

BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

Kesimpulan yang diperoleh dari penelitian ini adalah sebagai berikut :

Pertama, pemberian ekstrak etanol daun kelor selama 28 hari tidak menimbulkan gejala toksik pada tikus putih galur wistar .

Kedua, pemberian ekstrak etanol daun kelor selama 28 hari menaikkan dan menurunkan kadar biokimia darah tetapi masih dalam rentang normal sehingga ekstrak etanol daun kelor tidak menimbulkan efek toksik pada kadar biokimia pada tikus putih galur wistar.

Ketiga, pemberian ekstrak etanol daun kelor tidak memberikan efek toksik pada makropatologi ginjal tetapi mempengaruhi histopatologi organ ginjal tikus putih galur wistar.

B. Saran

1. Perlu dilakukan penelitian uji toksisitas subkronis jangka panjang ekstrak etanol daun kelor untuk melihat efek lebih lanjut
2. Perlu dilakukan pengamatan terhadap bagian organ lain seperti lambung, jantung, dan paru-paru pada tikus putih jantan dan betina
3. Perlu dilakukan pengamatan terhadap parameter fungsi ginjal yang lain seperti urin

DAFTAR PUSTAKA

- Arief M. 2004. *Histologi Umum Kedokteran*. Surakarta: Universitas Sebelas Maret .
- Bajpai RN. 1989. *Histologi Dasar Edisi 4*. Tambayong J, Penerjemah, Jakarta: Binarupa Aksara.
- Bata, M. H., Wijaya, S., & Setiawan, H. K. (2018). Standarisasi Simplisia Kering Daun Kelor (*Moringa oleifera*) Dari Tiga Daerah Berbeda. *Jurnal Farmasi Sains dan Terapan*, 5(1): 45-52
- [BPOMRI] Badan Pengawas Obat dan Makanan Republik Indonesia. 2014. *Peraturan Kepala Badan Pengawas Obat dan Makanan Republik Indonesia Nomor 7 Tahun 2014 tentang Pedoman Uji Toksisitas Nonklinik Secara In Vivo*. Jakarta: BPOMRI.
- Budiawan IGO, Suwiti NK, Suastika IP, Besung INK. 2013. Pengaruh pemberian pegagan (*centella asiatica*) terhadap gambaran mikroskopis limpa mencit yang diinfeksi *Salmonella typhi*. *Buletin Veteriner Udayana* 5(1):15-21.
- Budiono B, Herwiyanti S. 2000. The histological structure of liver of rats after consuming extract of lamtoro leaf and green tea (*Leucaena leucocephala*). *Jurnal Kedokteran Yarsi* 8: 16-24.
- Corwin EJ. 2009. *Buku Saku Patofisiologi*. Jakarta: Buku Kedokteran EGC. Hal: 704
- Contran, RS, H Rennke, V Kumar. 2007. *Ginjal dan Sistem Penyalurnya*. Dalam: Kumar, Cotran, Robbin (ed). *Buku Ajar Patologi Robbins Volume 2*. Edisi VII. Jakarta: EGC, pp: 572, 594-7.
- [DepkesRI] Departemen Kesehatan Republik Indonesia. 1986. *Sediaan Galenik*. Jakarta: Departemen Kesehatan Republik Indonesia.
- [DepkesRI] Departemen Kesehatan. 1995. *Materia Medika Indonesia*. Jilid VI: Departemen Kesehatan Republik Indonesia. Hal: 10
- Depkes RI, 2000, *Parameter Standar Umum Ekstrak Tumbuhan Obat* (Edisi 1), Jakarta: Direktorat Jenderal Pengawasan Obat dan Makanan
- Departemen Kesehatan, 2006, *Monografi Ekstrak Tumbuhan Obat Indonesia*, Vol.2, 124, Jakarta, Depkes RI.
- Depkes RI. 2008. *Farmakope Herbal Indonesia*. Edisi 1. Jakarta: Departemen Kesehatan Republik Indonesia. Hal. 171-174

- Gunawan D, Mulyani S. 2004. *Ilmu Obat Alam (Farmakognosi)*. Jilid I. Jakarta: Penebar Swadaya.
- Harborne J.B. 1987. *Metode Fitokimia*. Terjemahan : Padwinata, K dan Soediro, I. Institut Teknologi Bandung, Bandung. Hal :123
- Hardiyanthi, F. 2015. Pemanfaatan Aktivitas Antioksidan Ekstrak Daun Kelor (*Moringa oleifera*) Dalam Sediaan *Hand And Body Cream*. *Skripsi*, Program Studi Kimia, Fakultas Sains Dan Teknologi, Universitas Islam Negeri Syarif Hidayatullah, Jakarta.
- Harmita S, Radji M. 2005. *Buku Ajar Analisis Hayati*. Edisi 2. Jakarta: Departemen Farmasi FMIPA UI.
- Hazani, K, F., 2014. Pengaruh Pemberian Ekstrak Etanol Daun Kelor (*Moringa oleifera* L) Terhadap Kadar Malondialdehyde (MDA) dan Kualitas Spermatozoa Epididimis Mencit (*Mus musculus* L) yang Dipapar Timbal (Pb) Asetat. *Skripsi*, Jurusan Biologi, Fakultas Sains dan Teknologi, Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang, Malang.
- I Wayan *et al.* 2016. Identifikasi Senyawa Kimia Ekstrak Etanol Daun Kelor (*Moringa oleifera* Lamk) di Bali. *Indonesia Medicus Veterinus*. Vol 5.5: Hal 464-473.
- Katno. 2008. *Pengelolaan Pasca Panen Tanaman Obat*. Jakarta: Departemen Kesehatan RI.
- Kemenkes RI [Kementerian Kesehatan Republik Indonesia]. 2013. *Farmakope Herbal Indonesia*. Edisi 1 Suplemen III. Jakarta: Kementerian Kesehatan Republik Indonesia. Hal :106
- Komang *et al.* 2016. Skrining Fitokimia dan Uji Aktivitas Antioksidan dan Ekstrak Aseton Daun Kelor (*Moringa oleifera* L). *Jurnal Wahana Matematika dan Sains*, Vol 10 Nomor 2.
- Krisnadi, A Dudi. 2015. *Kelor Super Nutrisi*. Blora: Pusat Informasi dan Pengembangan Tanaman Kelor Indonesia.
- Lesson CR, Thomas TS, Paparo AA. 1996. *Buku Ajar Histologi*. Edisi ke-5. Jakarta: Penerbit Buku Kedokteran RGC. Hal: 8-9
- Linder MC. 1992. *Biokimia Nutrisi dan Metabolisme* : dengan pemakaian secara klinis. Jakarta : UI Press.

- Lu FC. 1995. *Toksikologi Dasar: Asas, Organ Sasaran, dan Penilaian Resiko*. Edisi Kedua. Nugroho E, penerjemah; Jakarta: Penerbit Universitas Indonesia. 86-89. Terjemahan dari: *Basis Toxicology Fundamentals, Target, Organs, and Risk Assesment*. Hal: 224-229
- Luqman S., Suchita., Ritesh K., Anil K.M., Debabrata C. 2012. Experimental Assessment of Moringa oleifera Leaf and Fruit for its Antistress, Antioxidant, and Seaving Potential Using In Vitro and In Vivo Assays. Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine :1-12
- Mitchell RN and Catron RS 2007. *Jejas, Adaptasi, dan Kematian sel*. Dalam: Kumar,V,Cotran, R.S.,Robbins, S.L. (eds). Buku Ajar Patologi Robbins vil 1. Edisi VII. Jakarta : ECG. 3:7-26.
- Malole M, Pramono CS. 1989. *Penggunaan Hewan Percobaan di Laboratorium*. Bogor: Departemen Pendidikan dan Kebudayaan Direktorat Jendral Tinggi. Pusat Antar Universitas Bioteknologi Institut Pertanian Bogor.
- Pandey A, Pandey RD, Tripathi P, Gupta PP, Haider J, Bhatt S, Singh AV. 2012. Moringa oleifera Lam. (Sahijan)- A Plant With a Plethora of Diverse Theraupetic Benefits: an update retrospection. Medical and Aromatic Plants 1(1):2-8
- Osman. HM *et al.* 2015. Assesment of acute toxiety and LD50 of Moringa oleifera ethanolic leave extract in albino rats and rabbit. Khartonum Sudan. *Journal of Medical and Biological Science Research*. 1:38-43.
- Rahman, F. 2015. *Efek Nefroprotector Ekstrak Etanol Daun Kelor (Moringa oleifera) Terhadap Kerusakan Histologis Nefron Mencit (Mus musculus L.) yang Diinduksi Parasetamol*. Skripsi, Fakultas Kedokteran, Universitas Sebelas Maret, Surakarta.
- Rifa'i, M.A. dan Ermitiati(eds). 1995 . *Glosarium Biologi*. Jakarta : Balai Pustaka.
- Setiabudy R. 2007. *Farmakologi Fakultas Kedokteran Universitas Indonesia*. Jakarta: Universitas Indonesia. Hal: 824-827.
- Sacher, Ronald A dan Richard A. Mc Pherson.2002. Tinjauan Klinis Hasil Pemeriksaan *Laboratorium*, e/11. Jakarta: EGC
- Sharp PE, Laregina MC, Suckw MA. 1998. *The Laboratory Rat*. USA: CRC Press.
- Sherwood L. 2011. *Fisiologi Manusia dari Sel ke Sistem*. Edisi VI. Pendit BU, penerjemah; Jakarta: Buku Kedokteran EGC. Terjemahan dari: *Human Pysiology From Cells to Systems*. Hal: 553

- Sukmayati *et al.* 2013. Kualitas Ekstrak Etanol 70% Daun Kelor (*Moringa oleifera* Lamk) Dalam Ramuan Penambah ASI. *Jurnal Kefarmasian Indonesia*. Vol 3.1. Hal 1-8.
- Susi Dewiyati dan Saleh Hidayat. 2015. Ekstrak Daun Kelor (*Moringa oleifera* Lamk.) sebagai Penurun Kadar Glukosa Darah Mencit Jantan (*Mus musculus* L.) Hiperqlikemik. *Jurnal Penelitian Sains* Vol 7: 73-77.
- Sutedjo, SKM. 2007. Mengenal Penyakit Melalui Hasil Pemeriksaan Laboratorium Amara Books, Yogyakarta.
- Tejas H, Genatra *et al.* 2012. A Panoramic View On Pharmacogbostic, Pharmacological Nutritional, Therapeutic and Prophylactic Value of *Moringa Oleifera* Lam. India :*International Research Journal of Pharmacy* Vo 3. No6, pp 1-7.
- Tende JA. *et al.* 2011. Effect of Ethanolic Leaves Extract of *Moringa oleifera* on Blood Glucose Levels of Steptozocin- Induced Diabetics and Normoglycomic Wistar Rats. Departement of Human Phystologi, Kampala International University, Uganda. *British Journal of Pharmacology amd Toxicology*. 3 (1):1-4
- Toripah SS, Abidjulu J, Wehantouw F. 2014. Aktivitas Antioksidan dan Kandungan Total Fenolik Ekstrak Daun Kelor (*Moringa oleifera* Lam). *Pharmacon* 3(4): 37-43.
- Tortora, G, J., Derrickson, B. 2011. *Principles of Anatomy and Physiology Maintenance anda Continuity of The Human Body 13th Edition*. Amerika Serikat: John Wiley & Sons, Inc.
- Underwood JCE. 1999. *Patologi*. Edisi 2. Jakarta: Buku Kedokteran EGC. Hal: 119
- Widowati *et al.* 2014. *Toksisitas akut dan subkronis ramuan ekstrak kelor dan klabet sebagai pelancar ASI dan penambah gizi*. *Jurnal farmasi Indonesia*. Vol 4.2.2014:51-56
- Wolf JC, Baumgartner WA, Blazer VS, Camus AC, Engelhardt J A, Fournie JW, Frasca SJ, Groman DB, Kent M, Khoo LH, *at al.* 2015. Nonlesions, misdiagnoses, missed diagnoses, and other interpretive challenges in fish histopathology studies: A Guide for Investigators, Authors, Reviewers, and Readers. *Toxicologic Pathology* 43: 297- 325.
- Yakubu, M. T., Musa, I. F. 2012. Liver and Kidney Functional Indices of Pregnant Rats Following the Administration of the Crude Alkaloids from *Senna alata* (Linn.Roxb) Leaves. *Iranian Journal of Toxicology*, Vol. 6(16): 616-625

L

A

M

P

I

R

A

N

Lampiran 1. Surat Keterangan Determinasi Tanaman



Nomor : 184/UN27.9.6.4/Lab/2019
Hal : Hasil Determinasi Tumbuhan
Lampiran : -

Nama Pemesan : Retna Dwi Nastutik
NIM : 22164831A
Alamat : Program Studi S1 Farmasi Fakultas Farmasi Universitas Setia Budi Surakarta

HASIL DETERMINASI TUMBUHAN

Nama Sampel : *Moringa oleifera* Lam.
Familia : Moringaceae

Hasil Determinasi menurut C.A. Backer & R.C. Bakhuizen van den Brink, Jr. (1963):
1b-2b-3b-4b-12b-13b-14b-17b-18b-19b-20b-21b-22b-23b-24b-25b-26b-27b-799b-800b-801b-802a-
803b-804b-805c-806b-807a-808c-809b-810b-811a-812b-815b-816b-818b-820b-821b-822b-824b-825b-
826b-829b-830b-831b-832b-833b-834a-835a-836a-837a-838b-839b-840a-841b-842a-843b-
844a

31. Moringaceae

1. *Moringa*

Moringa oleifera Lam.

Deskripsi Tumbuhan :

Habitus : pohon, tidak bergetah, menahun, tumbuh tegak, tinggi 3-10 m. Akar : tunggang, bercabang, putih kotor atau putih kekuningan atau coklat muda. Batang : bulat, berkayu, percabangan simpodial, arah cabang tegak atau miring, cabang cenderung tumbuh lurus dan memanjang, kulit tipis, permukaan kasar, berwarna putih kotor, banyak terdapat lentisel. Daun : majemuk menyirip beranak daun gasal (imparipinnatus) rangkap 2-4 tidak sempurna, tersusun berseling, dengan 8-10 pasang, panjang 20-60 cm, bertangkai panjang; anak daun berbentuk bulat telur memanjang atau oval, panjang 1-3 cm, tersusun berhadapan, pangkal runcing, ujung tumpul hingga runcing, tepi rata, pertulangan menyirip, permukaan gundul, warna hijau pucat pada kedua permukaan; daun penumpu tidak ada atau sangat kecil. Bunga : majemuk tipe malai, terletak di ketiak daun, panjang 10-30 cm, biseksual; kelopak bunga pendek, berlekatan berbentuk piala dengan 5 taju, berwarna hijau, taju kelopak bunga berwarna putih, panjang 1 cm; daun mahkota bunga berjumlah 5, berlepasan, berwarna putih atau kuning, panjang 1.5 cm; benangsari 5, berlepasan, berhadapan dengan daun mahkota bunga, melengkung; staminodia 5, berseling dengan benangsari, melengkung; bakal buah menumpang, bertangkai, beruang 1, bakal biji banyak. Buah : tipe buah kapsul/kotak, berbentuk panjang bersegi tiga, panjang 20 - 60 cm, membuka dengan 3 katup, katup buah tebal, di tengah ada bekas cetakan yang dalam berisi 1 baris biji, buah muda berwarna hijau dan setelah tua menjadi coklat. Biji : biji bulat, bersayap 3, berwarna coklat kehitaman.

Surakarta, 18 November 2019

Kepala Lab. Program Studi Biologi

Dr. Nita Etikawati, M.Si.
NIP. 19710426 199702 2 001

Penanggungjawab
Determinasi Tumbuhan

Suratman, S.Si., M.Si.
NIP. 19800705 200212 1 002

Mengetahui
Kepala Program Studi Biologi FMIPA UNS

Dr. Ratna Setyaningsih, M.Si.
NIP. 19660714 199903 2 001

Lampiran 2. Pengambilan sampel, pengeringan, dan pembuatan serbuk serta perhitungan rendemen daun kelor



Daun kelor basah



Daun kelor kering



Alat evaporator



Serbuk daun kelor



Ekstrak daun kelor



Alat *sterling bitwell*

Lampiran 3. Perhitungan rendemen berat kering terhadap berat basah daun kelor

Berat basah (kg)	Berat kering (kg)	Rendemen (%)
12	2.2	18,3

Perhitungan % rendemen

$$\% \text{ rendemen} = \frac{\text{berat kering}}{\text{berat basah}} \times 100\%$$

$$\% \text{ rendemen} = \frac{2,2 \text{ kg}}{12 \text{ kg}} \times 100\%$$

$$\% \text{ rendemen} = 18,3 \%$$

Lampiran 4. Perhitungan penetapan kadar air

Replikasi	Berat (g)	Volume air (ml)	Kadar (%)
1	20	1,8	9
2	20	1,9	9,5
3	20	2	10
Rata-rata ± SD			9,5±0,5

Replikasi 1

$$\begin{aligned} \% \text{ kadar} &= \frac{\text{volume air}}{\text{berat awal}} \times 100\% \\ &= \frac{1,8 \text{ ml}}{20 \text{ g}} \times 100\% \\ &= 9\% \end{aligned}$$

Replikasi 2

$$\begin{aligned} \% \text{ kadar} &= \frac{\text{volume air}}{\text{berat awal}} \times 100\% \\ &= \frac{1,9 \text{ ml}}{20 \text{ g}} \times 100\% \\ &= 9,5\% \end{aligned}$$

Replikasi 3

$$\begin{aligned} \% \text{ kadar} &= \frac{\text{volume air}}{\text{berat awal}} \times 100\% \\ &= \frac{2 \text{ ml}}{20 \text{ g}} \times 100\% \\ &= 10\% \end{aligned}$$

$$\text{Rata-rata kadar air} = \frac{9\% + 9,5\% + 10\%}{3} = 9,5\%$$

Lampiran 5. Perhitungan rendemen ekstrak

Serbuk (gram)	Berat wadah kosong (gram)	Berat wadah+ekstrak (gram)	Ekstrak (gram)	Rendemen (%)
1200	1743,8	2053,8	310	25,83

Perhitungan berat ekstrak

$$\text{Berat wadah + ekstrak} = 461,8 \text{ gram}$$

$$\text{Berat wadah kosong} = 391,6 \text{ gram}$$

$$\text{Berat ekstrak} = 70,2 \text{ gram}$$

$$\text{Berat wadah + ekstrak} = 468,4 \text{ gram}$$

$$\text{Berat wadah kosong} = 385,7 \text{ gram}$$

$$\text{Berat ekstrak} = 82,7 \text{ gram}$$

$$\text{Berat wadah + ekstrak} = 447 \text{ gram}$$

$$\text{Berat wadah kosong} = 356,6 \text{ gram}$$

$$\text{Berat ekstrak} = 90,4 \text{ gram}$$

$$\text{Berat wadah + ekstrak} = 367,9 \text{ gram}$$

$$\text{Berat wadah kosong} = 347,8 \text{ gram}$$

$$\text{Berat ekstrak} = 20,1 \text{ gram}$$

$$\text{Berat wadah + ekstrak} = 308,7 \text{ gram}$$

$$\text{Berat wadah kosong} = 262,1 \text{ gram}$$

$$\text{Berat ekstrak} = 46,6 \text{ gram}$$

$$\text{Total ekstrak} = 310 \text{ gram}$$

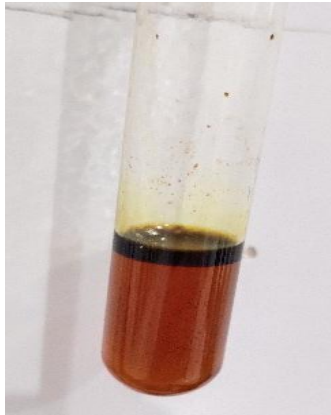
Perhitungan % rendemen ekstrak

$$\% \text{ rendemen} = \frac{\text{berat ekstrak}}{\text{berat serbuk}} \times 100\%$$

$$= \frac{310 \text{ gram}}{1200 \text{ gram}} \times 100\%$$

$$\% \text{ rendemen} = 25,83 \%$$

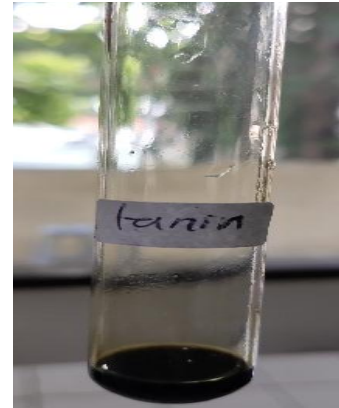
Lampiran 6. Hasil identifikasi kandungan senyawa kimia ekstrak etanol daun kelor



Flavonoid (+) Cincin merah



Saponin (+) Buih



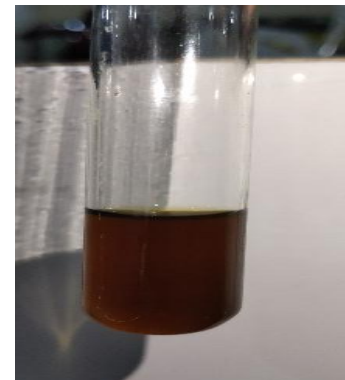
Tanin (+) Biru kehitaman



Alkaloid (+) Endapan jingga



Alkaloid (+) Endapan kuning



Triterpenoid (+) Cincin biru

Lampiran 7. Surat keterangan 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 : Retna Dwi Hastutik

Nim : 22164831 A

Institusi : Universitas Setia Budi Surakarta

Merupakan hewan uji dengan spesifikasi sebagai berikut:

Jenis hewan : Tikus Wistar

Umur : 2-3 bulan

Jumlah : 50 ekor

Jenis kelamin : 25 Jantan, 25 betina

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, 11 Maret 2020


Hormat kami



Sigit Pramono

"ABIMANYU FARM"

Lampiran 8. Surat izin etik kehewanan



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

Dr. Moewardi General Hospital
RSUD Dr. Moewardi

ETHICAL CLEARANCE
KELAIKAN ETIK

Nomor : 133 / 1 / HREC / 2020

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 Toksisitas Subkronis Ekstrak Etanol Daun Kelor (Moringa oleifera L) Terhadap Parameter Kreatinin, BUN, Albumin serta Histopatologi Ginjal Pada Tikus Putih Galur Wistar


Principal investigator : RETNA DWI HASTUTIK
Peneliti Utama 22164831A

Location of research : Universitas Setia Budi
Lokasi Tempat Penelitian

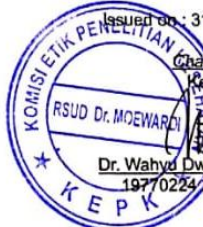
Is ethically approved
Dinyatakan layak etik

Issued on : 31 Januari 2020

Chairman
Ketua



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



Lampiran 9. Hewan uji yang digunakan



Kondisi kandang



Timbangan hewan uji



Pemberian sediaan hewan uji



Pembedahan hewan uji

Lampiran 10. Perhitungan penyesuaian dosis pada uji toksisitas subkronik

1. **Kontrol negatif.** Pembuatan larutan CMC 1% adalah dengan menimbang 100 mg CMC ditambahkan aquades sampai batas 100 ml. volume yang diberikan adalah 1 ml karena kurang dari volume pemberian yaitu 2 ml/100 gram berat badan tikus atau kurang lebih 4ml/200 gram berat badan tikus.

2. **Dosis rendah 225 mg/kgBB.** Dosis rendah untuk tikus sebesar 225 mg/kgBB tikus atau 0,225 mg/gramBB tikus.

$$\text{Dosis} = 0,225 \text{ mg/g} \times 200 \text{ gram BB tikus} = 45 \text{ mg}/200 \text{ gram BB tikus}$$

Larutan stok 2 %

$$\text{Larutan stok} = \frac{2000}{100} = 20 \text{ mg/ml}$$

$$\text{Larutan yang dioralkan} = \frac{45 \text{ mg}}{20 \text{ mg}} \times 1 \text{ ml} = 2,25 \text{ ml}$$

3. **Dosis sedang 450 mg/kgBB.** Dosis rendah untuk tikus sebesar 450 mg/kgBB tikus atau 0,45 mg/gram BB tikus.

Larutan stok 4 %

$$\text{Larutan stok} = \frac{4000}{100} = 40 \text{ mg/ml}$$

$$\text{Larutan yang dioralkan} = \frac{90 \text{ mg}}{40 \text{ mg}} \times 1 \text{ ml} = 2,25 \text{ ml}$$

4. **Dosis tinggi 900 mg/kgBB.** Dosis rendah untuk tikus sebesar 900 mg/kgBB tikus atau 0,90 mg/gramBB tikus.

$$\text{Dosis} = 0,90 \text{ mg/gram} \times 200 \text{ gram BB tikus} = 180 \text{ mg}/200 \text{ gram BB tikus}$$

Larutan stok 6%

$$\text{Larutan stok} = \frac{6000}{100} = 60 \text{ mg/ml}$$

$$\text{Larutan yang dioralkan} = \frac{180 \text{ mg}}{60 \text{ mg}} \times 1 \text{ ml} = 3 \text{ ml}$$

5. **Dosis tinggi 900 mg/kgBB.** Dosis rendah untuk tikus sebesar 900 mg/kgBB tikus atau 0,90 mg/gramBB tikus.

$$\text{Dosis} = 0,90 \text{ mg/gram} \times 200 \text{ gram BB tikus} = 180 \text{ mg}/200 \text{ gram BB tikus}$$

Larutan stok 6%

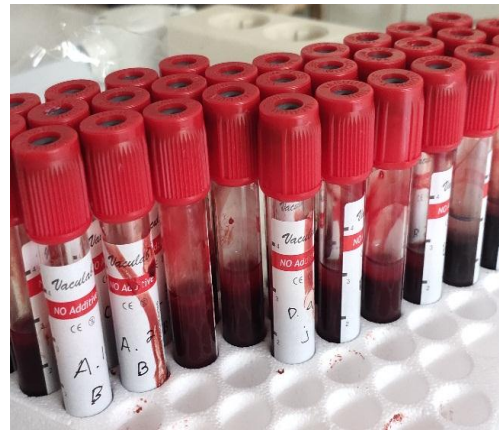
$$\text{Larutan stok} = \frac{6000}{100} = 60 \text{ mg/ml}$$

$$\text{Larutan yang dioralkan} = \frac{180 \text{ mg}}{60 \text{ mg}} \times 1 \text{ ml} = 3 \text{ ml}$$

Lampiran 11. Penelitian uji toksisitas subkronik



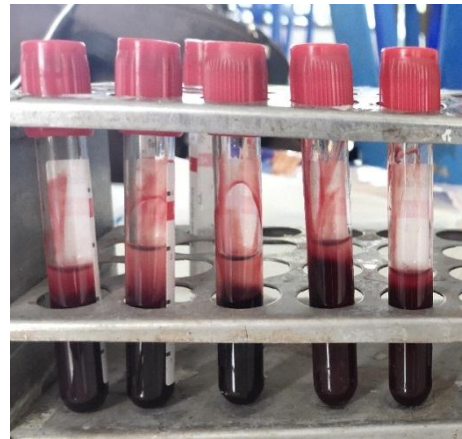
Pengambilan darah dari hewan uji



Darah hewan uji



Alat sentrifuse



Serum darah hewan uji

Jenis hewan	Kelompok Perlakuan	Rata-rata Berat Badan (gram) ± SD														
		Hari ke-														
		0	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Jantan	Kontrol	187	187	187	186	188	188	188	188	189	189	188	187	186	186	186
	Negatif	±6,70	±6,70	±6,70	±4,18	±4,47	±4,47	±4,47	±4,47	±2,23	±2,23	±2,73	±2,73	±2,23	±2,23	±2,23
	Dosis	177	177	177	176	175	175	174	177,5	177,5	176,25	176,25	176,25	180	180	181,66667
	225 mg/kgBB	±4,47	±4,47	±7,58	±7,41	±10,60	±10,60	±10,83	±11,90	±10,40	±8,53	±8,53	±7,5	±8,66	±8,66	±10,40
	Dosis	189	189	186	185	183	182,5	181,25	180	180	178,75	178,75	180	180	180	178,33333
	450 mg/kgBB	±4,18	±4,18	±4,18	±3,53	±5,70	±2,88	±4,78	±4,08	±4,08	±8,53	±8,53	±5	±5	±5	±7,63
	Dosis	181	181	182	180	177	174	173	171	172	173,75	175	180	181,67	181,67	181,67
	900 mg/kgBB	±8,21	±8,21	±8,36	±7,90	±9,74	±8,94	±6,70	±8,21	±9,74	±10,30	±10,80	±5	±7,63	±7,63	±7,63
	Dosis	185	185	185	180	180	177	175	171	170	169	169	178,33	176,67	176,67	176,67
	Satelit	±6,12	±6,12	±6,12	±11,72	±11,72	±9,74	±7,07	±8,94	±10	±11,40	±11,40	±2,88	±2,88	±2,88	±2,88
Betina	Kontrol	190	190	190	189	189	187	188	189	191	191	191	191	191	191	191
	Negatif	±5	±5	±5	±6,51	±6,51	±4,47	±2,73	±2,23	±2,23	±2,23	±4,18	±4,18	±4,18	±4,18	±4,18
	Dosis	182	182	182	181	181	180	178	178	178	178	179	179	179	145	145
	225 mg/kgBB	±5,70	±5,70	±5,70	±4,18	±4,18	±3,16	±5,70	±5,70	±7,58	±7,58	±7,41	±7,41	±7,41	±6,29	±6,29
	Dosis	171	171	171	172	172	175	176	176	176	175	175	175	176	180	180
	450 mg/kgBB	±8,21	±8,21	±8,21	±8,36	±8,36	±10	±8,21	±7,41	±7,41	±7,9	±7,90	±12,24	±11,40	±8,16	±8,16
	Dosis	181	181	176	176	174	177,5	176,25	185	185	186,67	183,33	183,33	186,67	186,67	186,67
	900 mg/kgBB	±6,51	±6,51	±11,93	±10,83	±12,94	±11,90	±11,08	±5	±5	±5,77	±11,54	±11,54	±10,40	±10,40	±10,40
	Dosis	183	183	181	181	182	180	181,25	181,25	182,5	182,5	182,5	181,25	181,25	181,25	181,25
	Satelit	±7,58	±7,58	±9,61	±8,94	±9,08	±10,60	±8,53	±8,53	±9,57	±11,90	±11,90	±11,08	±11,08	±11,08	±11,08

Jenis hewan	Kelompok Perlakuan	Rata-rata Berat Badan (gram) \pm SD						
		Hari ke-						
		30	32	34	36	38	40	42
Jantan	Kontrol							
	Negatif							
	Dosis 225 mg/kgBB							
	Dosis 450 mg/kgBB							
	Dosis 900 mg/kgBB							
	Dosis Satelit	176,67 \pm 2,88	175 \pm 5	173,3 \pm 5,77	173 \pm 5,77	173 \pm 3,53	173 \pm 3,53	173 \pm 3,53
Betina	Kontrol							
	Negatif							
	Dosis 225 mg/kgBB							
	Dosis 450 mg/kgBB							
	Dosis 900 mg/kgBB							
	Dosis Satelit	180 \pm 13,54	183 \pm 2,88	181,7 \pm 5,77	182 \pm 5,77	183 \pm 7,63	182 \pm 7,63	182 \pm 7,63

Lampiran 12. Data kadar kreatinin (mg/dL)**Tikus jantan**

Perlakuan	Tikus jantan	Kadar kreatinin		
		T0	T28	T42
Kontrol negatif	1	0,5	0,4	
	2	0,4	0,4	
	3	0,5	0,5	
	4	0,4	0,5	
	5	0,4	0,5	
Dosis 225 mg/kgBB	1	0,4	0	
	2	0,6	0,4	
	3	0,5	0	
	4	0,3	0,5	
	5	0,4	0,5	
Dosis 450 mg/kgBB	1	0,5	0	
	2	0,6	0	
	3	0,4	0,4	
	4	0,4	0,7	
	5	0,6	0,4	
Dosis 900 mg/kgBB	1	0,7	0,5	
	2	0,5	0	
	3	0,4	0,5	
	4	0,6	0	
	5	0,3	0,6	
Kelompok satelit	1	0,4	0,6	0,4
	2	0,3	0,8	0,6
	3	0,5	0,5	0
	4	0,5	0,4	0,5
	5	0,4	0	0

Tikus betina

Perlakuan	Tikus betina	Kadar kreatinin		
		T0	T28	T42
Kontrol negatif	1	0,4	0,6	
	2	0,5	0,6	
	3	0,7	0,5	
	4	0,7	0,8	
	5	0,5	0,5	
Dosis 225 mg/kgBB	1	0,4	0,5	
	2	0,7	0,5	
	3	0,5	0,4	
	4	0,4	0,3	
	5	0,5	0	
Dosis 450 mg/kgBB	1	0,5	0,5	
	2	0,6	0	
	3	0,4	0,6	
	4	0,6	0,5	
	5	0,4	0,5	
Dosis 900 mg/kgBB	1	0,5	0	
	2	0,3	0,5	
	3	0,4	0,6	
	4	0,7	0,5	
	5	0,5	0	
Kelompok satelit	1	0,3	0,6	0,5
	2	0,2	0,4	0
	3	0,6	0	0
	4	0,7	0,5	0,6
	5	0,4	0,4	0,4

Lampiran 13. Data kadar BUN (mg/dL)

Tikus jantan

Perlakuan	Tikus jantan	Kadar BUN		
		T0	T28	T42
Kontrol negatif	1	17	19	
	2	11	18	
	3	18	11	
	4	18	18	
	5	12	17	
Dosis 225 mg/kgBB	1	13	0	
	2	19	16	
	3	13	0	
	4	14	15	
	5	16	18	
Dosis 450 mg/kgBB	1	12	0	
	2	18	0	
	3	17	19	
	4	15	18	
	5	14	15	
Dosis 900 mg/kgBB	1	13	18	
	2	18	0	
	3	18	25	
	4	16	0	
	5	20	23	
Kelompok satelit	1	18	19	19
	2	17	16	19
	3	19	20	0
	4	13	18	17
	5	12	0	0

Tikus betina

Perlakuan	Tikus betina	Kadar BUN		
		T0	T28	T42
Kontrol negatif	1	18	24	
	2	17	14	
	3	16	16	
	4	22	18	
	5	17	17	
Dosis 225 mg/kgBB	1	19	14	
	2	20	11	
	3	14	14	
	4	17	13	
	5	17	0	
Dosis 450 mg/kgBB	1	14	22	
	2	14	0	
	3	16	16	
	4	15	17	
	5	18	15	
Dosis 900 mg/kgBB	1	14	0	
	2	14	20	
	3	13	17	
	4	12	16	
	5	11	0	
Kelompok satelit	1	14	19	23
	2	15	18	0
	3	11	0	0
	4	18	15	19
	5	20	24	21

Lampiran 14. Data kadar Albumin (mg/dL)

Tikus jantan

Perlakuan	Tikus jantan	Kadar Albumin		
		T0	T28	T42
Kontrol negatif	1	4,1	3,2	
	2	4,3	3,6	
	3	4,1	3,1	
	4	4,1	3,5	
	5	3,9	3,4	
Dosis 225 mg/kgBB	1	4,2	0	
	2	4	3,4	
	3	4	0	
	4	4	3	
	5	4,3	3,4	
Dosis 450 mg/kgBB	1	4,1	0	
	2	4,2	0	
	3	4,8	3,3	
	4	4,3	3,4	
	5	3,9	3,6	
Dosis 900 mg/kgBB	1	3,1	3,1	
	2	3,6	0	
	3	3,5	3,2	
	4	4,1	0	
	5	4,2	3,1	
Kelompok satelit	1	3,6	3,6	3,7
	2	4,3	3,5	3,8
	3	4,5	3,4	
	4	3,2	2,7	3,3
	5	2,8	0	

Tikus betina

Perlakuan	Tikus betina	Kadar Albumin		
		T0	T28	T42
Kontrol negatif	1	4,1	3,5	
	2	4,2	3,3	
	3	4	3,2	
	4	4	3,4	
	5	3,9	3,6	
Dosis 225 mg/kgBB	1	4	2,6	
	2	4	2,7	
	3	3,8	3,2	
	4	4	2,4	
	5	3,4	0	
Dosis 450 mg/kgBB	1	4,2	3	
	2	4,5	0	
	3	4,5	3	
	4	4,1	3,3	
	5	3,4	2,7	
Dosis 900 mg/kgBB	1	4,2	0	
	2	3,5	3	
	3	3,2	2,8	
	4	4,2	2,9	
	5	3,8	0	
Kelompok satelit	1	4	2,8	3,1
	2	4,2	2,9	0
	3	4,3	0	0
	4	4	3,6	3,5
	5	3,2	3	3,4

Lampiran 15. Data Kematian Hewan Uji

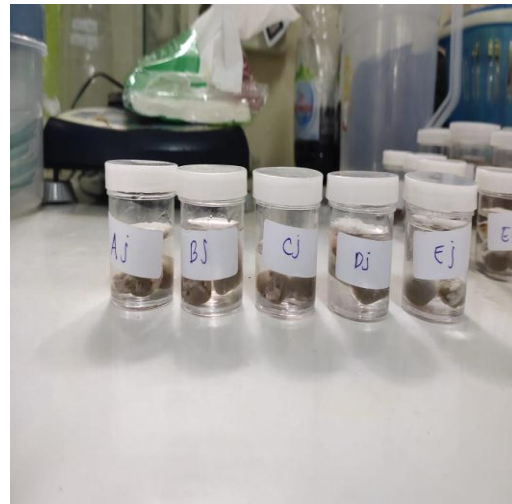
No	Tanggal	Dosis	No Tikus jantan	Keterangan
1	23/01/2020	Dosis 450 mg/kgBB	2	Tidak dibedah
2	27/01/2020	Dosis 225 mg/kgBB	1	Tidak dibedah
3	31/01/2020	Dosis 900 mg/kgBB	4	Tidak dibedah
4	03//2/2020	Dosis 900 mg/kgBB	2	Tidak dibedah
5	03/02/2020	Dosis satelit	5	Tidak dibedah
6	04/02/2020	Dosis 450 mg/kgBB	1	Dibedah
7	06/02/2020	Dosis 225 mg/kgBB	3	Tidak dibedah
8	19/02/2020	Dosis satelit	3	Dibedah

No	Tanggal	Dosis	No Tikus betina	Keterangan
1	22/01/2020	Dosis 900 mg/kgBB	5	Tidak dibedah
2	25/01/2020	Dosis satelit	3	Tidak dibedah
3	27/01/2020	Dosis 900 mg/kgBB	1	Dibedah
4	07/02/2020	Dosis 225 mg/kgBB	5	Dibedah
5	08/02/2020	Dosis 450 mg/kgBB	2	Tidak dibedah
6	13/02/2020	Dosis satelit	2	Tidak dibedah

Lampiran 16. Pemeriksaan histopatologi



Organ ginjal



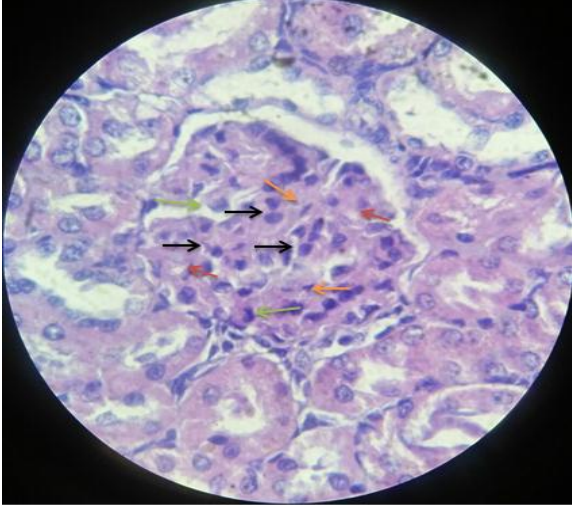
Penyimpanan organ dengan formalin

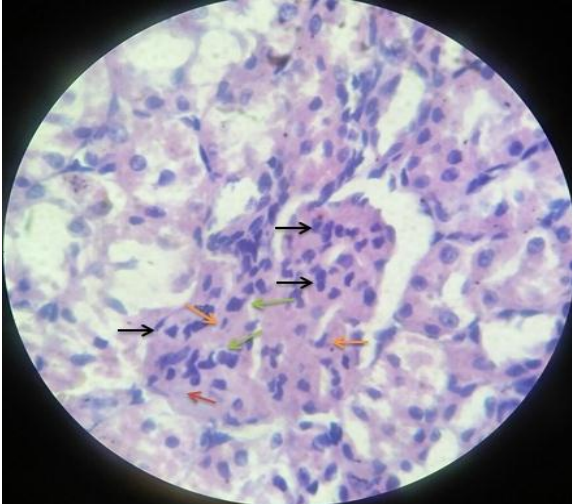
Lampiran 17. Gambaran hasil uji histopatologi

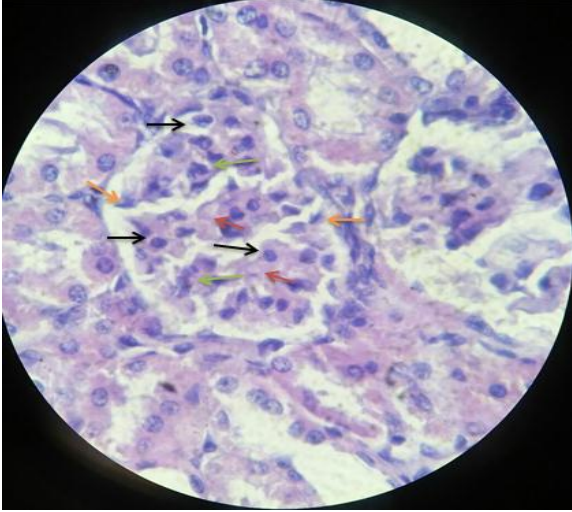
Kontrol negatif (CMC Na) jantan	
Perbesaran 1000 kali	
<p>A circular microscopic image of kidney tissue stained with hematoxylin and eosin (H&E). The image shows a cross-section of a renal corpuscle. Several arrows point to specific cellular features: black arrows point to normal cells, orange arrows point to cells with pyknotic nuclei, green arrows point to cells with karyorectic nuclei, and red arrows point to cells with karyolytic nuclei.</p>	<p>Keterangan :</p> <ul style="list-style-type: none"> → sel normal → piknosis → karyoreksis → karyolisis

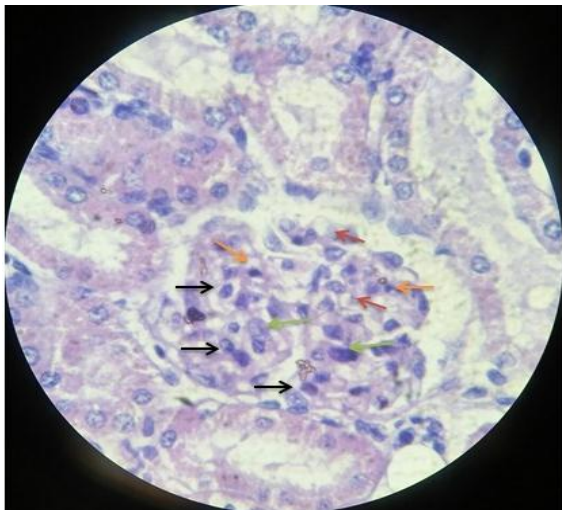
Kontrol negatif (CMC Na) betina	
Perbesaran 1000 kali	
	<p>Keterangan :</p> <ul style="list-style-type: none"> → sel normal → piknosis → karyoreksis → karyolisis

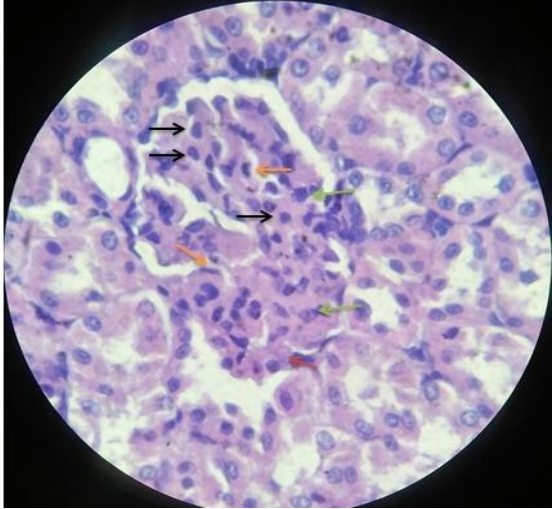
225mg/kgBB jantan	
Perbesaran 1000 kali	
	<p>Keterangan :</p> <ul style="list-style-type: none"> → sel normal → piknosis → karyoreksis → karyolisis

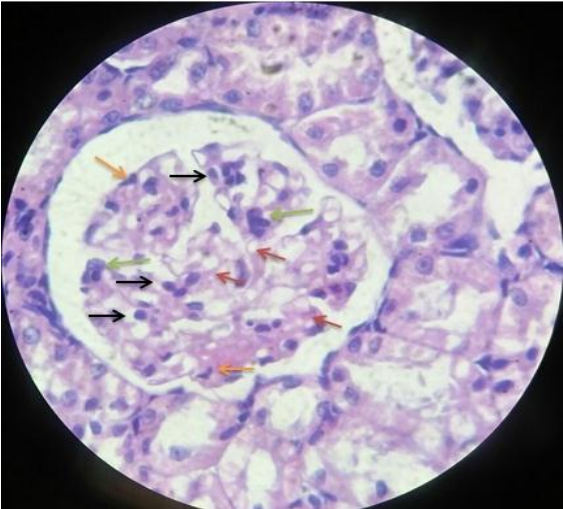
225mg/kgBB betina	
Perbesaran 1000 kali	
	<p>Keterangan :</p> <ul style="list-style-type: none">→ sel normal→ piknosis→ karyoreksis→ karyolisis

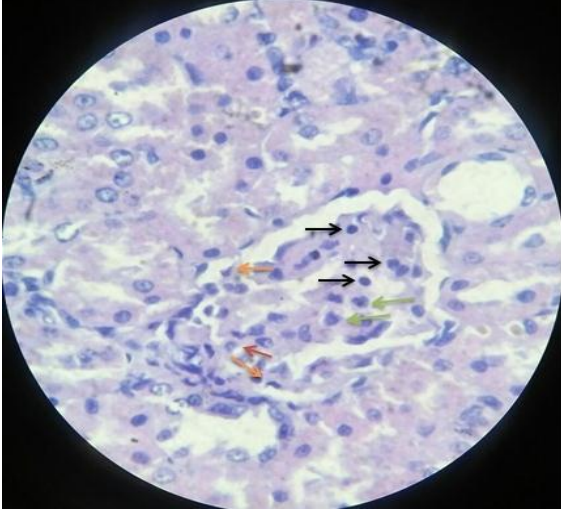
450 mg/kgBB jantan	
Perbesaran 1000 kali	
	<p>Keterangan :</p> <ul style="list-style-type: none">→ sel normal→ piknosis→ karyoreksis→ karyolisis

450 mg/kgBB betina	
Perbesaran 1000 kali	
	<p>Keterangan :</p> <ul style="list-style-type: none">→ sel normal→ piknosis→ karyoreksis→ karyolisis

900 mg/kgBB jantan	
Perbesaran 1000 kali	
	<p>Keterangan :</p> <ul style="list-style-type: none">→ sel normal→ piknosis→ karyoreksis→ karyolisis

900 mg/kgBB betina	
Perbesaran 1000 kali	
	<p>Keterangan :</p> <ul style="list-style-type: none">→ sel normal→ piknosis→ karyoreksis→ karyolisis

Satelit jantan	
Perbesaran 1000 kali	
	<p>Keterangan :</p> <ul style="list-style-type: none">→ sel normal→ piknosis→ karyoreksis→ karyolisis

Satelit betina	
Perbesaran 1000 kali	
	<p>Keterangan :</p> <ul style="list-style-type: none">→ sel normal→ piknosis→ karyoreksis→ karyolisis

Lampiran 18. Hasil analisis statistik

KREATININ JANTAN T0

One-Sample Kolmogorov-Smirnov Test

		kreatinint0
N		25
Normal Parameters ^{a,b}	Mean	.460
	Std. Deviation	.1041
	Absolute	.238
Most Extreme Differences	Positive	.238
	Negative	-.162
Kolmogorov-Smirnov Z		1.189
Asymp. Sig. (2-tailed)		.118

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

kreatinint0

Levene Statistic	df1	df2	Sig.
.551	4	20	.700

ANOVA

kreatinint0

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.020	4	.005	.417	.795
Within Groups	.240	20	.012		
Total	.260	24			

KREATININ JANTAN T28

One-Sample Kolmogorov-Smirnov Test

		kreatinint28
N		18
Normal Parameters ^{a,b}	Mean	.506
	Std. Deviation	.1110
	Absolute	.298
Most Extreme Differences	Positive	.298
	Negative	-.171
Kolmogorov-Smirnov Z		1.263
Asymp. Sig. (2-tailed)		.082

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

kreatinint28

Levene Statistic	df1	df2	Sig.
2.768	4	13	.073

ANOVA

kreatinint28

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.008	4	.002	.125	.971
Within Groups	.202	13	.016		
Total	.209	17			

KREATININ JANTAN T28 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t28	t42
N		4	3
Normal Parameters ^{a,b}	Mean	.575	.500
	Std. Deviation	.1708	.1000
	Absolute	.192	.175
Most Extreme Differences	Positive	.192	.175
	Negative	-.156	-.175
Kolmogorov-Smirnov Z		.384	.303
Asymp. Sig. (2-tailed)		.999	1.000

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t28	.600	3	.2000	.1155
	t42	.500	3	.1000	.0577

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t28 & t42	3	.500	.667

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1	t28 - t42	.1000	.1732	.1000	-.3303	.5303	1.000	2	.423

KREATININ JANTAN T0 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t0	t42
N		5	3
Normal Parameters ^{a,b}	Mean	.420	.500
	Std. Deviation	.0837	.1000
	Absolute	.231	.175
Most Extreme Differences	Positive	.194	.175
	Negative	-.231	-.175
Kolmogorov-Smirnov Z		.515	.303
Asymp. Sig. (2-tailed)		.953	1.000

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t0	.400	3	.1000	.0577
	t42	.500	3	.1000	.0577

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t0 & t42	3	-.500	.667

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	t0 - t42	-.1000	.1732	.1000	-.5303	.3303	-1.000	2	.423

KREATININ BETINA T0**One-Sample Kolmogorov-Smirnov Test**

		kreatinint0
N		25
Normal Parameters ^{a,b}	Mean	.496
	Std. Deviation	.1399
	Absolute	.169
Most Extreme Differences	Positive	.169
	Negative	-.128
Kolmogorov-Smirnov Z		.843
Asymp. Sig. (2-tailed)		.476

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

kreatinint0

Levene Statistic	df1	df2	Sig.
2.869	4	20	.050

ANOVA

kreatinint0

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.122	4	.030	1.747	.179
Within Groups	.348	20	.017		
Total	.470	24			

KREATININ BETINA T28

One-Sample Kolmogorov-Smirnov Test

		kreatinint28
N		20
Normal Parameters ^{a,b}	Mean	.515
	Std. Deviation	.1040
	Absolute	.257
Most Extreme Differences	Positive	.257
	Negative	-.243
Kolmogorov-Smirnov Z		1.151
Asymp. Sig. (2-tailed)		.141

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

kreatinint28

Levene Statistic	df1	df2	Sig.
.652	4	15	.635

ANOVA

kreatinint28

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.013	4	.003	.260	.899
Within Groups	.192	15	.013		
Total	.206	19			

KREATININ BETINA T28 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t28	t42
N		4	3
Normal Parameters ^{a,b}	Mean	.475	.500
	Std. Deviation	.0957	.1000
	Absolute	.283	.175
Most Extreme Differences	Positive	.283	.175
	Negative	-.217	-.175
Kolmogorov-Smirnov Z		.567	.303
Asymp. Sig. (2-tailed)		.905	1.000

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t28	.500	3	.1000	.0577
	t42	.500	3	.1000	.0577

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t28 & t42	3	.500	.667

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	t28 - t42	.0000	.1000	.0577	-.2484	.2484	.000	2	1.000

KREATININ BETINA T0 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t0	t42
N		5	3
Normal Parameters ^{a,b}	Mean	.440	.500
	Std. Deviation	.2074	.1000
	Absolute	.180	.175
Most Extreme Differences	Positive	.176	.175
	Negative	-.180	-.175
Kolmogorov-Smirnov Z		.402	.303
Asymp. Sig. (2-tailed)		.997	1.000

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t0	.467	3	.2082	.1202
	t42	.500	3	.1000	.0577

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t0 & t42	3	.721	.488

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1	t0 - t42	-.0333	.1528	.0882	-.4128	.3461	-.378	2	.742

BUN JANTAN T0**One-Sample Kolmogorov-Smirnov Test**

		BUNt0
N		25
Normal Parameters ^{a,b}	Mean	15.64
	Std. Deviation	2.706
	Absolute	.172
Most Extreme Differences	Positive	.155
	Negative	-.172
Kolmogorov-Smirnov Z		.862
Asymp. Sig. (2-tailed)		.448

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

BUNt0

Levene Statistic	df1	df2	Sig.
.534	4	20	.712

ANOVA

BUNt0

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	23.760	4	5.940	.782	.550
Within Groups	152.000	20	7.600		
Total	175.760	24			

BUN JANTAN T28**One-Sample Kolmogorov-Smirnov Test**

		BUNt28
N		18
Normal Parameters ^{a,b}	Mean	17.94
	Std. Deviation	3.038
	Absolute	.197
Most Extreme Differences	Positive	.197
	Negative	-.174
Kolmogorov-Smirnov Z		.838
Asymp. Sig. (2-tailed)		.484

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

BUNt28

Levene Statistic	df1	df2	Sig.
1.675	4	13	.215

ANOVA

BUNt28

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.361	4	2.840	.254	.902
Within Groups	145.583	13	11.199		
Total	156.944	17			

BUN JANTAN T28 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t28	t42
N		4	3
Normal Parameters ^{a,b}	Mean	18.25	18.33
	Std. Deviation	1.708	1.155
	Absolute	.192	.385
Most Extreme Differences	Positive	.156	.282
	Negative	-.192	-.385
Kolmogorov-Smirnov Z		.384	.667
Asymp. Sig. (2-tailed)		.999	.766

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t28	17.67	3	1.528	.882
	t42	18.33	3	1.155	.667

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t28 & t42	3	-.189	.879

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	t28 - t42	-.667	2.082	1.202	-5.838	4.504	-.555	2	.635

BUN JANTAN T0 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t0	t42
N		5	3
Normal Parameters ^{a,b}	Mean	15.80	18.33
	Std. Deviation	3.114	1.155
	Absolute	.250	.385
Most Extreme Differences	Positive	.216	.282
	Negative	-.250	-.385
Kolmogorov-Smirnov Z		.559	.667
Asymp. Sig. (2-tailed)		.913	.766

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t0	16.00	3	2.646	1.528
	t42	18.33	3	1.155	.667

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t0 & t42	3	.982	.121

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	t0 - t42	-2.333	1.528	.882	-6.128	1.461	-2.646	2	.118

BUN BETINA T0**One-Sample Kolmogorov-Smirnov Test**

		BUNt0
N		25
Normal Parameters ^{a,b}	Mean	15.84
	Std. Deviation	2.838
	Absolute	.142
Most Extreme Differences	Positive	.142
	Negative	-.099
Kolmogorov-Smirnov Z		.708
Asymp. Sig. (2-tailed)		.698

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

BUNt0

Levene Statistic	df1	df2	Sig.
.271	4	20	.893

ANOVA

BUNt0

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24.560	4	6.140	.727	.584
Within Groups	168.800	20	8.440		
Total	193.360	24			

BUN BETINA T28**One-Sample Kolmogorov-Smirnov Test**

		BUNt28
N		20
Normal Parameters ^{a,b}	Mean	17.00
	Std. Deviation	3.464
	Absolute	.150
Most Extreme Differences	Positive	.150
	Negative	-.093
Kolmogorov-Smirnov Z		.671
Asymp. Sig. (2-tailed)		.759

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

BUNt28

Levene Statistic	df1	df2	Sig.
2.622	4	15	.077

ANOVA

BUNt28

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	58.283	4	14.571	1.288	.319
Within Groups	169.717	15	11.314		
Total	228.000	19			

BUN BETINA T28 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t28	t42
N		4	3
Normal Parameters ^{a,b}	Mean	19.00	21.00
	Std. Deviation	3.742	2.000
	Absolute	.250	.175
Most Extreme Differences	Positive	.250	.175
	Negative	-.159	-.175
Kolmogorov-Smirnov Z		.500	.303
Asymp. Sig. (2-tailed)		.964	1.000

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t28	19.33	3	4.509	2.603
	t42	21.00	3	2.000	1.155

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t28 & t42	3	.444	.707

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	t28 - t42	-1.667	4.041	2.333	-11.706	8.373	-.714	2	.549

BUN BETINA T0 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t0	t42
N		5	3
Normal Parameters ^{a,b}	Mean	15.60	21.00
	Std. Deviation	3.507	2.000
	Absolute	.168	.175
Most Extreme Differences	Positive	.168	.175
	Negative	-.153	-.175
Kolmogorov-Smirnov Z		.375	.303
Asymp. Sig. (2-tailed)		.999	1.000

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t0	17.33	3	3.055	1.764
	t42	21.00	3	2.000	1.155

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t0 & t42	3	-.655	.546

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1	t0 - t42	-3.667	4.619	2.667	-15.140	7.807	-1.375	2	.303

ALBUMIN JANTAN T0

One-Sample Kolmogorov-Smirnov Test

		t0
N		25
Normal Parameters ^{a,b}	Mean	3.968
	Std. Deviation	.4507
	Absolute	.208
Most Extreme Differences	Positive	.151
	Negative	-.208
Kolmogorov-Smirnov Z		1.042
Asymp. Sig. (2-tailed)		.228

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

t0

Levene Statistic	df1	df2	Sig.
.394	4	20	.810

ANOVA

t0

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.510	4	.128	.585	.677
Within Groups	4.364	20	.218		
Total	4.874	24			

ALBUMIN JANTAN T28

One-Sample Kolmogorov-Smirnov Test

		albumint28
N		18
Normal Parameters ^{a,b}	Mean	3.306
	Std. Deviation	.2413
	Absolute	.208
Most Extreme Differences	Positive	.111
	Negative	-.208
Kolmogorov-Smirnov Z		.882
Asymp. Sig. (2-tailed)		.418

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

albumint28

Levene Statistic	df1	df2	Sig.
2.944	4	13	.062

ANOVA

albumint28

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.242	4	.060	1.052	.418
Within Groups	.748	13	.058		
Total	.989	17			

ALBUMIN JANTAN T28 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t28	t42
N		4	3
Normal Parameters ^{a,b}	Mean	3.300	3.600
	Std. Deviation	.4082	.2646
	Absolute	.347	.314
Most Extreme Differences	Positive	.231	.225
	Negative	-.347	-.314
Kolmogorov-Smirnov Z		.694	.544
Asymp. Sig. (2-tailed)		.722	.929

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t28	3.267	3	.4933	.2848
	t42	3.600	3	.2646	.1528

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t28 & t42	3	.958	.186

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	t28 - t42	-.3333	.2517	.1453	-.9585	.2918	-2.294	2	.149

ALBUMIN JANTAN T0 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t0	t42
N		5	3
Normal Parameters ^{a,b}	Mean	3.680	3.600
	Std. Deviation	.7190	.2646
	Absolute	.206	.314
Most Extreme Differences	Positive	.148	.225
	Negative	-.206	-.314
Kolmogorov-Smirnov Z		.460	.544
Asymp. Sig. (2-tailed)		.984	.929

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t0	3.700	3	.5568	.3215
	t42	3.600	3	.2646	.1528

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t0 & t42	3	.882	.312

Paired Samples Test

	Paired Differences				t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 t0 - t42	.1000	.3464	.2000	-.7605	.9605	.500	2	.667

ALBUMIN BETINA T0

One-Sample Kolmogorov-Smirnov Test

		albumint0
N		25
Normal Parameters ^{a,b}	Mean	3.948
	Std. Deviation	.3584
	Absolute	.238
Most Extreme Differences	Positive	.121
	Negative	-.238
Kolmogorov-Smirnov Z		1.188
Asymp. Sig. (2-tailed)		.119

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

albumint0

Levene Statistic	df1	df2	Sig.
2.749	4	20	.057

ANOVA

albumint0

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.098	4	.275	2.768	.056
Within Groups	1.984	20	.099		
Total	3.082	24			

ALBUMIN BETINA T28

One-Sample Kolmogorov-Smirnov Test

		albumint28
N		20
Normal Parameters ^{a,b}	Mean	3.045
	Std. Deviation	.3364
	Absolute	.153
Most Extreme Differences	Positive	.153
	Negative	-.078
Kolmogorov-Smirnov Z		.685
Asymp. Sig. (2-tailed)		.736

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

albumint28

Levene Statistic	df1	df2	Sig.
1.168	4	15	.364

ANOVA

albumint28

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.077	4	.019	.138	.965
Within Groups	2.073	15	.138		
Total	2.150	19			

ALBUMIN BETINA T28 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t28	t42
N		4	3
Normal Parameters ^{a,b}	Mean	3.075	3.333
	Std. Deviation	.3594	.2082
	Absolute	.333	.292
Most Extreme Differences	Positive	.333	.212
	Negative	-.222	-.292
Kolmogorov-Smirnov Z		.665	.506
Asymp. Sig. (2-tailed)		.768	.960

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t28	3.133	3	.4163	.2404
	t42	3.333	3	.2082	.1202

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t28 & t42	3	.846	.358

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	t28 - t42	-.2000	.2646	.1528	-.8572	.4572	-1.309	2	.321

ALBUMIN BETINA T0 DAN T42

One-Sample Kolmogorov-Smirnov Test

		t0	t42
N		5	3
Normal Parameters ^{a,b}	Mean	3.940	3.333
	Std. Deviation	.4336	.2082
	Absolute	.355	.292
Most Extreme Differences	Positive	.203	.212
	Negative	-.355	-.292
Kolmogorov-Smirnov Z		.794	.506
Asymp. Sig. (2-tailed)		.554	.960

a. Test distribution is Normal.

b. Calculated from data.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	t0	3.733	3	.4619	.2667
	t42	3.333	3	.2082	.1202

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	t0 & t42	3	-.277	.821

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1	t0 - t42	.4000	.5568	.3215	-.9831	1.7831	1.244	2	.339

BERAT BADAN TIKUS JANTAN

One-Sample Kolmogorov-Smirnov Test

		Minggu 0	Minggu 1	Minggu 2
N		25	25	23
Normal Parameters ^{a,b}	Mean	183,8000	180,5264	177,0461
	Std. Deviation	7,11220	7,71801	9,84363
	Absolute	,183	,179	,158
Most Extreme Differences	Positive	,183	,083	,136
	Negative	-,168	-,179	-,158
Kolmogorov-Smirnov Z		,917	,894	,760
Asymp. Sig. (2-tailed)		,369	,401	,611

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Minggu 0	2,523	4	20	,073
Minggu 1	2,238	4	20	,101
Minggu 2	6,578	4	18	,002

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Minggu 0	Between Groups	64,000	4	16,000	,278	,889
	Within Groups	1150,000	20	57,500		
	Total	1214,000	24			
Minggu 1	Between Groups	125,292	4	31,323	,480	,750
	Within Groups	1304,332	20	65,217		
	Total	1429,624	24			
Minggu 2	Between Groups	316,724	4	79,181	,785	,550
	Within Groups	1815,010	18	100,834		
	Total	2131,734	22			

Ranks

	Jantan	N	Mean Rank
Minggu 0	1	5	5,60
	2	5	5,40
	Total	10	
Minggu 1	1	5	5,50
	2	5	5,50
	Total	10	
Minggu 2	1	4	4,88
	2	4	4,13
	Total	8	

Test Statistics^{a,b}

	Minggu 0	Minggu 1	Minggu 2
Chi-Square	,011	,000	,192
df	1	1	1
Asymp. Sig.	,915	1,000	,661

a. Kruskal Wallis Test

b. Grouping Variable: Jantan

BERAT BADAN TIKUS BETINA

One-Sample Kolmogorov-Smirnov Test

		Minggu 0	Minggu 1	Minggu 2
N		25	25	22
Normal Parameters ^{a,b}	Mean	181,0000	179,9824	182,3636
	Std. Deviation	8,53913	8,54837	9,19413
	Absolute	,161	,130	,188
Most Extreme Differences	Positive	,119	,065	,092
	Negative	-,161	-,130	-,188
Kolmogorov-Smirnov Z		,806	,649	,880
Asymp. Sig. (2-tailed)		,535	,793	,420

a. Test distribution is Normal.

b. Calculated from data.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Minggu 0	,274	4	20	,891
Minggu 1	3,181	4	20	,036
Minggu 2	2,226	4	17	,109

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Minggu 0	Between Groups	290,000	4	72,500	,993	,434
	Within Groups	1460,000	20	73,000		
	Total	1750,000	24			
Minggu 1	Between Groups	74,817	4	18,704	,223	,922
	Within Groups	1678,975	20	83,949		
	Total	1753,792	24			
Minggu 2	Between Groups	616,758	4	154,190	2,263	,105
	Within Groups	1158,414	17	68,142		
	Total	1775,173	21			

Ranks

	Betina	N	Mean Rank
Minggu 0	1	5	5,00
	2	5	6,00
	Total	10	
Minggu 1	1	5	5,20
	2	5	5,80
	Total	10	
Minggu 2	1	4	6,50
	2	5	3,80
	Total	9	

Test Statistics^{a,b}

	Minggu 0	Minggu 1	Minggu 2
Chi-Square	,287	,099	2,178
df	1	1	1
Asymp. Sig.	,592	,753	,140

a. Kruskal Wallis Test

b. Grouping Variable: Betina