

## Daftar Pustaka

- Abere, T. A., Agoreyo, F. O., & Eze, G. I. (2012). *Phytochemical, Antimicrobial and Toxicological evaluation of the leaves of Peperomia Pellucida (L.) HBK (Piperaceae)*. *Journal of Pharmaceutical and Allied Sciences*, 9(3), 1637-1652
- Adawiah, Dede Sukandar, Anna Muawanah. 2015. *Aktivitas Antioksidan dan Kandungan Komponen Bioaktif Sari Buah Namnam*. *urnal Kimia VALENSI: Jurnal Penelitian dan Pengembangan Ilmu Kimia*, 1(2), November 2015, 130-136
- Aguilar, T. A. F., Navarro, B. C. H., & Pérez, J. A. M. (2016). Endogenous antioxidants: a review of their role in oxidative stress. *A master regulator of oxidative stress-the transcription factor nrf2*, 3-20.
- Angelina, M., Amelia, P., Irsyad, M., Meilawati, L., & Hanafi, M. (2015). *Karakterisasi Ekstrak Etanol Herba Katumpangan Air (Peperomia pellucida L . Kunth) (Characterization of Ethanol Extract from Katumpangan Air Herbs (Peperomia)*. Universitas Islam Negeri Jakarta, 53–61.
- Alves, N. S. F., Setzer, W. N., & da Silva, J. K. R. (2019). The chemistry and biological activities of *Peperomia pellucida* (Piperaceae): A critical review. *Journal of ethnopharmacology*, 232, 90-102.
- Amarathunga, A. A. M. D. D. N., & Kankanamge, S. U. (2017). *a Review on Pharmacognostic, Phytochemical and Ethnopharmacological Findings of Peperomia Pellucida (L.) Kunth: Pepper Elder*. *International Research Journal of Pharmacy*, 8(11), 16–23. <https://doi.org/10.7897/2230-8407.0811211>
- Alfonso, P. G. I., & Riego de Dios, M. B. C. (2015). *The Effects of Peperomia pellucida (L.) HBK methanolic extract on total blood cholesterol levels and liver histology of induced hypercholesterolemic rats* (Doctoral dissertation).
- AL, Mescher. "*Histologi dasar junqueira*." *Edisi ke-12*. Jakarta: EGC (2011).
- Arista Devy Apriana. *Effects of Long Exposure CO to ALT (Alanine Aminotransferase) Leve Alcoholic Steatosis in Different Strains of Rat: A Comparative Study*. Fakultas Kedokteran, Universitas Lampung.

- Arifin, W. N., & Zahiruddin, W. M. (2017). Sample size calculation in animal studies using resource equation approach. *The Malaysian journal of medical sciences: MJMS*, 24(5), 101.
- Aisyah, S., Budiman, H., Aliza, D., Salim, M. N., Balqis, U., & Armansyah, T. (2015). EFEK PEMBERIAN MINYAK JELANTAH TERHADAP GAMBARAN HISTOPATOLOGIS HATI TIKUS PUTIH (*Rattus norvegicus*). *Jurnal Medika Veterinaria*, 9(1).
- Azzahra, H. (2020). *Pengaruh pemberian Natrium Nitrit terhadap fungsi enzimatis kadar Alanine Transaminase (ALT) dan Aspartate Transaminase (AST) serta gambaran histopatologis organ hati Tikus Putih (Rattus norvegicus)* (Doctoral dissertation, UIN Sunan Ampel Surabaya).
- Bhopale, K. K., Kondraganti, S., Fernando, H., Boor, P. J., Kaphalia, B. S., & Ansari, G. S. (2015). Alcoholic steatosis in different strains of rat: a comparative study. *Journal of drug and alcohol research*, 4.
- Botezelli, J. D., Mora, R. F., Dalia, R. A., Moura, L. P., Cambri, L. T., Ghezzi, A. C., ... & Mello, M. A. (2010). Exercise counteracts fatty liver disease in rats fed on fructose-rich diet. *Lipids in health and disease*, 9(1), 1-9
- Bredo RM. 2011. Anatomy of the liver in Wistar Rat (*Rattus nervegicus*). *Jurnal Internasional J. Morphol* : 77
- Carocho, M., & Ferreira, I. C. (2013). A review on antioxidants, prooxidants and related controversy: natural and synthetic compounds, screening and analysis methodologies and future perspectives. *Food and chemical toxicology*, 51, 15-25
- Chen L. The role of antioxidant in photoprotector: a critical review. *J Am Acad Dermatol*. 2012; 67(5): 1013-24
- Farasat, M., Khavari-Nejad, R. A., Nabavi, S. M. B., & Namjooyan, F. (2014). Antioxidant activity, total phenolics and flavonoid contents of some edible green seaweeds from northern coasts of the Persian Gulf. *Iranian journal of pharmaceutical research: IJPR*, 13(1), 163.

- Fabros III, J. A. D., & Fulgar, M. D. E. (2013). *Antioxidant effect of Peperomia pellucida (L.) HBK decoction on the liver histopathology of trichloroethylene-exposed rats* (Doctoral dissertation).
- Fakayode Aderonke, E., Imaghodob Freda, I., Fajobi Adeniyi, O., Emma-Onkon Beatrice, O., & Oyedapo Oluokun, O. Phytonutrients, antioxidants and anti-inflammatory analysis of peperomia pellucida.
- Fatmawati, N. K., Ali, M., & Widjajanto, E. (2012). Efek Proteksi Kombinasi Minyak Wijen (Sesame Oil) dengan  $\alpha$ -Tocopherol terhadap Steatosis melalui Penghambatan Stres Oksidatif pada Tikus Hiperkolesterolemia. *The Journal of Experimental Life Science*, 2(2), 56-64.
- Florence, N. T., Huguet, S. T. S., Hubert, D. J., Raceline, G. K., Desire, D. D. P., Pierre, K., & Theophile, D. (2017). Aqueous extract of Peperomia pellucida (L.) HBK accelerates fracture healing in Wistar rats. *BMC complementary and alternative medicine*, 17(1), 1-9
- Hong SH, Lee H, Lee HJ, Kim B, Nam MH, Shim BS, Kim SH. Ethanol Extract of Pinus koraiensis Leaf Ameliorates Alcoholic Fatty Liver via the Activation of LKB1-AMPK Signaling In Vitro and In Vivo. *Phytother Res*. 2017 May;31(5):783-791. doi: 10.1002/ptr.5801. Epub 2017 Mar 16. PMID: 28299850.
- Hamzah, R. U., Odetola, A. A., Erukainure, O. L., & Oyagbemi, A. A. (2012). Peperomia pellucida in diets modulates hyperglycemia, oxidative stress and dyslipidemia in diabetic rats. *Journal of Acute Disease*, 1(2), 135-140.
- Imbar, A. C., de Queljoe, E., & Rotinsulu, H. (2019). Uji Aktivitas Antihiperurisemia Ekstrak Etanol Tumbuhan Suruhan (Peperomia pellucida L. Kunth) Terhadap Tikus Putih Jantan (Gallur wistar) Yang Di Induksi Kafein. *PHARMACON*, 8(4), 953-960
- Javier, M. I., & Segun, V. Bachelor of Science in Chemistry for Teachers 2013.
- Junquiera, LC and Carneiro, J 2012. Histologi dasar, Edisi 10. trans. A Dharma, EGC, Jakarta

- Kamper-Jørgensen, M., Grønbaek, M., Tolstrup, J., & Becker, U. (2004). Alcohol and cirrhosis: dose–response or threshold effect?. *Journal of hepatology*, 41(1), 25-30.
- Kapoor, V. K. 2015. *Liver Anatomy*. (serial online), (Oktober 2021). Available at: <http://emedicine.medscape.com/article/1900159overview>
- Kerr JB 2010, *Functional histology*, 2nd Ed, Mosby Elsevier, Australia, Pp. 356-357.
- Kumari Neha, Md Rafi Haider, Ankita Pathak, M.Shahar Yar. 2019. *Medical Prospect of antioxidant. A review*. European Journal of Medicinal Chemistry 178 (2019) 687e704.
- Kumar, S. (2014). The importance of antioxidant and their role in pharmaceutical science-a review. *Asian Journal of Research in Chemistry and Pharmaceutical Sciences*, 1(1), 27-44.
- Kumar, R., Prakash, S., Chhabra, S., Singla, V., Madan, K., Gupta, S. D., ... & Acharya, S. K. (2012). Association of pro-inflammatory cytokines, adipokines & oxidative stress with insulin resistance & non-alcoholic fatty liver disease. *The Indian journal of medical research*, 136(2), 229.
- Liu, J. (2014). Ethanol and liver: recent insights into the mechanisms of ethanol-induced fatty liver. *World journal of gastroenterology: WJG*, 20(40), 14672.
- Louvet, A., & Mathurin, P. (2015). Alcoholic liver disease: mechanisms of injury and targeted treatment. *Nature reviews Gastroenterology & hepatology*, 12(4), 231-242.
- Majumder, P. (2011). Evaluation of pharmacognostic, phytochemical profile along with quantitative physicochemical standards on the root of the medicinal herb *Peperomia pellucida* (L.) HBK. *Journal of Pharmaceutical and Biomedical Sciences*, 10(10), 1-3.
- Manela, C., & Hidayat, T. (2018). Korelasi Kadar Alkohol dengan Derajat Luka Dalam Hal Pembuatan Visum Et Repertum pada Pasien Kecelakaan Lalu Lintas Rumah Sakit M. Djamil Padang. *Jurnal Kesehatan Andalas*, 7(3), 370. <https://doi.org/10.25077/jka.v7i3.888>
- Matibag, I. L., & Su, G. L. (2013). Enzyme activity and histopathology of rat liver treated with crude methanolic extract of *Peperomia pellucida*

(L.) HBK. *Journal of Biological Sciences [serial on the internet]*, 13(4), 183-95.

Mawati, isa desi. (2017). Uji Aktivitas Antihiperurisemia Ekstrak Etil Asetat Tanaman Suruhan (*Peperomia pellucida* L. Kunth) Pada Tikus Putih Jantan Yang Diinduksi Kafein. 1–64.

Melo, A., Guimarães, E. F., & Alves, M. (2016). Synopsis of the genus *Peperomia* Ruiz & Pav.(Piperaceae) in Roraima State, Brazil1. *Hoehnea*, 43, 119-134.

Merlin Mathew and Jyoti Harindran, 2018. *Antioxidant And Free Radical Scavenging Activiti Of Peperomia Pellucida L. Kunth*. World Journal of Pharmaceutical Research. doi: 10.20959/wjpr201817-13461

Massey, V. L., Arteel, G. E. 2012. Acute Alcohol Induced Liver Injury. *Frontier in Physiology*. Vol : 3.

Mollik, M. A. H., Hossan, M. S., Paul, A. K., Taufiq-Ur-Rahman, M., Jahan, R., & Rahmatullah, M. (2010). A comparative analysis of medicinal plants used by folk medicinal healers in three districts of Bangladesh and inquiry as to mode of selection of medicinal plants. *Ethnobotany Research and Applications*, 8, 195-218.

Namvar, F., Mohamed, S., Fard, S. G., Behravan, J., Mustapha, N. M., Alitheen, N. B. M., & Othman, F. (2012). Polyphenol-rich seaweed (*Eucheuma cottonii*) extract suppresses breast tumour via hormone modulation and apoptosis induction. *Food chemistry*, 130(2), 376-382.

Norström, T., & Ramstedt, M. (2018). The link between per capita alcohol consumption and alcohol-related harm in Sweden, 1987–2015. *Journal of studies on alcohol and drugs*, 79(4), 578-584.

Ngatidjan. 2006. *Metode Laboratorium dalam Toksikologi*. Cetakan ke1.Yogyakarta. Bagian Farmakologi dan Toksikologi Fakultas Kedokteran UGM. hal: 116, 136.

Pai VV, et al. Antioxidants in dermatology. *Indian Dermatol Online J*. 2014; 5(2): 210-4

Phaniendra, A., Jestadi, D. B., & Periyasamy, L. (2014). Free Radicals: Properties, Sources, Targets, and Their Implication in Various

- Diseases. *Indian Journal of Clinical Biochemistry*, 30(1), 11–26. doi:10.1007/s12291-014-0446-0
- Pisoschi, A. M., & Pop, A. (2015). The role of antioxidants in the chemistry of oxidative stress: A review. *European journal of medicinal chemistry*, 97, 55-74.
- Phongtongpasuk, S., & Poadang, S. (2014). Extraction of antioxidants from *Peperomia pellucida* L. Kunth. *Science & Technology Asia*, 38-43.
- Pertiwi PA & Widyaningsih W. 2015. *The Effect of Ethanol Extact of Ulva Latuca L. on SGPT-SGOT Activity in Rat*. Faculty of Pharmacy. University of Ahmad Dahlan : 2.
- Rocco, A., Compare, D., Angrisani, D., Zamparelli, M. S., & Nardone, G. (2014). Alcoholic disease: liver and beyond. *World journal of gastroenterology: WJG*, 20(40), 14652.
- Rehm, J., Mathers, C., Popova, S., Thavorncharoensap, M., Teerawattananon, Y., & Patra, J. (2009). Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *The lancet*, 373(9682), 2223-2233
- Sakhuja, P. (2014). Pathology of alcoholic liver disease, can it be differentiated from nonalcoholic steatohepatitis. *World Journal of Gastroenterology: WJG*, 20(44), 16474. Sakhuja, P. (2014). Pathology of alcoholic liver disease, can it be differentiated from nonalcoholic steatohepatitis. *World Journal of Gastroenterology: WJG*, 20(44), 16474.
- Saryono, S., Hernayanti, H., & Proverawati, A. (2020). Anti-toxicity test of *Peperomia pellucida* steeping on liver function in diabetic-induced rat. *Molekul*, 15(2), 97-104c
- Suckow, M. A., ]] , F. C., Wilson, R. P., & Foley, P. L. (Eds.). (2019). *The laboratory rat*. Academic Press.
- Sengupta, P. (2013). The laboratory rat: relating its age with human's. *International journal of preventive medicine*, 4(6), 624.
- Singh, D., & Gupta, R. S. (2011). Hepatoprotective activity of methanol extract of *Tecomella undulata* against alcohol and paracetamol induced hepatotoxicity in rats. *Life Sci Med Res*, 26, 1-8.

- Sitorus, E., Momuat, L.I. and Katja, D.G., 2013. *Aktivitas Antioksidan Tumbuhan Suruhan (Peperomia pellucida [L.] Kunth)*. Jurnal Ilmiah Sains, 13(1), pp.80-85
- Seth, D., Haber, P. S., Syn, W. K., Diehl, A. M., & Day, C. P. (2011). Pathogenesis of alcohol-induced liver disease: Classical concepts and recent advances. *Journal of gastroenterology and hepatology*, 26(7), 1089-1105.
- Singal, A. K., & Anand, B. S. (2013). Recent trends in the epidemiology of alcoholic liver disease. *Clinical Liver Disease*, 2(2), 53-56.
- Sosa, V., Moline, T., Somoza, R., Paciucci, R., Kondoh, H., LLeonart, ME, *stres oksidatif dan kanker: Tinjauan umum, Penuaan Res. Rev.*, Vol. 12, hlm. 376-390, 2013.
- Smith, J.B., & Mangkoewidjojo, S. (1988). *Pemeliharaan Pembiakan dan Penggunaan Hewan Percobaan di Daerah Tropis*. Depok: Penerbit Universitas Indonesia.
- Susanti, 2015. *Gambaran Histopatologi Hati Tikus Putih (Rattus norvegicus) yang diberi Insektisida Golongan Piretroid*. Fakultas Kedokteran UH.
- Tommolino, E., Piper, M. H. 2017. *Fatty Liver*. Medscape. website. [emedicine.medscape.com/article/175472-overview#a1](https://www.emedicine.medscape.com/article/175472-overview#a1). Updated January 25, 2022.
- Valenti, L., Pelusi, S., Bianco, C., Ceriotti, F., Berzuini, A., Iogna Prat, L., ... & Prati, D. (2021). Definition of healthy ranges for alanine aminotransferase levels: a 2021 update. *Hepatology communications*, 5(11), 1824-1832.
- Wang, Z., Singh, R., Marques, C., Jha, R., Zhang, B., & Kumar, S. (2021). Taper-in-taper fiber structure-based LSPR sensor for alanine aminotransferase detection. *Optics Express*, 29(26), 43793-43810.
- Wagner, K. H., Cameron-Smith, D., Wessner, B., & Franzke, B. (2016). Biomarkers of aging: from function to molecular biology. *Nutrients*, 8(6), 338.
- Waty, D. R., Saputri, F. C., & Mun'im, A. (2017). Secondary metabolites screening and acute toxicity test of *Peperomia pellucida* (L.) Kunth

methanolic extracts. *International Journal of PharmTech Research*, 10(1), 31-38.

Wei, L.S., Wee, W., Siong, J.Y.F. and Syamsumir, D.F., 2011. *Characterization of anticancer, antimicrobial, antioxidant properties and chemical compositions of Peperomia pellucida leaf extract*. *Acta Medica Iranica*, 49(10), pp.670-674.

Williams, J. A., & Ding, W. X. (2015). A mechanistic review of mitophagy and its role in protection against alcoholic liver disease. *Biomolecules*, 5(4), 2619-2642.

Widyastuti, E., Maharani, N., & Utomo, A. W. (2018). Effect of Mangosteen Peel Extract on SGOT and SGPT in Rats Fed Reused Cooking Oil. *Sains Medika: Jurnal Kedokteran dan Kesehatan*, 9(2), 45-49.  
Widyastuti, E., Maharani, N., & Utomo, A. W. (2018). Effect of Mangosteen Peel Extract on SGOT and SGPT in Rats Fed Reused Cooking Oil. *Sains Medika: Jurnal Kedokteran dan Kesehatan*, 9(2), 45-49.

Wibowo, W. A., Maslachah, L., dan Bijanti, R. 2008. Pengaruh Pemberian Buah Mengkudu Terhadap Kadar SGOT dan SGPT Tikus Putih dengan Diet Tinggi Lemak. *Media Veterinaria Medika*. Vol. 1. No.1.

Yoneda, M., Imajo, K., Eguchi, Y., Fujii, H., Sumida, Y., Hyogo, H., ... & Japan Study Group of Nonalcoholic Fatty Liver Disease (JSG-NAFLD). (2013). Noninvasive scoring systems in patients with nonalcoholic fatty liver disease with normal alanine aminotransferase levels. *Journal of gastroenterology*, 48(9), 1051-1060.

Zakhari, S. (2006). Overview: how is alcohol metabolized by the body?. *Alcohol research & health*, 29(4), 245.

Zalukhu, M. L., Phyma, A. R., & Pinzon, R. T. (2016). Proses Menua, Stres Oksidatif, dan Peran Anti Oksidan. *Cermin Dunia Kedokteran*, 43(10), 733-736.



# LAMPIRAN

### **Lampiran 1. Keterbatasan Penelitian**

Penelitian ini mempunyai keterbatasan-keterbatasan yang dapat dijadikan bahan pertimbangan bagi peneliti berikutnya agar mendapatkan hasil penelitian yang lebih baik lagi. Keterbatasan tersebut antara lain:

1. Perlu dilakukan penelitian selanjutnya untuk menggunakan dosis etanol lebih tinggi untuk memicu terjadinya kerusakan hati sampai pada gejala berat.
2. Pemberian perlakuan selama 6 minggu dalam penelitian ini belum cukup memicu kerusakan hati gejala berat. Sehingga perlu dilakukan penelitian dengan durasi perlakuan lebih lama, untuk menilai lebih lanjut pengaruh pemberian ekstrak suruhan (*Peperomia pellucida* L. Kunt) terhadap kerusakan hati tikus yang diinduksi alkohol.

## Lampiran 2 . Rekomendasi Etik



### **REKOMENDASI PERSETUJUAN ETIK**

Nomor : 27/UN4.6.4.5.31/ PP36/ 2022

Tanggal: 18 Januari 2022

Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH21120755	No Sponsor Protokol	
Peneliti Utama	<b>Laras Puspita Taib, SPd</b>	Sponsor	
Judul Peneliti	Pengaruh Pemberian Ekstrak Suruhan (Peperomia pellucida L. Kunt) Dalam Menghambat Peningkatan Alanin Aminotransferase Dan Perlemakan Sel Hati Tikus Jantan (Rattus norvegicus) Wistar Yang Diberi Alkohol		
No Versi Protokol	<b>2</b>	Tanggal Versi	<b>17 Januari 2022</b>
No Versi PSP		Tanggal Versi	
Tempat Penelitian	Laboratorium Fakultas Kedokteran Dan Fak. Farmasi Universitas Hasanuddin Makassar		
Jenis Review	<input type="checkbox"/> Exempted <input checked="" type="checkbox"/> Expedited <input type="checkbox"/> Fullboard Tanggal	Masa Berlaku	Frekuensi review lanjutan
Ketua KEPK FKUH RSUH dan RSWs	Nama <b>Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)</b>	Tanda tangan	
Sekretaris KEPK FKUH RSUH dan RSWs	Nama <b>dr. Agusalm Bukhari, M.Med.,Ph.D.,Sp.GK (K)</b>	Tanda tangan	

**Kewajiban Peneliti Utama:**

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Laporan SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap

### Lampiran 3. Perhitungan Dosis Ekstrak Suruhan

#### **Dosis 100 mg/kg BB**

$$\frac{100\text{mg}}{1000\text{ g}} = 0,1 \text{ mg/gram BB}$$

-Pemberian Dosis Ekstrak Suruhan 100 mg

$$= 0,1 \times 200$$

$$= 20 \text{ mg}$$

Berapa dosis untuk manusia?

$$= 20 \text{ mg} \times 56 \text{ (konversi tikus-manusia)}$$

$$= 1,120 \text{ mg (untuk manusia 70 kg)}$$

$$= 1,120 \text{ mg}/70 \text{ kg}$$

$$= 16 \text{ mg/kg}$$

#### **Dosis 200 mg/kg BB**

$$\frac{200\text{mg}}{1000\text{ g}} = 0,2 \text{ mg/gram BB}$$

-Pemberian Dosis Ekstrak Suruhan 200 mg

$$= 0,2 \times 200$$

$$= 40 \text{ mg}$$

Berapa dosis untuk manusia?

$$= 40 \text{ mg} \times 56 \text{ (konversi tikus-manusia)}$$

$$= 2,240 \text{ mg (untuk manusia 70 kg)}$$

$$= 2,240 \text{ mg}/70 \text{ kg}$$

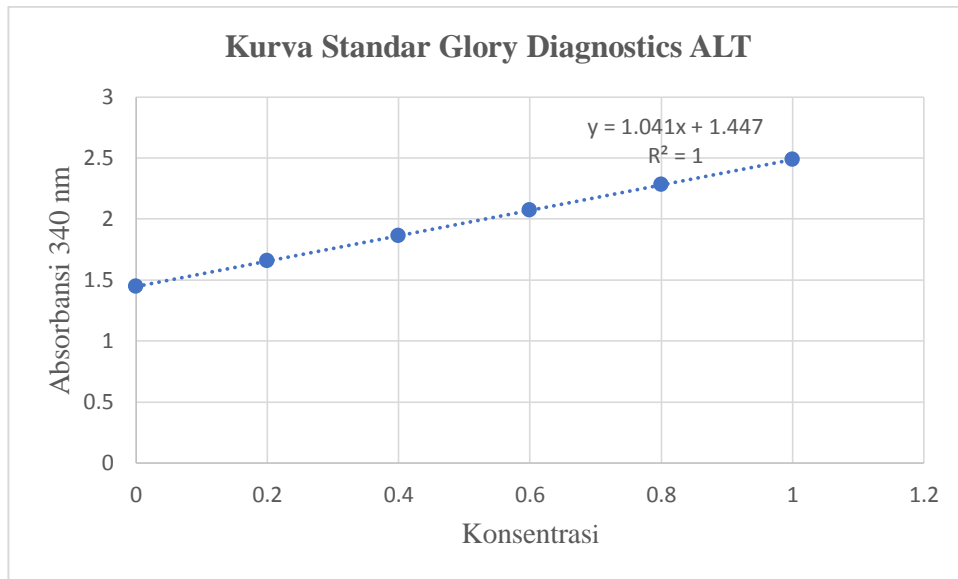
$$= 32 \text{ mg/kg}$$

#### **Volume pemberian aquades**

$$\frac{200\text{mg}}{200\text{mg}} \times 5 = 5 \text{ ml}$$

## Lampiran 4. Kurva Standar

### Kurva Standar Glory Diagnostics ALT/GPT



Persamaan akhir absorbansinya dengan  $y=1,041x+1,447$  dan  $R^2 = 1$ . Pada Kurva standar diperoleh memiliki nilai absorbansi yang berbanding lurus ke atas.

## Lampiran 5. Perhitungan Enzim ALT

Perhitungan total enzim ALT menggunakan rumus

$$u/L = \frac{\Delta A}{3} \times 1746 \text{ (30}^\circ\text{C)}.$$

### Data Pengukuran Enzim ALT Sebelum Perlakuan

Kontrol	Menit				Jumlah Enzim ALT
	0	1	2	3	
Kontrol (1)	0,513	0,501	0,498	0,478	20,30 u/L
Kontrol (2)	0,498	0,479	0,467	0,456	24,44 u/L
Kontrol (3)	0,400	0,388	0,376	0,364	20,95 u/L
Kontrol (4)	0,916	0,901	0,891	0,881	20,37 u/L
Kontrol (5)	1,050	1,039	1,025	1,014	20,95 u/L
Kontrol (6)	1,266	1,241	1,221	1,197	40,15 u/L
Kontrol (7)	1,268	1,244	1,214	1,189	45,09 u/L
Kontrol (8)	1,048	1,032	1,014	0,996	21,26 u/L
Rerata	26,68 u/L				

Perlakuan 2 (100 mg)	Menit				Jumlah Enzim ALT
	0	1	2	3	
S <sub>1</sub> (1)	1,279	1,263	1,244	1,234.	26,19 u/L
S <sub>1</sub> (2)	0,551	0,545	0,535	0,527	13,96 u/L
S <sub>1</sub> (3)	1,170	1,153	1,135	1,119	29,68 u/L
S <sub>1</sub> (4)	1,174	1,157	1,138	1,119	32,01 u/L
S <sub>1</sub> (5)	1,245	1,228	1,212	1,196	28,51 u/L
S <sub>1</sub> (6)	0,425	0,409	0,399	0,386	22,69 u/L
S <sub>1</sub> (7)	0,365	0,348	0,331	0,314	16,87 u/L

S <sub>1</sub> (8)	0,419	0,407	0,396	0,386	19,20 u/L
Rerata	23,63 u/L				

Perlakuan 1 (200 mg)	Menit				Jumlah Enzim ALT
	0	1	2	3	
S <sub>2</sub> (1)	0,546	0,537	0,527	0,517	16,87 u/L
S <sub>2</sub> (2)	1,350	1,327	1,308	1,286	37,28 u/L
S <sub>2</sub> (3)	1,396	1,392	1,385	1,379	15,75 u/L
S <sub>2</sub> (4)	1,340	1,325	1,307	1,291	28,51 u/L
S <sub>2</sub> (5)	1,315	1,295	1,276	1,255	34,92 u/L
S <sub>2</sub> (6)	0,420	0,409	0,397	0,391	16,87 u/L
S <sub>2</sub> (7)	0,393	0,386	0,380	0,371	12,84 u/L
S <sub>2</sub> (8)	0,356	0,347	0,338	0,329	15,71 u/L
Rerata	22,34 u/L				

#### Data Pengukuran Enzim ALT Setelah Perlakuan

Kontrol	Menit				Jumlah Enzim ALT
	0	1	2	3	
Kontrol (1)	0,395	0,388	0,384	0,876	48,30 u/L
Kontrol (2)	1,346	1,329	1,310	1,292	31,42 u/L
Kontrol (3)	1,229	1,212	1,196	1,178	29,68 u/L
Kontrol (4)	0,502	0,495	0,488	0,482	27,65 u/L
Kontrol (5)	0,414	0,404	0,393	0,382	18,62 u/L
Kontrol (6)	0,894	0,851	0,809	0,766	50,49 u/L
Kontrol (7)	0,880	0,820	0,760	0,720	69,12 u/L
Kontrol (8)	0,920	0,884	0,850	0,841	45,97 u/L

Rerata	40,16 u/L
--------	-----------

Perlakuan 2 (100 mg)	Menit				Jumlah Enzim ALT
	0	1	2	3	
S <sub>1</sub> (1)	0,946	0,939	0,918	0,903	25,02 u/L
S <sub>1</sub> (2)	0,417	0,408	0,400	0,391	15,13 u/L
S <sub>1</sub> (3)	1,422	1,396	1,388	1,377	26,19 u/L
S <sub>1</sub> (4)	0,999	0,981	0,963	0,945	31,42 u/L
S <sub>1</sub> (5)	0,409	0,395	0,385	0,375	19,78 u/L
S <sub>1</sub> (6)	0,420	0,409	0,398	0,387	19,20 u/L
S <sub>1</sub> (7)	0,413	0,404	0,396	0,388	14,55 u/L
S <sub>1</sub> (8)	0,438	0,428	0,418	0,408	17,46 u/L
Rerata	21,09 u/L				

Perlakuan 1 (200 mg)	Menit				Jumlah Enzim ALT
	0	1	2	3	
S <sub>2</sub> (1)	0,407	0,397	0,388	0,379	16,29 u/L
S <sub>2</sub> (2)	1,045	1,025	1,005	0,986	34,33 u/L
S <sub>2</sub> (3)	0,379	0,370	0,361	0,352	15,71 u/L
S <sub>2</sub> (4)	0,380	0,373	0,365	0,357	13,38 u/L
S <sub>2</sub> (5)	1,302	1,285	1,265	1,244	33,75 u/L
S <sub>2</sub> (6)	0,418	0,410	0,401	0,391	15,71 u/L
S <sub>2</sub> (7)	0,395	0,388	0,376	0,884	34,92 u/L
S <sub>2</sub> (8)	0,391	0,379	0,376	0,360	18,04 u/L
Rerata	22,76 u/L				



## Lampiran 6. Dokumentasi Penelitian



Kondisi kandang hewan coba



Pengukuran berat badan hewan coba dengan menggunakan timbangan neraca digital.



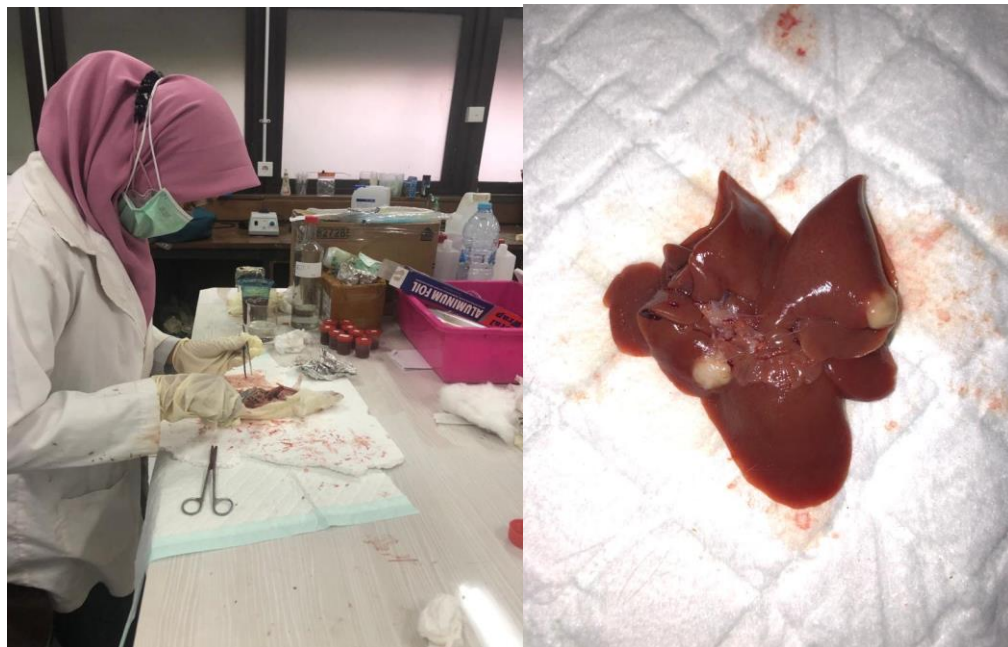
Penimbangan Ekstrak Suruhan



Pemberian perlakuan kepada tikus (Induksi etanol, aquades dan Ekstra Suruhan)



Pemeriksaan Serum Darah Tikus



Pembedahan Untuk Pemeriksaan Histologi Organ Hati Tikus

## Lampiran 7. Analisis Data Statistik SPSS

### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
▶ Enzim_ALT_Setelah	.143	24	.200*	.964	24	.432
Enzim_ALT_Sebelum	.160	24	.116	.952	24	.301

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

a. Lilliefors Significance Correction

### Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Enzim_ALT_Sebelum	.583	2	21	.567
Enzim_ALT_Setelah	.165	2	21	.849

### ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Enzim_ALT_Sebelum	Between Groups	79.426	2	39.713	.504	.611
	Within Groups	1655.324	21	78.825		
	Total	1734.750	23			
Enzim_ALT_Setelah	Between Groups	1710.747	2	855.374	6.366	.007
	Within Groups	2821.789	21	134.371		
	Total	4532.536	23			

**ANOVA**

Selisih\_Enzim\_ALT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1158.725	2	579.363	7.575	.003
Within Groups	1606.048	21	76.478		
Total	2764.773	23			

**Post Hoc Tests**

**Multiple Comparisons**

Dependent Variable: Selisih\_Enzim\_ALT

Tukey HSD

(I) Kelompok	(J) Kelompok	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Kontrol	S1	15.7942*	4.2494	.004	5.083	26.505
	S2	12.9018*	4.5261	.025	1.494	24.310
S1	Kontrol	-15.7942*	4.2494	.004	-26.505	-5.083
	S2	-2.8924	4.4072	.791	-14.001	8.216
S2	Kontrol	-12.9018*	4.5261	.025	-24.310	-1.494
	S1	2.8924	4.4072	.791	-8.216	14.001

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

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Kelompok Kontrol Sebelum	26.6838	8	10.01006	3.53909
Kelompok Kontrol Setelah	39.7813	8	16.57377	5.85971

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 Kelompok Kontrol Sebelum & Kelompok Kontrol Setelah	8	.765	.027

**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	Kelompok Kontrol Sebelum - Kelompok Kontrol Setelah	13.09750	10.99598	3.88766	-22.29037	-3.90463	-3.369	7	.012

Activate | Go to Settings

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Kelompok S1 Sebelum	23.6387	8	6.51273	2.30260
Kelompok S2 Setelah	21.0938	8	5.91514	2.09132

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 Kelompok S1 Sebelum & Kelompok S2 Setelah	8	.893	.003

**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 Kelompok S1 Sebelum - Kelompok S2 Setelah	-2.54500	2.93386	1.03728	.09223	4.99777	2.454	7	.044

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 S2 Sebelum	23.1257	7	10.18793	3.85068
Setelah_Perlakuan	23.4414	7	10.23483	3.86840

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 S2 Sebelum & Setelah_Perlakuan	7	-.658	.108

**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 S2 Sebelum - Setelah_Perlakuan	.42250	18.59707	7.02903	-17.51513	16.88371	-.045	6	.966

**Ranks**

	Kelompok	N	Mean Rank
Keruskan_Hati	Kontrol	4	7.25
	S1	4	6.50
	S2	4	5.75
	Total	12	

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

	Keruskan_Hati
Chi-Square	.407
df	2
Asymp. Sig.	.816

a. Kruskal Wallis Test

b. Grouping Variable:  
Kelompok

