 136b – 139b – 140b – 142b – 143b – 146b – 154b – 155b – 156b – 162b – 163b – 167b – 169b – 171b – 177b – 179a – 180b – 182b – 183b – 184b – 185b – 186b. Familia 74. Tiliaceae. 1a. 1. *Muntingia*. *Muntingia calabura L.*

Deskripsi :

Habitus : Pohon, menahun, tinggi 2 - 10 m.  
Batang : Berkayu, bulat percabangan simpodial, tegak, ranting diselimitirapatoleh rambut biasa yang halus dan oleh rambut kelenjar.  
Daun : Tunggal, berseling, helaian daun tidak sama sisi, jorong, panjang 4,5-14 cm, lebar 1,5-4 cm, ujung dan pangkal runcing, tepi bergerigi, permukaan bawah berambut rapat, tangkai pendek, tulang daun menyirip, hijau.  
Bunga : 1-3 menjadi satu di ketiak daun, berbilangan 5, berkelamin 2. Kelopak berbagi dalam, taju meruncing menjadi bentuk benang, berambut halus. Daun mahkota tepi rata, bulat telur terbalik, gundul, putih, panjang 8-11 mm. Benangsari banyak, terutama pada tonjolan dasar bunga. Bakal buah bertangkai pendek, gundul, beruang 5-6. Kepala sari hampir duduk, berlekuk 5-6. Tonjolan dasar bunga bentuk cawan.  
Buah : Buni, dimahkotai oleh tangkai putik yang tetap, akhirnya merah, panjang 1 cm.  
Akar : Tunggang.

Pustaka : Steenis C.G.G.J., Bloembergen S. Eyma P.J. (1978): *FLORA*, PT Pradnya Paramita. Jl. Kebon Sirih 46. Jakarta Pusat, 1978.

Surakarta, 10 Januari 2015  
Tim determinasi  
  
Dra. Kartinah Wiryosoendjojo, SU.

## Lampiran 2. Surat pembelian 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

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Yang bertanda tangan di bawah ini:

Nama : Sigit Pramono

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

Nama : Mooriena Dianingtyas  
 Nim : 15120894 B  
 Institusi : Universitas Setia Budi Surakarta

Merupakan hewan uji dengan spesifikasi sebagai berikut:

Jenis hewan : Tikus Wistar  
 Umur : 2-3 bulan  
 Jenis kelamin : Jantan  
 Jumlah : 25 ekor  
 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, 05 Mei 2015

Hormat kami

  
 Sigit Pramono  
 "ABIMANYU FARM"

### Lampiran 3. Foto daun kersen

#### Daun kersen



#### Serbuk daun kersen

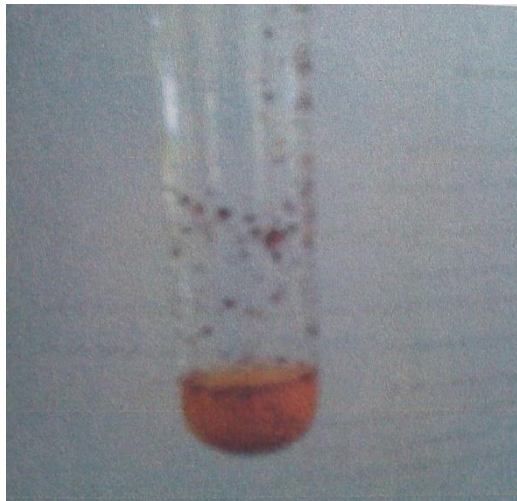


#### Infus daun kersen

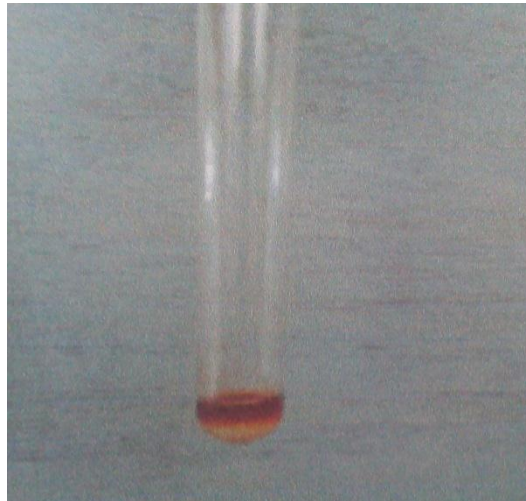


**Lampiran 4. Foto identifikasi dengan uji tabung kandungan kimia daun kersen**

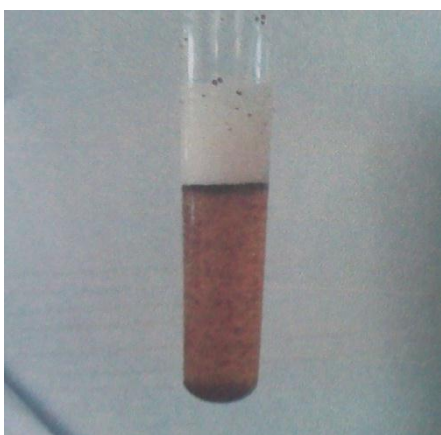
**Flavonoid serbuk**



**Flavonoid infus**



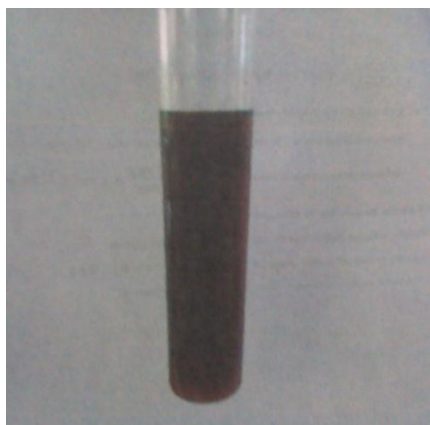
**Saponin serbuk**



**Saponin infus**



**Polivenol serbuk**



**Polivenol infus**



**Lampiran 5. Foto hewan uji dan alat yang digunakan dalam percobaan**



**Hewan percobaan**



**Menghitung volume urin**





**Timbangan digital**



**Timbangan hewan uji**

**Lampiran 6. Hasil rendemen daun kersen**

No	Bobot basah (g)	Bobot kering (g)	Rendemen (%)
<b>1</b>	<b>1700</b>	<b>170</b>	<b>10</b>
	<b>Presentase rendemen</b>		<b>10</b>

Rendemen infus daun kersen  $\frac{\text{beratkering}}{\text{beratbasah}} \times 100\%$

$$\frac{1700}{170} \times 100\% = 1000\% \text{ b/b}$$

### Lampiran 7. Hasil penetapan susut pengeringan daun kersen

Serbuk daun kersen (g)	% kandungan lembab
2,00	7,8
2,00	7,6
2,00	7,4
<b>Prosentase rata-rata kadar air</b>	<b>7,6</b>

Analisa statistik yang dilakukan adalah:

$$SD = \frac{\sqrt{\sum |x - \bar{x}|^2}}{n-1}$$

Ket:

$x - \bar{x}$  = deviasi

n = banyaknya percobaan

SD = standar deviasi

No	X	$\bar{X}$	$ X - \bar{X} $	$ X - \bar{X} ^2$
1	7,8		0,2	0,04
2	7,6	7,6	0	0
3	7,4		0,2	0,04
				<b><math>\Sigma = 0,08</math></b>

$$SD = \frac{\sqrt{\sum |x - \bar{x}|^2}}{n-1}$$

$$SD = \frac{\sqrt{0,08}}{3-1} = 0,141$$

$$2 \times SD = 0,28$$

Penolakan data menggunakan rumus  $|x - \bar{x}| > 2 SD$

Data yang dicurigai (x) adalah 7,4

$$\text{Rata-rata} = \frac{7,8+7,6}{2} = 7,5$$

Kriteria penolakan :  $7,4 - 7,5 = -0,1 < 0,28$

Sehingga data diterima

Perhitungan rata-rata susut pengeringan serbuk daun kersen adalah:

$$\frac{7,8+7,6+7,4}{3} = 7,6\% \text{ Jadi rata-rata persentase kadar lembab daun kersen adalah}$$

7,6 %

### Lampiran 8. Hasil perhitungan dosis

- Perhitungan dosis furosemid

Dosis untuk manusia 40mg

Dosis konversi untuk manusia 70 kg ke tikus 200 gram

Dosis tikus 200 gram = 40 mg x 0,018 = 0,72mg

$$\text{Konsentrasi obat} = \frac{0,72}{2,5} = \frac{14,4 \text{ mg}}{50 \text{ ml}}$$

$$\text{Larutan stock} = \frac{0,72}{2,5} = \frac{14,4 \text{ mg}}{50 \text{ ml}}$$

Diketahui 1 tablet mengandung 40mg furosemid dan setelah ditimbang berat 80 mg

$$\text{Jumlah tablet yang harus ditimbang} = \frac{14,4 \text{ mg}}{40 \text{ mg}} \times 80 \text{ mg} = 28,8 \text{ mg}$$

$$= 28,8 \text{ mg} / 50 \text{ ml}$$

$$\text{Untuk tikus dengan berat 200 gram} = \frac{200 \text{ gram}}{200 \text{ gram}} \times 0,72 = 0,72$$

$$1. \frac{197 \text{ gram}}{200 \text{ gram}} \times 0,72 = 0,709 \text{ mg}$$

$$2. \frac{197 \text{ gram}}{200 \text{ gram}} \times 0,72 = 0,709 \text{ mg}$$

$$3. \frac{195 \text{ gram}}{200 \text{ gram}} \times 0,72 = 0,702 \text{ mg}$$

$$4. \frac{198 \text{ gram}}{200 \text{ gram}} \times 0,72 = 0,712 \text{ mg}$$

$$5. \frac{208 \text{ gram}}{200 \text{ gram}} \times 0,72 = 0.7488 \text{ mg}$$

Volume penyuntikan

$$1. \frac{50}{14,4} \times 0,709 = 2,46 \text{ ml}$$

$$2. \frac{50}{14,4} \times 0,709 = 2,46 \text{ ml}$$

$$3. \frac{50}{14,4} \times 0,702 = 2,43 \text{ ml}$$

$$4. \frac{50}{14,4} \times 0,712 = 2,47 \text{ ml}$$

$$5. \frac{50}{14,4} \times 0.7488 = 2,6 \text{ ml}$$

- Pemberiandosis 1 (6%)

$$\text{Larutan stock } 6\% = \frac{6}{100} \times 50 = 3 \text{ g}$$

Volume penyuntikan

$$1. \frac{50}{3} \times 0.1188 = 1,98 \text{ ml}$$

$$2. \frac{50}{3} \times 0.1182 = 1,97 \text{ ml}$$

$$3. \frac{50}{3} \times 0.1188 = 1,98 \text{ ml}$$

$$4. \frac{50}{3} \times 0.1242 = 2,07 \text{ ml}$$

$$5. \frac{50}{3} \times 0.1218 = 2,03 \text{ ml}$$

Dosis untuk tikus 1.  $\frac{3 \text{ g}}{100 \text{ ml}} = \frac{x}{1.98 \text{ ml}} = 0.0594 \text{ g}$

2.  $\frac{3 \text{ g}}{100 \text{ ml}} = \frac{x}{1.97 \text{ ml}} = 0.0591 \text{ g}$

3.  $\frac{3 \text{ g}}{100 \text{ ml}} = \frac{x}{1.98 \text{ ml}} = 0.0594 \text{ g}$

4.  $\frac{3 \text{ g}}{100 \text{ ml}} = \frac{x}{2.07 \text{ ml}} = 0.0621 \text{ g}$

5.  $\frac{3 \text{ g}}{100 \text{ ml}} = \frac{x}{2.03 \text{ ml}} = 0.0609 \text{ g}$

- Pemberian dosis 2 (12%)

Larutan stock 12% =  $\frac{12}{100} \times 50 = 6 \text{ g}$

Volume penyuntikan

1.  $\frac{50}{6} \times 0.2364 = 1,97 \text{ ml}$

2.  $\frac{50}{6} \times 0.2436 = 2,03 \text{ ml}$

3.  $\frac{50}{6} \times 0.2376 = 1,98 \text{ ml}$

4.  $\frac{50}{6} \times 0.2376 = 1,98 \text{ ml}$

5.  $\frac{50}{6} \times 0.2496 = 2,08 \text{ ml}$

Dosis untuk tikus 1.  $\frac{6 \text{ g}}{100 \text{ ml}} = \frac{x}{1.97 \text{ ml}} = 0.1182 \text{ g}$

2.  $\frac{6 \text{ g}}{100 \text{ ml}} = \frac{x}{2.03 \text{ ml}} = 0.1218 \text{ g}$

3.  $\frac{6 \text{ g}}{100 \text{ ml}} = \frac{x}{1.98 \text{ ml}} = 0.1188 \text{ g}$

4.  $\frac{6 \text{ g}}{100 \text{ ml}} = \frac{x}{1.98 \text{ ml}} = 0.1188 \text{ g}$

5.  $\frac{6 \text{ g}}{100 \text{ ml}} = \frac{x}{2.08 \text{ ml}} = 0.1248 \text{ g}$

- Pemberian dosis 3 (24%)

Larutan stock 24% =  $\frac{24}{100} \times 50 = 12 \text{ g}$

Volume penyuntikan

1.  $\frac{50}{12} \times 0.4728 = 1,97 \text{ ml}$

2.  $\frac{50}{12} \times 0.4728 = 1,97 \text{ ml}$

3.  $\frac{50}{12} \times 0.4704 = 1,96 \text{ ml}$

4.  $\frac{50}{12} \times 0.468 = 1,95 \text{ ml}$

5.  $\frac{50}{12} \times 0.4704 = 1,96 \text{ ml}$



Dosis untuk tikus 1.  $\frac{12 \text{ g}}{100 \text{ ml}} = \frac{x}{1.97 \text{ ml}} = 0.2364 \text{ g}$

2.  $\frac{12 \text{ g}}{100 \text{ ml}} = \frac{x}{1.97 \text{ ml}} = 0.2364 \text{ g}$

3.  $\frac{12 \text{ g}}{100 \text{ ml}} = \frac{x}{1.96 \text{ ml}} = 0.2352 \text{ g}$

4.  $\frac{12 \text{ g}}{100 \text{ ml}} = \frac{x}{1.95 \text{ ml}} = 0.234 \text{ g}$

5.  $\frac{12 \text{ g}}{100 \text{ ml}} = \frac{x}{1.96 \text{ ml}} = 0.2352 \text{ g}$

### Lampiran 9. Hasil volume urin tiap jam

1. Jumlah rata-rata urin yang dikeluarkan oleh tikus putih jantan selama 6 jam pada kelompok daun kersen dengan kadar 6% b/v

No	BB	Volpenyuntikan (6%)	1	2	3	4	5	6	Total
1	198	1.98	0.2	0.1	0.7	0.6	0.8	0.1	2.5
2	197	1.97	0.4	0.03	0.06	0.1	0.02	0.8	1.41
3	198	1.98	0.6	0.8	0.1	1	0.7	0.4	3.6
4	207	2.07	0.3	1	0.05	0.7	0.4	0.2	2.65
5	203	2.03	0.1	0.8	0.4	0.3	0.01	0.5	2.11
Rata-Rata			0.32	0.546	0.262	0.54	0.386	0.4	2.454
Total			1.6	2.73	1.31	2.7	1.93	2	12.27

2. Jumlah rata-rata urin yang dikeluarkan oleh tikus putih jantan selama 6 jam pada kelompok daun kersen dengan kadar 12% b/v

No	BB	Volpenyuntikan (12%)	1	2	3	4	5	6	Total
1	197	1.97	0.1	0.3	0.1	0.8	0.06	0.4	1.76
2	203	2.03	0.9	0.7	0.3	1.2	0.2	0.03	3.33
3	198	1.98	0.5	1	0.04	0.5	0.3	0.6	2.94
4	198	1.98	0.07	0.06	0.8	0.7	0.01	0.9	2.54
5	208	2.08	0.05	1.7	0.04	0.3	0.6	1.4	4.09
Rata-Rata			0.324	0.752	0.256	0.7	0.234	0.666	2.932
Total			1.62	3.76	1.28	3.5	1.17	3.33	14.66

3. Jumlah rata-rata urin yang dikeluarkan oleh tikus putih jantan selama 6 jam pada kelompok daun kersen dengan kadar 24% b/v

No	BB	Vol penyuntikan (24%)	1	2	3	4	5	6	Total
1	197	1.97	0.5	0.1	0.6	0.3	0.9	0.4	2.8
2	197	1.97	0.9	0.5	0.6	1.4	0.2	0.7	4.3
3	196	1.96	0.2	1.7	0.01	0.2	0.9	0.5	3.51
4	195	1.95	0.3	0.8	0.5	0.2	1.4	0.08	3.28
5	196	1.96	0.6	0.3	0.4	0.7	0.3	0.4	2.7
Rata-Rata			0.5	0.68	0.422	0.56	0.74	0.416	3.218
Total			2.5	3.4	2.11	2.8	3.7	2.08	16.59

4. Jumlah rata-rata urin yang dikeluarkan oleh tikus putih jantan selama 6 jam pada kelompok Kontrol negatif

No	BB	CMC	1	2	3	4	5	6	Total
1	203	2.5	0.2	0.1	0.5	0.1	0.2	0.3	1.4
2	197	2.5	0.4	0.6	0.01	0.2	0.4	0.6	2.21
3	197	2.5	0.2	0.3	0.3	0.4	0.2	0.5	1.9
4	198	2.5	0.5	0.4	0.07	0.1	0.1	0.2	1.37
5	201	2.5	0.1	0.2	0.1	0.8	0.03	0.2	1.43
Rata-Rata			0.28	0.32	0.196	0.32	0.186	0.36	1.662
Total			1.4	1.6	0.98	1.6	0.93	1.8	8.31

5. Jumlah rata-rata urin yang dikeluarkan oleh tikus putih jantan selama 6 jam pada kelompok Kontrol positif

No	BB	furosemid	1	2	3	4	5	6	Total
1	197	2.46	1.6	0.5	0.8	0.02	0.4	0.2	3.52
2	197	2.46	0.7	0.6	0.1	0.4	0.6	0.05	2.45
3	195	2.43	0.05	0.9	0.5	0.3	0.1	1.8	3.65
4	198	2.47	0.1	0.8	0.04	0.2	1	0.5	2.64
5	208	2.6	1.4	0.5	1.7	0.01	0.6	0.8	5.01
Rata-Rata			0.77	0.66	0.628	0.186	0.54	0.67	3.316
Total			3.85	3.3	3.14	0.93	2.7	3.35	17.27

Rata-rata volume urin

PERLAKUAN	Rata-Rata					
	1	2	3	4	5	6
Daun kersen dengan kadar 6% b/V	0.32	0.546	0.262	0.54	0.386	0.4
Daun kersen dengan kadar 12% b/V	0.324	0.752	0.256	0.7	0.234	0.666
Daun kersen dengan kadar 24% b/V	0.5	0.68	0.422	0.56	0.74	0.416
Kontrol negatif	0.28	0.32	0.196	0.32	0.186	0.36
Kontrol positif	0.77	0.66	0.628	0.186	0.54	0.67

Perhitungan AUC

**Kontrol negatif (Suspensi CMC)**

**Tikus 1**

$$AUC = \frac{Vn - (Vn-1)}{2} \times t_n - (t_n - 1)$$

$$AUC_1 = \frac{0.2 + (-0.8)}{2} \times 1 = -0.3 \text{ ml}$$

$$AUC_2 = \frac{0.3 + (-0.7)}{2} \times 1 = -0.2 \text{ ml}$$

$$AUC_3 = \frac{0.8 + (-0.2)}{2} \times 1 = 0.3 \text{ ml}$$

$$AUC_4 = \frac{0.9 + (-0.1)}{2} \times 1 = 0.4 \text{ ml}$$

$$AUC_5 = \frac{1.1 + 0.1}{2} \times 1 = 0.6 \text{ ml}$$

$$AUC_6 = \frac{1.4 + 0.4}{2} \times 1 = 0.9 \text{ ml}$$

Total = 1.7 ml

**Tikus 2**

$$AUC = \frac{Vn - (Vn-1)}{2} \times t_n - (t_n - 1)$$

$$AUC_1 = \frac{0.4 + (-0.6)}{2} \times 1 = -0.1 \text{ ml}$$

$$AUC_2 = \frac{1 + 0}{2} \times 1 = 0.5 \text{ ml}$$

$$AUC_3 = \frac{1.01 + 0.01}{2} \times 1 = 0.51 \text{ ml}$$

$$AUC_4 = \frac{1.21 + 0.21}{2} \times 1 = 0.71 \text{ ml}$$

$$AUC_5 = \frac{1.61 + 0.61}{2} \times 1 = 1.11 \text{ ml}$$

$$AUC_6 = \frac{2.21 + 1.21}{2} \times 1 = 1.71 \text{ ml}$$

$$\text{Total} = 4.54 \text{ ml}$$

### Tikus 3

$$AUC = \frac{Vn - (Vn - 1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.2 + (-0.8)}{2} \times 1 = -0.3 \text{ ml}$$

$$AUC_2 = \frac{0.5 + (-0.5)}{2} \times 1 = 0 \text{ ml}$$

$$AUC_3 = \frac{0.8 + (-0.2)}{2} \times 1 = 0.3 \text{ ml}$$

$$AUC_4 = \frac{1.2 + 0.2}{2} \times 1 = 0.7 \text{ ml}$$

$$AUC_5 = \frac{1.4 + 0.4}{2} \times 1 = 0.9 \text{ ml}$$

$$AUC_6 = \frac{1.9 + 0.91}{2} \times 1 = 1.4 \text{ ml}$$

$$\text{Total} = 3 \text{ ml}$$

### Tikus 4

$$AUC = \frac{Vn - (Vn - 1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.5 + (-0.5)}{2} \times 1 = 0 \text{ ml}$$

$$AUC_2 = \frac{0.9 + (-0.1)}{2} \times 1 = 0.4 \text{ ml}$$

$$AUC_3 = \frac{0.97 + (0.03)}{2} \times 1 = 0.47 \text{ ml}$$

$$AUC_4 = \frac{1.07 + 0.7}{2} \times 1 = 0.885 \text{ ml}$$

$$AUC_5 = \frac{1.17 + 0.17}{2} \times 1 = 0.67 \text{ ml}$$

$$AUC_6 = \frac{1.37 + 0.37}{2} \times 1 = 0.87 \text{ ml}$$

Total= 3.295 ml

### Tikus 5

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.1 + (-0.9)}{2} \times 1 = -0.4 \text{ ml}$$

$$AUC_2 = \frac{0.3 + (-0.7)}{2} \times 1 = -0.2 \text{ ml}$$

$$AUC_3 = \frac{0.4 + (0.6)}{2} \times 1 = -0.1 \text{ ml}$$

$$AUC_4 = \frac{1.2 + 0.2}{2} \times 1 = 0.7 \text{ ml}$$

$$AUC_5 = \frac{1.23 + 0.23}{2} \times 1 = 0.73 \text{ ml}$$

$$AUC_6 = \frac{1.43 + 0.43}{2} \times 1 = 0.93 \text{ ml}$$

Total= 1.76 ml

**Kontrol positif (Furosemid)****Tikus 1**

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{1.6+0.6}{2} \times 1 = 1.1 \text{ ml}$$

$$AUC_2 = \frac{2.1+1.1}{2} \times 1 = 1.6 \text{ ml}$$

$$AUC_3 = \frac{2.9+1.9}{2} \times 1 = 2.4 \text{ ml}$$

$$AUC_4 = \frac{2.92+1.92}{2} \times 1 = 2.42 \text{ ml}$$

$$AUC_5 = \frac{3.32+2.32}{2} \times 1 = 2.82 \text{ ml}$$

$$AUC_6 = \frac{3.52+2.52}{2} \times 1 = 3.02 \text{ ml}$$

Total= 13.36 ml

**Tikus 2**

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.7+(-0.3)}{2} \times 1 = 0.2 \text{ ml}$$

$$AUC_2 = \frac{1.3+0.3}{2} \times 1 = 0.8 \text{ ml}$$

$$AUC_3 = \frac{1.4+0.4}{2} \times 1 = 0.9 \text{ ml}$$

$$AUC_4 = \frac{1.8+0.8}{2} \times 1 = 1.3 \text{ ml}$$

$$AUC_5 = \frac{2.4+1.4}{2} \times 1 = 1.9 \text{ ml}$$



$$AUC_6 = \frac{2.45 + 1.45}{2} \times 1 = 1.95 \text{ ml}$$

Total = 7.05 ml

### Tikus 3

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.05 + (-0.95)}{2} \times 1 = -0.45 \text{ ml}$$

$$AUC_2 = \frac{0.95 + (0.05)}{2} \times 1 = 0.45 \text{ ml}$$

$$AUC_3 = \frac{1.45 + 0.45}{2} \times 1 = 0.95 \text{ ml}$$

$$AUC_4 = \frac{1.75 + 0.75}{2} \times 1 = 1.25 \text{ ml}$$

$$AUC_5 = \frac{1.85 + 0.85}{2} \times 1 = 1.35 \text{ ml}$$

$$AUC_6 = 2.65 \times 1 = 3.15 \text{ ml}$$

Total = 6.7 ml

### Tikus 4

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.1 + (-0.9)}{2} \times 1 = -0.4 \text{ ml}$$

$$AUC_2 = \frac{0.9 + (-0.1)}{2} \times 1 = 0.4 \text{ ml}$$

$$AUC_3 = \frac{0.94 + (-0.06)}{2} \times 1 = 0.44 \text{ ml}$$

$$AUC_4 = \frac{1.14+0.14}{2} \times 1 = 0.64 \text{ ml}$$

$$AUC_5 = \frac{2.14+ 1.14}{2} \times 1 = 1.64 \text{ ml}$$

$$AUC_6 = \frac{2.64+ 1.64}{2} \times 1 = 2.14 \text{ ml}$$

Total= 4.86 ml

### Tikus 5

$$AUC = \frac{Vn-(Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{1.4+0.4}{2} \times 1 = 0.9 \text{ ml}$$

$$AUC_2 = \frac{1.9+0.9}{2} \times 1 = 1.4 \text{ ml}$$

$$AUC_3 = \frac{3.6+2.6}{2} \times 1 = 3.1 \text{ ml}$$

$$AUC_4 = \frac{3.61+2.61}{2} \times 1 = 3.11 \text{ ml}$$

$$AUC_5 = \frac{4.2+ 3.2}{2} \times 1 = 3.7 \text{ ml}$$

$$AUC_6 = \frac{5+ 4}{2} \times 1 = 4.5 \text{ ml}$$

Total= 16.71 ml

**Dosis pertama (Infus daun kersen kadar 6%)****Tikus 1**

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.2 + (-0.8)}{2} \times 1 = -0.3 \text{ ml}$$

$$AUC_2 = \frac{0.3 + (-0.7)}{2} \times 1 = -0.4 \text{ ml}$$

$$AUC_3 = \frac{1 + 0}{2} \times 1 = 0.5 \text{ ml}$$

$$AUC_4 = \frac{1.6 + 0.6}{2} \times 1 = 1.1 \text{ ml}$$

$$AUC_5 = \frac{2.4 + 1.4}{2} \times 1 = 1.9 \text{ ml}$$

$$AUC_6 = \frac{2.5 + 1.5}{2} \times 1 = 2 \text{ ml}$$

Total = 4.8 ml

**Tikus 2**

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.4 + (-0.6)}{2} \times 1 = -0.1 \text{ ml}$$

$$AUC_2 = \frac{0.43 + (0.57)}{2} \times 1 = -0.07 \text{ ml}$$

$$AUC_3 = \frac{0.49 + 0.51}{2} \times 1 = 0.01 \text{ ml}$$

$$AUC_4 = \frac{0.5 + (-0.5)}{2} \times 1 = 0 \text{ ml}$$

$$AUC_5 = \frac{0.52 + (-0.48)}{2} \times 1 = 0.02 \text{ ml}$$

$$AUC_6 = \frac{0.6 + (-0.4)}{2} \times 1 = 0.1 \text{ ml}$$

$$\text{Total} = -0.06 \text{ ml}$$

### Tikus 3

$$AUC = \frac{Vn - (Vn - 1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.6 + (-0.4)}{2} \times 1 = 0.1 \text{ ml}$$

$$AUC_2 = \frac{1.4 + 0.4}{2} \times 1 = 3.8 \text{ ml}$$

$$AUC_3 = \frac{1.5 + 0.5}{2} \times 1 = 1 \text{ ml}$$

$$AUC_4 = \frac{2.5 + 1.5}{2} \times 1 = 2 \text{ ml}$$

$$AUC_5 = \frac{3.2 + 2.2}{2} \times 1 = 2.7 \text{ ml}$$

$$AUC_6 = \frac{3.6 + 2.6}{2} \times 1 = 3.1 \text{ ml}$$

$$\text{Total} = 12.7 \text{ ml}$$

### Tikus 4

$$AUC = \frac{Vn - (Vn - 1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.43 + (-0.7)}{2} \times 1 = -0.2 \text{ ml}$$

$$AUC_2 = \frac{1.3 + 0.3}{2} \times 1 = 0.8 \text{ ml}$$

$$AUC_3 = \frac{1.35 + 0.35}{2} \times 1 = 0.85 \text{ ml}$$

$$AUC_4 = \frac{2.05+1.05}{2} \times 1 = 1.55 \text{ ml}$$

$$AUC_5 = \frac{2.45+1.45}{2} \times 1 = 1.95 \text{ ml}$$

$$AUC_6 = \frac{2.65+1.65}{2} \times 1 = 2.15 \text{ ml}$$

Total= 7.1 ml

### Tikus 5

$$AUC = \frac{Vn-(Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.1+(-0.9)}{2} \times 1 = -0.4 \text{ ml}$$

$$AUC_2 = \frac{0.9+(0.1)}{2} \times 1 = 0.4 \text{ ml}$$

$$AUC_3 = \frac{1.3+0.3}{2} \times 1 = 0.8 \text{ ml}$$

$$AUC_4 = \frac{1.6+0.6}{2} \times 1 = 1.1 \text{ ml}$$

$$AUC_5 = \frac{1.61+0.61}{2} \times 1 = 1.11 \text{ ml}$$

$$AUC_6 = \frac{2.11+1.11}{2} \times 1 = 1.61 \text{ ml}$$

Total= 4.62 ml

**Dosis kedua (Infus daun kersen kadar 12%)****Tikus 1**

$$AUC = \frac{Vn - (Vn-1)}{2} \times t_n - (t_n - 1)$$

$$AUC_1 = \frac{0.1 + (-0.9)}{2} \times 1 = -0.4 \text{ ml}$$

$$AUC_2 = \frac{0.4 + (-0.6)}{2} \times 1 = 0.1 \text{ ml}$$

$$AUC_3 = \frac{0.5 + (-0.5)}{2} \times 1 = 0 \text{ ml}$$

$$AUC_4 = \frac{1.3 + 0.3}{2} \times 1 = 0.8 \text{ ml}$$

$$AUC_5 = \frac{1.36 + 0.36}{2} \times 1 = 0.86 \text{ ml}$$

$$AUC_6 = \frac{1.76 + 0.76}{2} \times 1 = 1.26 \text{ ml}$$

$$\text{Total} = 2.42 \text{ ml}$$

**Tikus 2**

$$AUC = \frac{Vn - (Vn-1)}{2} \times t_n - (t_n - 1)$$

$$AUC_1 = \frac{0.9 + (-0.1)}{2} \times 1 = -0.4 \text{ ml}$$

$$AUC_2 = \frac{1.6 + 0.6}{2} \times 1 = 1.1 \text{ ml}$$

$$AUC_3 = \frac{1.9 + 0.9}{2} \times 1 = 1.4 \text{ ml}$$

$$AUC_4 = \frac{3.1 + 2.1}{2} \times 1 = 2.6 \text{ ml}$$

$$AUC_5 = \frac{3.3 + 2.3}{2} \times 1 = 2.8 \text{ ml}$$

$$AUC_6 = \frac{3.33 + 2.33}{2} \times 1 = 2.83 \text{ ml}$$

Total = 11.13 ml

### Tikus 3

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.5 + (-0.5)}{2} \times 1 = 0 \text{ ml}$$

$$AUC_2 = \frac{1.5 + 0.5}{2} \times 1 = 1 \text{ ml}$$

$$AUC_3 = \frac{1.54 + 0.54}{2} \times 1 = 1.04 \text{ ml}$$

$$AUC_4 = \frac{2.04 + 1.04}{2} \times 1 = 1.54 \text{ ml}$$

$$AUC_5 = \frac{2.34 + 1.34}{2} \times 1 = 1.84 \text{ ml}$$

$$AUC_6 = \frac{2.94 + 1.94}{2} \times 1 = 2.44 \text{ ml}$$

Total = 7.86 ml

### Tikus 4

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.07 + (-0.93)}{2} \times 1 = -0.43 \text{ ml}$$

$$AUC_2 = \frac{0.13 + (-0.87)}{2} \times 1 = -0.37 \text{ ml}$$

$$AUC_3 = \frac{0.93 + (-0.07)}{2} \times 1 = 0.43 \text{ ml}$$

$$AUC_4 = \frac{1.63+0.63}{2} \times 1 = 1.13 \text{ ml}$$

$$AUC_5 = \frac{1.65+0.65}{2} \times 1 = 1.15 \text{ ml}$$

$$AUC_6 = \frac{2.25+1.25}{2} \times 1 = 1.75 \text{ ml}$$

Total= 3.66 ml

### **Tikus 5**

$$AUC = \frac{Vn-(Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.05+(-0.95)}{2} \times 1 = -0.1 \text{ ml}$$

$$AUC_2 = \frac{1.75+0.75}{2} \times 1 = 1.25 \text{ ml}$$

$$AUC_3 = \frac{1.79+0.79}{2} \times 1 = 1.29 \text{ ml}$$

$$AUC_4 = \frac{2.09+1.09}{2} \times 1 = 1.59 \text{ ml}$$

$$AUC_5 = \frac{2.69+1.69}{2} \times 1 = 2.19 \text{ ml}$$

$$AUC_6 = \frac{1.09+3.09}{2} \times 1 = 3.59 \text{ ml}$$

Total= 9.46 ml



**Dosis ketiga (Infus daun kersen kadar 24%)****Tikus 1**

$$AUC = \frac{Vn - (Vn-1)}{2} \times t_n - (t_n - 1)$$

$$AUC_1 = \frac{0.5 + (-0.5)}{2} \times 1 = 0 \text{ ml}$$

$$AUC_2 = \frac{0.6 + (0.4)}{2} \times 1 = 0.1 \text{ ml}$$

$$AUC_3 = \frac{12 + 0.2}{2} \times 1 = 0.7 \text{ ml}$$

$$AUC_4 = \frac{1.5 + 0.5}{2} \times 1 = 1 \text{ ml}$$

$$AUC_5 = \frac{2.4 + 1.4}{2} \times 1 = 1.9 \text{ ml}$$

$$AUC_6 = \frac{2.8 + 1.8}{2} \times 1 = 2.3 \text{ ml}$$

Total = 6 ml

**Tikus 2**

$$AUC = \frac{Vn - (Vn-1)}{2} \times t_n - (t_n - 1)$$

$$AUC_1 = \frac{0.9 + (-0.1)}{2} \times 1 = 0.4 \text{ ml}$$

$$AUC_2 = \frac{1.4 + 0.4}{2} \times 1 = 0.9 \text{ ml}$$

$$AUC_3 = \frac{2 + 1}{2} \times 1 = 1.5 \text{ ml}$$

$$AUC_4 = \frac{3.4 + 2.4}{2} \times 1 = 2.9 \text{ ml}$$

$$AUC_5 = \frac{3.6 + 2.6}{2} \times 1 = 3.1 \text{ ml}$$

$$AUC_6 = \frac{4.3 + 3.3}{2} \times 1 = 3.8 \text{ ml}$$

Total = 12.6 ml

### Tikus 3

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.2 + (-0.8)}{2} \times 1 = -0.3 \text{ ml}$$

$$AUC_2 = \frac{1.9 + 0.9}{2} \times 1 = 1.4 \text{ ml}$$

$$AUC_3 = \frac{1.91 + 0.91}{2} \times 1 = 1.41 \text{ ml}$$

$$AUC_4 = \frac{2.11 + 1.11}{2} \times 1 = 1.61 \text{ ml}$$

$$AUC_5 = \frac{3.01 + 2.01}{2} \times 1 = 2.51 \text{ ml}$$

$$AUC_6 = \frac{3.51 + 2.51}{2} \times 1 = 3.01 \text{ ml}$$

Total = 9.64 ml

### Tikus 4

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.3 + (-0.7)}{2} \times 1 = -0.2 \text{ ml}$$

$$AUC_2 = \frac{1.1 + 0.1}{2} \times 1 = 0.6 \text{ ml}$$

$$AUC_3 = \frac{1.6 + 0.6}{2} \times 1 = 1.1 \text{ ml}$$

$$AUC_4 = \frac{1.8+0.8}{2} \times 1 = 1.3 \text{ ml}$$

$$AUC_5 = \frac{3.2+2.2}{2} \times 1 = 2.7 \text{ ml}$$

$$AUC_6 = \frac{3.28+2.28}{2} \times 1 = 2.78 \text{ ml}$$

$$\text{Total} = 8.28 \text{ ml}$$

### **Tikus 5**

$$AUC = \frac{Vn - (Vn-1)}{2} \times tn - (tn - 1)$$

$$AUC_1 = \frac{0.6+(-0.4)}{2} \times 1 = 0.1 \text{ ml}$$

$$AUC_2 = \frac{0.9+(-0.3)}{2} \times 1 = 0.4 \text{ ml}$$

$$AUC_3 = \frac{1.3+0.3}{2} \times 1 = 0.8 \text{ ml}$$

$$AUC_4 = \frac{2+1}{2} \times 1 = 1.5 \text{ ml}$$

$$AUC_5 = \frac{2.3+1.3}{2} \times 1 = 1.8 \text{ ml}$$

$$AUC_6 = \frac{2.7+1.7}{2} \times 1 = 2.2 \text{ ml}$$

$$\text{Total} = 6.8 \text{ ml}$$

**Kontrol negatif (suspensi CMC)**

$$\text{Total rata-rata} = \frac{1.7+4.54+3+3.295+1.76}{5} = 2.256 \text{ ml}$$

**Kontrol positif (Furosemid)**

$$\text{Total rata-rata} = \frac{13.36+7.05+6.7+4.86+16.71}{5} = 9.736 \text{ ml}$$

**Dosis pertama (Infus daun kersen kadar 6%)**

$$\text{Total rata-rata} = \frac{4.8+(-0.06)+12.7+7.1+4.62}{5} = 5.832 \text{ ml}$$

**Dosis kedua (Infus daun kersen kadar 12%)**

$$\text{Total rata-rata} = \frac{2.42+11.13+7.86+3.66+9.46}{5} = 6.906 \text{ ml}$$

**Dosis ketiga (Infus daun kersen kadar 24%)**

$$\text{Total rata-rata} = \frac{6+12.6+9.64+8.28+6.8}{5} = 8.664 \text{ ml}$$

$$\text{AUC} = \frac{AUCp - AUCk}{AUCk} \times 100\%$$

$$\text{Kontrol negatif} = \frac{2.256 - 2.256}{2.256} \times 100\% = 0\%$$

$$\text{Kontrol positif} = \frac{9.736 - 2.256}{2.256} \times 100\% = 33.15\%$$

$$\text{Dosis 1} = \frac{5.832 - 2.256}{2.256} \times 100\% = 15.85\%$$

$$\text{Dosis 2} = \frac{6.906 - 2.256}{2.256} \times 100\% = 20.61\%$$

$$\text{Dosis 3} = \frac{8.664 - 2.256}{2.256} \times 100\% = 28.40\%$$

## Lampiran 10. Hasil uji statistik

### Explore

#### kelompok

Case Processing Summary

kelompok	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
volum.urin dosis 1	5	100,0%	0	,0%	5	100,0%
dosis 2	5	100,0%	0	,0%	5	100,0%
dosis 3	5	100,0%	0	,0%	5	100,0%
kontrol positif	5	100,0%	0	,0%	5	100,0%
kontrol negatif	5	100,0%	0	,0%	5	100,0%

Descriptives

kelompok			Statistic	Std. Error
volum.urin	dosis 1	Mean	2,4540	,35792
		95% Confidence Interval for Mean		
		Lower Bound	1,4603	
		Upper Bound	3,4477	
		5% Trimmed Mean	2,4483	
		Median	2,5000	
		Variance	,641	
		Std. Deviation	,80033	
		Minimum	1,41	
		Maximum	3,60	
		Range	2,19	
		Interquartile Range	1,37	
		Skewness	,272	,913
		Kurtosis	,922	2,000
dosis 2	Mean	2,9320	,38902	
	95% Confidence Interval for Lower Bound	1,8519		

	Mean	Upper Bound	4,0121	
	5% Trimmed Mean		2,9328	
	Median		2,9400	
	Variance		,757	
	Std. Deviation		,86987	
	Minimum		1,76	
	Maximum		4,09	
	Range		2,33	
	Interquartile Range		1,56	
	Skewness		-,034	,913
	Kurtosis		,151	2,000
dosis 3	Mean		3,3180	,28748
	95% Confidence Interval for	Lower Bound	2,5198	
	Mean	Upper Bound	4,1162	
	5% Trimmed Mean		3,2978	
	Median		3,2800	
	Variance		,413	
	Std. Deviation		,64282	
	Minimum		2,70	
	Maximum		4,30	
	Range		1,60	
	Interquartile Range		1,15	
	Skewness		,908	,913
	Kurtosis		,412	2,000
kontrol positif	Mean		1,6620	,16803
	95% Confidence Interval for	Lower Bound	1,1955	
	Mean	Upper Bound	2,1285	
	5% Trimmed Mean		1,6478	
	Median		1,4300	
	Variance		,141	
	Std. Deviation		,37573	
	Minimum		1,37	
	Maximum		2,21	
	Range		,84	
	Interquartile Range		,67	

	Skewness		,964	,913
	Kurtosis		-1,209	2,000
kontrol negatif	Mean		3,4540	,45467
	95% Confidence Interval for Mean	Lower Bound	2,1916	
		Upper Bound	4,7164	
	5% Trimmed Mean		3,4233	
	Median		3,5200	
	Variance		1,034	
	Std. Deviation		1,01668	
	Minimum		2,45	
	Maximum		5,01	
	Range		2,56	
	Interquartile Range		1,79	
	Skewness		,882	,913
	Kurtosis		,563	2,000

#### Tests of Normality

kelompok	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
volum.urin	dosis 1	,203	5	,200*	,982	5	,943
	dosis 2	,126	5	,200*	,999	5	1,000
	dosis 3	,190	5	,200*	,922	5	,546
	kontrol positif	,332	5	,076	,816	5	,110
	kontrol negatif	,224	5	,200*	,915	5	,500

a. Lilliefors Significance Correction

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

## Oneway

#### Test of Homogeneity of Variances

volum.urin

Levene Statistic	df1	df2	Sig.
,586	4	20	,677

## ANOVA

volum.urin

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10,609	4	2,652	4,442	,010
Within Groups	11,941	20	,597		
Total	22,550	24			

## Post Hoc Tests

## Homogeneous Subsets

volum.urin

Student-Newman-Keuls<sup>a</sup>

kelompok	N	Subset for alpha = 0.05	
		1	2
kontrol positif	5	1,6620	
dosis 1	5	2,4540	2,4540
dosis 2	5		2,9320
dosis 3	5		3,3180
kontrol negatif	5		3,4540
Sig.		,121	,205

Means for groups in homogeneous subsets are displayed.

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



## Multiple Comparisons

volum.urin

LSD

(I) kelompok	(J) kelompok	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
dosis 1	dosis 2	-,47800	,48869	,340	-1,4974	,5414
	dosis 3	-,86400	,48869	,092	-1,8834	,1554
	kontrol positif	,79200	,48869	,121	-,2274	1,8114
	kontrol negatif	-1,00000	,48869	,054	-2,0194	,0194
dosis 2	dosis 1	,47800	,48869	,340	-,5414	1,4974
	dosis 3	-,38600	,48869	,439	-1,4054	,6334
	kontrol positif	1,27000*	,48869	,017	,2506	2,2894
	kontrol negatif	-,52200	,48869	,298	-1,5414	,4974
dosis 3	dosis 1	,86400	,48869	,092	-,1554	1,8834
	dosis 2	,38600	,48869	,439	-,6334	1,4054
	kontrol positif	1,65600*	,48869	,003	,6366	2,6754
	kontrol negatif	-,13600	,48869	,784	-1,1554	,8834
kontrol positif	dosis 1	-,79200	,48869	,121	-1,8114	,2274
	dosis 2	-1,27000*	,48869	,017	-2,2894	-,2506
	dosis 3	-1,65600*	,48869	,003	-2,6754	-,6366
	kontrol negatif	-1,79200*	,48869	,002	-2,8114	-,7726
kontrol negatif	dosis 1	1,00000	,48869	,054	-,0194	2,0194
	dosis 2	,52200	,48869	,298	-,4974	1,5414
	dosis 3	,13600	,48869	,784	-,8834	1,1554
	kontrol positif	1,79200*	,48869	,002	,7726	2,8114

The mean difference is significant at the 0.05 level.