M. DAFTAR PUSTAKA

Abdullah, N.,Kasim, K.F. 2017. In-Vitro Antidiabetic Activity of Clinacanthus nutansExtracts. Int.J.Pharm.Phytochem.Res., 9(6), pp. 846-852.

Adisakwattana, S., *et al.,*(2009). "Inhibition of α-glucosidase by flavonoids from some medicinal plants." Journal of Ethnopharmacology, 124(1), pp. 510-516.

Ahmed M. Acute Toxicity (Lethal Dose 50 Calculation) of Herbal Drug Somina in Rats and Mice. Pharmacol & Pharm. 2015;06(03):185-189. doi:10.4236/pp.2015.63019

Alam, A., Ferdosh, S., Ghafoor, K., Hakim, A., Juraimi, A. S., Khatib, A., & Sarker, Z. I. (2016). Clinacanthus nutans: A review of the medicinal uses, pharmacology and phytochemistry. In Asian Pacific Journal of Tropical Medicine (Vol. 9, Issue 4, pp. 402–409). Elsevier (Singapore) Pte Ltd. https://doi.org/10.1016/j.apjtm.2016.03.011

Alam*et al.,*2016. Influence Of Raisins Puree On The Physicochemical Properties, Resistant Starch, Probiotic Viability And Sensory Attributes Of Coconut Milk Yogurt. Faculty of Food Science and Technology, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia.

Alhassen L, Dabbous T, Ha A, Dang LHL, Civelli O. The Analgesic Properties of Corydalis yanhusuo. Molecules. 2021;26(24). doi:10.3390/molecules26247498

Aliyu A, Shaari MR, Ahmad Sayuti NS, Reduan MFH, Sith ambaram S, Noordin MM, Shaari K, Hamzah H. Subacute Oral Administration of Clinacanthus nutans Ethanolic Leaf Extract Induced Liver and Kidney Toxicities in ICR Mice. Molecules. 2020;25(11). doi:10.3390/molecules25112631

American Diabetes Association. (2014). "Diagnosis and classification of diabetes mellitus." Diabetes Care, 37(Supplement 1), pp. S81-S90.

American Diabetes Association. (2019). Classification and diagnosis of diabetes: Standards of Medical Care in Diabetes—2019. Diabetes Care, 42(Supplement 1), S13-S28. DOI: 10.2337/dc19-

S002

American Diabetes Association. 2018. Standards of Medical Care in Diabetes—2018.Diab.Care, 41(1), 57-5143.

Andarwulan, N., Wijaya, H., Cahyono, T. 1996. Aktivitas Antioksidan dari Daun Sirih (Piper betle L). Teknologi dan Industri Pangan. 7: 6-9.

Andayani, R., & Lisawati, Y. (2008). Penentuan Aktivitas Antioksidan, Kadar Fenolat Total dan Likopen pada Buah Tomat (Solanum Lycopersicum L). Jurnal Sains Dan Teknologi Farmasi, 13(1), 31–3

Anggraini, M.D., Kusuma, E.K. 2019. Uji Efek Antidiabetes Kombinasi Ekstrak Herba Sambiloto (Andrographis paniculate (Burm. F) Nees.) dan Daun Sirsak (Annona muricata L.) Pada Tikus Jantan Yang Diinduksi Aloksan. As-Syifa Jurnal Farmasi. 11(1): 24-29.

Ariani, N., Kartika, I. R., & Kurniadewi, F. (2017). Uji Aktivitas Inhibisi Enzim α- Glukosidase secara *In vitro* dari Ekstrak Metanol Daun Cryptocarya densiflora Blume dan Fraksi-Fraksinya. Jurnal Riset Sains Dan Kimia Terapan, 7(1), 14– 20.

Arjadi, Fitranto dan Susatyo, Priyo. (2010). 'Regenerasi Sel Pulau Langerhans Pada Tikus Putih (Rattus norvegicus) Diabetes yang Diberi Rebusan Daging Mahkota Dewa (Phaleria macrocarp (scheff.) Boerl.), Journal Medical Faculty of Jendral Soedirman University, Juli-Desember, Vol. 2, No.2, p 117-126.

Aronson, D. 2008. Hyperglycemia and the Pathobiology of Diabetic complications.Adv. Cardiol.45: 1-16.

Artati, Ahmad A, Karim A, Fajriah S, Karim H, Nuradi, Nur A, Zahra U, Djasang S, Nasir M, Fajriah SN. Exploration of the Potential of Dandang Gendis Leaf Extract (Clinacanthus nutans L) as an *In vitro* Antidiabetic (A-Glucosidase Enzyme Inhibition Test) and *In vivo* (Decrease Glucose Levels and Glut-2 Expression in Mice). In: Proceedings of the 4th International Seminar on Science and Technology (ISST 2022). Atlantis Press International BV; 2023:251-261. doi:10.2991/978-94-6463-228-6_29

Artati, Ahmad A, Karim A, Fajriah S, Karim H. The Effect of Solvents and Extraction Methods on Pharmacological Activities of Leaves of Dandang Gendis (Clinacanthus nutans): A Review Study. Plant Cell Biotechnol Mol Biol. 2021;22(41 & 42):184-196.

Arya A., Taha H., Khan A.K. 2014. *In vivo* Antidiabetic and antioxidant

potential of Pseudovaria macrophylla extract. International Journal of Medical, Health, Pharmaceutical and Biomedic Engineering 8: 514-517.

Arya, A., Taha, H., Khan, A. K., Shahid, N., Ali, H. M., & Mohd, M. A. (2014). *In vivo* Antidiabetic and Antioxidant Potential of Pseudovaria macrophylla Extract. International Journal of Medical, Health, Biomedical, Bioengineering and Pharmaceutical Engineering, 8(9), 540–543. https://www.researchgate.net/publication/266237398

Aslam, M.S., Ahmad, M.S., Mamat, A.S. 2016. Phytochemical Evaluation of Polyherbal Formulation of Clinacanthus nutans and Elephantopus scaber to Identify Flavonoid. Pharmacognosy Journal, 8(6): 534-541.

Ayodeji, O.D., Maryann, C.E., Samuel, C., Paul, T. 2019. Dependence Of Ageing On Reactive Oxygen Species Production and The Cushioning Effect of Antioxidants (Review). Journal Pharmacological Online Volume 1: 397-402.

Azalia. D, Rachmawati. I, Zahira. S, Andriyani, F., Melia .T, Rahmi A., Matematika dan Ilmu Pengetahuan Alam, F., Negeri Jakarta Jl Rawamangun Muka Raya No, U., Timur, J., & Jakarta, D. (2023). Uji Kualitatif Senyawa Aktif Flavonoid dan Terpenoid oada beberapa Jenis Tumbuhan Fabaceae dan

Apocynaceae di kawasan TNGPP Bodogol. Bioma: Jurnal Bilogi Makasar, 8(1), 32–33. https://journal.unhas.ac.id/index.php/bioma

Badan POM RI. 2014. Informatorium Obat Nasional Indonesia (IONI). Jakarta: Pusat Informasi Obat Nasional Badan POM RI.

Bagchi, D., *et al.,*(2000). "Free radicals and grape seed proanthocyanidin extract: importance In human health and disease prevention." Toxicology, 148(2-3),pp. 187-197.

Batubara R, Surjanto, Ismanelly Hanum T, Handika A, Affandi O. The screening of phytochemical and antioxidant activity of agarwood leaves (Aquilaria malaccensis) from two sites in North Sumatra, Indonesia. Biodiversitas. 2020;21(4):1588-1596. doi:10.13057/biodiv/d210440

Bhushan, M.S., Rao, C.V., Ojha, S.K., Vijayakumar, M., & Verma, A.,

2010, An Analytical Review of Plants for Antidiabetic Activity with Their Phytoconstituen & Mechanism of Action, International Journal of Pharmaceutical Sciences of Research, Vol. 1 (1): 29-46

Boots, A. W., Haenen, G. R., & Bast, A. (2008). Health effects of quercetin: From antioxidant to nutraceutical. European Journal of Pharmacology, 585(2-3), 325-337.

Boudreau, M.D., H.W. Taylor, D.G. Baker And J.C. Means. 2006. Dietary Exposure To 2-Aminoanthracene Induces Morphological And Immunocytochemical Changes In Pancreatic Tissues Of Fisher-344 Rats. Toxicol. Sci. 93: 50-61.

Budiarso, S.F., Suryanto, E., Yudishtira, A., 2017. Ekstraksi Dan Aktivitas Antioksidan Dari Biji Jagung Manado Kuning (Zea Mays L.). Pharmacon Jurnal Ilmiah Farmasi-UNSRAT. 6(3): 2302 – 2493.

Cancino K, Castro I, Yauri C, Jullian V, Arévalo J, Sauvain M, Adaui V, Castillo D. Toxicity assessment of synthetic chalcones with antileishmanial potential in BALB/c mice. Rev Peru Med Exp Salud Publica. 2021;38(3):424-433. doi:10.17843/rpmesp.2021.383.6937

Cancino K, Castro I, Yauri C, Jullian V, Arévalo J, Sauvain M, Adaui V, Castillo D. Toxicity assessment of synthetic chalcones with antileishmanial potential in BALB/c mice. Rev Peru Med Exp Salud Publica. 2021;38(3):424-433. doi:10.17843/rpmesp.2021.383.6937

Cao, H., & Chen, X. (2012). Structures Required of Flavonoids for Inhibiting Digestive Enzymes. Anti-Cancer Agents in Medicinal Chemistry, 12(8), 929–939. https://doi.org/10.2174/187152012802650110

Cazarolli, L. H., Zanatta, L., Alberton, E. H., *et al.*,(2018). Flavonoids: Prospective drug candidates. Mini Reviews in Medicinal Chemistry, 18(13), 1088-1095. DOI: 10.2174/1389557518666170307114752

Chan, E. W. C., Soon, C. Y., Tan, J. B. L., & Wong, S. K. (2012). Phytochemistry and pharmacological properties of Clinacanthus nutans: A review. Pharmacognosy Journal, 4(34), 1-9. DOI: 10.5530/pj.2012.34.1

Chothani, D.L. and Vaghasiya, H.U. (2011). "A review on Balanites

aegyptiaca Del (desert date): phytochemical constituents, traditional uses, and pharmacological activity." Pharmacognosy Reviews, 5(9), pp. 55-62.

Chuthaputti, A., *et al.,*(2012). "Safety evaluation of Clinacanthus nutans (Burm. f.) Lindau extracts in rats." Journal of Ethnopharmacology, 142(1), pp. 430-437.

comperative study. Journal of Basic and Clinical Physiology and Pharmacology. 26(2): 165-170.

Dahlia, A. A., Amima, N. Q., Arum, A. R., Syarif, R. A., & Ahmad, A. R. (2022). Kadar Fenolik Dan Flavonoid Total Dalam Ekstrak Metanol Daun Cemba (Acacia Rugata (Lam.) Fawc. Rendle). Jurnal Fitofarmaka Indonesia, 9(1), 15–19. Https://Doi.Org/10.33096/Jffi.V9i1.808

Danggur YE, Seran W, Kaho NPLBR. Identification of Types of Traditional Medicinal Plants by Communities in the Meler Kuwus Protected Forest Area (Case Study of Banteng Suru Village, Kuwus District, West Manggarai Regency, East Nusa Tenggara Province. J Wana Lestari. 2022;04(02):293-302.

Departement of Applied Microbiology and Food Science, University of Saskatchewan Canada.

Depkes RI. 2014. Situasi dan Analisis Diabetes. Jakarta. http://www.depkes.go.id/folder/view/01/structure-publikasi-pusdatininfo- datin.html

Dewi, N. W. O. A. C., Puspawati, N. M., Swantara, I. M. D., Asih, I. A. R. A., & Rita, W. S. (2014). Aktivitas Antiokn Senyawa Flavonoid Ekstrak Etanol Biji Terong Belanda (Solanum betaceum, syn) dalam Menghambat Reaksi Peroksidasi Lemak pada Plasma Darah Tikus Wistar. Cakra Kimia [Indonesian E-Journal of Applied Chemistry, 2(1), 7–16.

Dewinta NR, Mukono IS, Mustika A. The Effect of Dandang Gendis (Clinacanthus nutans) Extracts on Blood Glucose Levels in Wistar Rats Diabetes Mellitus Model. J Med Vet. 2020;3(1):76-81. doi:10.20473/jmv.vol3.iss1.2020.76-81

Dey P, Kundu A, Kumar A, Gupta M, Lee BM, Bhakta T, Dash S, Kim HS. Analysis of Alkaloids (Indole Alkaloids, Isoquinoline Alkaloids, Tropane Alkaloids). Elsevier Inc.; 2020. doi:10.1016/B978-0-12-816455-6.00015-9

Diao, H. Z., Chen, W. H., Cao, J., Shao, T. M., Song, X. P., & Han, C. R. (2019).Furofuran lignans and alkaloids from Clinacanthus nutans. Natural Product Research, 33(9), 1317-1321.

Diez, J.M., Bauman, E., Gajardo, R. 2015. Culture of Human Mesenchymal stem cells using a candidate pharmaceutical grade xeno- free cell culture supplement derived from industrial human plasma pools, stem cell research and therapy. Stem Cell Res Ther. 6(1): 28.

Direktorat Pengendalian Penyakit Tidak Menular. 2008. Pedoman Teknis Penemuan dan Tatalaksana penyakit Diabetes Melitus. II penyunt. Jakarta: Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan Departemen Kesehatan RI.

Doughari James Hamuel. 2012. Phytochemicals : Extraction Methods, Basic Structuresand Mode of Action as Potential Chemotherapeutic Agents. Department of Microbiology School of Pure and Applied Sciences, Federal UniversityofTechnology Yola. Nigeria.

Dwimayasanti R. 2018. Seaweed : Natural Antioxidant Free Radical Antidote. Oseana.2 13-23.

Edem, D.O. 2009. Hypoglycemic Effects of Ethanolic Extract of Alligator Pear Seed (Persea Americana Mill) in Rats, European Journal of Scientific Research, 33,4,669- 678.

Effective A gainst Type 2 Diabetes Mellitus: A Systematic Review. Curr Top Med Chem.2021;21(12):1067-1095. doi:10.2174/1568026621666210509161059

Egbuna C, Awuchi CG, Kushwaha G, Rudrapal M, Patrick-Iwuanyanwu KC, Singh O, Odoh UE, Khan J, Jeevanandam J, Kumarasamy S, Chukwube VO, Narayanan M, Palai S, Găman M-A, Uche CZ, Ogaji DS, Ezeofor NJ, Mtewa AG, Patrick-Iwuanyanwu CC, Kesh SS, Shivamallu C, Saravanan K, Tijjani H, Akram M, Ifemeje JC, Olisah MC, Chikwendu CJ. Bioactive Compounds

El Barky, A. R. Hussein, S.A., Eldeen, A.A.E.A., Hafez, Y.A., Mohamed,T.M.2017. Saponins and their potential role in diabetes mellitus. Diab.Manag., 7(1), 148- 158.

Fajarullah, A. 2014. Ekstraksi Senyawa Metabolit Sekunder Lamun Thalassodendron ciliatum Pada Pelarut Berbeda. FIKP UMRAH, Tanjung Pinang.

Fatmawati, Susilawati, Oswari, L. D., Fadiya, & Nadya. (2021). Uji Aktivitas Penghambatan Enzim α-glucosidase Ekstrak Air dan Ekstrak Etanol Kayu Kuning (Arcangelisia flava). Jurnal Kedokteran Dan Kesehatan: Publikasi Ilmiah Fakultas Kedokteran Universitas Sriwijaya, 8(1), 53–61. https://doi.org/10.32539/JKK.V8I1.13118

Finegood, D., MC Arhur, M., & Kojwang, D. (2001). Rosiglitazion prevent the rise of net cell death. Diabetes, 50, 1021–1029.

Foo, J. B., Saad, W. N. W., Abdullah, R., *et al.,*(2018). Phytochemical constituents and antioxidant properties of Clinacanthus nutans (Burm. f.) Lindau leaves in different solvent systems. BMC Complementary and Alternative Medicine, 18(1), 3. DOI: 10.1186/s12906-018-2087-5

Foo, J. B., Saad, W. N. W., Abdullah, R., *et al.,*(2018). Phytochemical constituents and antioxidant properties of Clinacanthus nutans (Burm. f.) Lindau leaves in different solvent systems. BMC Complementary and Alternative Medicine, 18(1), 3. DOI: 10.1186/s12906-018-2087-5

Francis, G., *et al.,*(2002). "The biological action of saponins in animal systems: a review." British Journal of Nutrition, 88(6), pp. 587-605.

Fransiska, Amelia, dkk. (2021). Efektivitas Kombinasi Effleurage Massage Dan Jahe Compres Ball Terhadap Penurunan Tingkat Nyeri Punggung.

Fukumoto, L. R., & Mazza, G. (2000). Assessing antioxidant and prooxidant activities of phenolic compounds. J Agric Food Chem, 48(8), 3597–3604.

Galati, G. dan O'Brien, P.J. (2004). "Potential toxicity of flavonoids and other dietary phenolics: significance for their chemopreventive and anticancer properties." Free Radical Biology and Medicine, 37(3), pp. 287-303.

Goh, L. M. L., & Pannirselvam, B. (2013). *In vitro* α-glucosidase inhibition and antioxidant activities of condensed tannins from Rhizophora apiculata bark. Journal of Medicinal Plants Research, 7(33), 2445-2450. DOI: 10.5897/JMPR2013.5147

Górecki, T., & Poerschmann, J. (2006). Applications of comprehensive two-dimensional gas chromatography (GC × GC) in environmental analysis and related fields. Journal of Chromatography A, 1126(1-2), 1-12.

Guide of Drug Interactions. Bone Care International Nephrology Pharmacy Associated Inc. Middleton

Haetrakul, T., Dunbar, S.G., and Chansue, N. 2018. Antiviral Activities of Clinacanthusnutans(Burm.f.) Lindau E3xtract Against Cyprinid Herpesvirus 3 in Koi (Cyprinus carpio koi). Journal Fish Diseases. 41(4): 581-587.

Haida, Z., & Hakiman, M. (2019). A review of therapeutic potentials of Clinacanthus nutans as source for alternative medicines. Sains Malaysiana, 48, 2683-2691. Hanhineva, K., Törrönen, R., Bondia-Pons, I., Pekkinen, J., Kolehmainen, M., Mykkänen, H., & Poutanen, K. (2010). Impact of dietary polyphenols on carbohydrate metabolism. International Journal of Molecular Sciences, 11(4),1365-1402.

Harapan, Jamil, K., Hayati, Z., & Muhammad, I. (2010). Peran puasa dalam remodelling sel enteroendokrin untuk mencegah diabetes melitus tipe 2. JIMKI, 1(1), 36– 40.

Harborne. 1987. Metode Fitokimia: Penuntun Cara Modern Menganalisis Tumbuhan. Edisi I. Terjemahan Kosasih Padmawinata dan Iwang Soediro. Bandung: Penerbit ITB.

Hartanti, D. and Budipramana, K., 2020. Traditional antidiabetic plants from Indonesia. Ethnobotany Research & Applications, 19(34), pp.1-24.
Availableat:https://ethnobotanyjournal.org/index.php/era/article/view/2134 [Accessed 28 July 2024].A. Rahmawati, and T. Lestari. 2013. “Penetapan Kadar Total Flavonoid Ekstrak Etanol Dan Fraksi Daun Saliara (Lantana Camara L.) dengan Metode Spektrofotometri”. Tasikmalaya: Sekolah Tinggi Ilmu Kesehatan Bakti Tunas Husada Tasikmalaya,

Haryati, N.A., Chairul S., Erwin. (2015). Uji Toksisitas dan Aktivitas

Antibakteri Ekstrak Daun Merah Tanaman Pucuk Merah (Syzygium myrtifollium Walp). terhadap Bakteri Staphylococcus aureus dan Escherichia coli. Jurnal Kimia Mulawarman. 13 (1): p.35-40

Hayden, M.R., P.R. Karuparthi, C.M. Manrique, G. Lastra, J. Habibi And J.R. Sowers. 2007. Longitudinal Ultrastructure Study Of Islet Amyloid In The Hip Rat Model Of Type 2 Diabetes Mellitus. Exp. Biol. Med. 232: 772-779.

Hernani., Raharjo, M. 2005. Tanaman Berkhasiat Antioksidan. Penebar Swadya, Jakarta.

Hikmah *et al* 2016. GC-MS/MS analysis and preliminary antimicrobial activity of Albizia adianthifolia (Schumach) and Pterocarpus angolensis (DC). Medicines, 3(1): doi:10.1155/2012/632796

Hikmah, N., Arung, E. T., & Sukemi, S. (2020). Senyawa fenolik dan flavonoid, dan aktivitas antioksidan ekstrak metanol kulit buah ihau (Dimocarpus longan Lour. var. malesianus Leenh.). Bivalen: Chemical Studies Journal, 3(2), 39–42. https://doi.org/10.30872/bcsj.v3i2.447

Hikmah, N., Yuliet, Y., & Khaerati, K. (2016). Pengaruh Pemberian Ekstrak Daun Salam (Syzygium polyanthum Wight.) Terhadap Glibenklamid dalam Menurunkan Kadar Glukosa Darah Mencit (Mus musculus) yang Diinduksi Aloksan. Galenika Journal of Pharmacy, 2(1), 24–30. https://doi.org/10.22487/j24428744.2016.v2.i1.5300

Hossain, M.A., & Ismail, Z. (2013). Analysis of phenolics, flavonoids, and antioxidant activity in oil palm leaves. International Journal of Food Properties, 16(5), 1080-1092.

Huang, D., Guo, W., Gao, J., Chen, J., & Olatunji, J. O. (2015). Clinacanthus nutans ethanol extract inhibits hepatoma in mice through upregulation of the immune response. Molecules, 20, 17405-17428.

Ighodaro, O.M., Adeosun, A.M., Akinloye, O.A. 2017. Alloxan-induced diabetes, a common model for evaluating the glycemic-control potential of therapeutic compounds and plants extracts in experimental studies. Medicina. 53:365- 374.

Infodatin. 2014. Situasi dan Analisis Diabetes, Jakarta: Pusat Data dan Informasi Kementerian Kesehatan RI.

International Diabetes Federation, 2013, International Diabetes Federation Sixth Edition, Terdapat di: www.idf.org/diabetesatlas.

International Diabetes Federation. 2017. IDF Diabetes Atlas -eighth edition, Brussels: International Diabetes Federation.

Islam, S., 2006, Sweetpotato (Ipomoea batatas L .) Leaf : Its Potential Effect on Human Health and Nutrition, Journal of Food Science, 71.

Ismail, F., Golbabapour, S., Hassandarvish, P., Hajrezaie, M., & Abdul Majid, N. (2012). Gastroprotective activity of Clinacanthus nutans leaf extract against ethanol- induced gastric mucosal hemorrhagic lesions in rats. Journal of Ethnopharmacology, 141(3), 979-986.

Ismail, N. Z., Arsad, H., Toha, Z. M., Mohamed Kamal, N. N., & Mohamad Zain, N. N. (2020). Antioxidant effects, antiproliferative effects, and molecular docking of Clinacanthus nutans leaf extracts. Molecules, 25(9), 2067.

Jorns, A., R. Munday, M. Tiege And S. Lenzen. 1997. Comparative Toxicity Of Alloxan, N-Alkylalloxans And Ninhydrin To Isolated Pancreatic Islet *In vitro*. J. Endocrinol. 155: 283-293.

Kadi, R., Salim, L. Z., Bamerni, H. H., & Ali, Z. (2018). Antioxidant and antidiabetic activities of phenolic compounds extracted from some plant materials: Mechanistic approach. International Journal of Pharmaceutical Sciences and Research, 9(11), 4500-4507. DOI: 10.13040/IJPSR.0975-8232.9(11).4500-07

Kaewpiboon, C., *et al.,*(2012). Antioxidant and cytotoxic activities of selected Thai medicinal plants. Fitoterapia, 83(1), 117-121.

Kamarudin, M. N. A., Sarker, M. M. R., Kadir, H. A., & Ming, L. C. (2017). Ethnopharmacological uses, phytochemistry, biological activities, and therapeutic applications of Clinacanthus nutans: A comprehensive review. Journal of Ethnopharmacology, 206, 245-266.

Kardono, L. B. S. (2003). Kajian Kandungan Kimia Mahkota Dewa (Phaleria marcocarpa). Prosiding Pameran Obat Tradisional Dan Seminar Sehari Mahkota Dewa, 72–76

Kemenkes RI, 2014. Peraturan Menteri Kesehatan Republik Indonesia Nomor 5 Tahun 2014. Jakarta: Kementerian Kesehatan RI.

Khadayat, K., Marasini, B. P., Gautam, H., Ghaju, S., & Parajuli, N.

(2020). Evaluation of the alpha-amylase inhibitory activity of Nepalese medicinal plants used in the treatment of diabetes mellitus. Clinical Phytoscience, 6, 34.

Khoo LW, Foong Kow AS, Maulidiani M, Lee MT, Tan CP, Shaari K, Tham CL, Abas F. Hematological, Biochemical, Histopathological and 1H-NMR Metabolomics Application in Acute Toxicity Evaluation of Clinacanthus nutans Water Leaf Extract. Molecules. 2018;23(9). doi:10.3390/molecules23092172

Khoo, L. W., Kow, S. A., Lee, M. T., Tan, C. P., Shaari, K., Tham, C. L., & Abas, F. (2018). A comprehensive review on phytochemistry and pharmacological activities of Clinacanthus nutans. Evidence-Based Complementary and Alternative Medicine, 2018.

Khoo, L. W., Mediani, A., Zolkeflee, N. K., Leong, S. W., Ismail, I. S., Khatib, A.Shaari, K., & Abas, F. (2015). Phytochemical diversity of Clinacanthus nutans extracts and their bioactivity correlations elucidated by NMR based metabolomics.

Kooti, W., Farokhipour, M., Asadzadeh, Z., Larky, D.A., Samani, M.A., 2016. The role of medicinal plants in the treatment of diabetes: a systematic review. Electr.Physic., 8(1), 1832-1842

Kotranas, 2007. Kebijakan Obat Trandisional Nasional Tahun 2007. [Online] Available at: http://binfar.depkes.go.id/dat/lama/1206328790_Buku%20Kebijakan%20Obat%20Tradisional%20Nasional%20Tahun%202007.pdf[Accessed4August2019]

Kumar, R., Sharma, A., Singh, G., *et al.,*(2020). Bioactive steroids as potential anti- diabetic agents: A comprehensive review. Steroids, 158, 108649. DOI: 10.1016/j.steroids.2020.108649

Kumari, M., Jain, S. 2012. Tannins: An Antinutrient with Positive Effect to Manage Diabetes. Res.J.Recent Sci., 1(12), 1-8.

Kurniawati, D., Jasaputra, D. K., Dewi, K., Sujatno, M., Putra, M. S., Sallyvania, M. Y., & Juanda, I. J. (2010). Effect of physalis minina,linn., psidium guajana, linn., sweitenia mahgoni, jacq ethanol extract against bood glucose level. Jurnal Mediaka Planta, 1(2), 56–60.

Kwon, Y. I., Apostolidis, E., & Shetty, K. (2008). Inhibitory potential of wine and tea against alpha-amylase and alpha-glucosidase for management of hyperglycemia linked to type 2 diabetes. Journal

of Food Biochemistry, 32(1), 15-31.
Kwon, Y. I., Vattem, D. A., & Shetty, K. (2007). Evaluation of clonal herbs of Lamiaceae species for management of diabetes and hypertension. Asia Pacific Journal of Clinical Nutrition, 15(1), 107-118. DOI: 10.6133/apjcn.2007.15.s1.22
Larantukan, S. V. M., Setiasih, L. N. E., Widyastuti, S. K., & *et al.,*(2014). Pemberian Ekstrak Etanol Kulit Batang Kelor Glukosa Darah Tikus Hiperglikemia. Indonesia Medicus Veterinus, 3(4), 292–299.
Lee, S. H., & Lee, J. H. (2011). Alpha-glucosidase inhibitors from phlorotannins in Ecklonia cava. Journal of Applied Phycology, 23(5), 873-880. DOI: 10.1007/s10811-010-9584-4
Lenzen S (2008). The mechanism of alloxan- and streptozotocin-induced diabetes. Diabetologia; 51: 216-22
Li X, Yang Y, Zhang B, Lin X, Fu X, An Y, Zou Y, Wang JX, Wang Z, Yu T. Lactate metabolism in human health and disease. Signal Transduct Target Ther. 2022;7(1). doi:10.1038/s41392-022-01151-3
Li, S., *et al.,*(2010). "Pharmacokinetics and bioavailability of herbal medicines: a review of recent progress and challenges." Drug Metabolism Reviews, 43(4), pp. 418-438.

Lim, S.H., *et al.,*(2016). "Toxicity evaluation of Clinacanthus nutans extract in rats." Journal of Medicinal Plant Research, 10(2), 16-22. DOI: 10.5897/JMPR2015.5962
Lindeboom N. 2005. Studies on the characterization, biosynthesis and isolation of starch and protein from quinoa (Chenopodium quinoa Willd). Tesis. Saskatoon:
Litbang, 2013. Riset Kesehatan Dasar 2013, Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI.
Liu, X., *et al.,*(2010). "Effects of saponins from Tribulus terrestris on hyperglycemia in diabetic rats." Journal of Ethnopharmacology, 129(1), pp. 205-208.
Liu, Z., Sun, X., Bai, J., & Jiang, S. (2015). Effects of tannins extracted from Chinese herb gallnut on insulin resistance in type 2 diabetes mellitus rats. Journal of Nutritional Biochemistry, 26(8), 765-772.

DOI: 10.1016/j.jnutbio.2014.07.005.

Lobo, V., Patil, A., Phatak, A., & Chandra, N. (2010). Free radicals, antioxidants and functional foods: Impact on human health. Pharmacognosy Reviews, 4(8), 118-126. DOI: 10.4103/0973-7847.70902

Loomis, T.A. dan Hayes, A.W. (1996). Loomis's Essentials of Toxicology. 4th ed.California: Academic Press.

Mahmood, N.D., *et al.,*(2016). "Alpha-glucosidase inhibitory activity of some Malaysian plants used to manage type 2 diabetes." BMC Complementary and Alternative Medicine, 16(1), 346. DOI: 10.1186/s12906-016-1374-4

Mai CW, Yap KSI, Kho MT, Ismail NH, Yusoff K, Shaari K, Chin SY, Lim ESH. Mechanisms underlying the anti-inflammatory effects of Clinacanthus nutans lindau extracts: Inhibition of cytokine production and toll-like receptor-4 activation. Front Pharmacol. 2016;7(FEB):1-11. doi:10.3389/fphar.2016.00007

Malangngi, L.P., Sangi, M.S., & Paendong, J. E., 2012, Penentuan Kandungan Tanin dan Uji Aktivitas Antioksidan Ekstrak Biji Buah Alpukat (Persea americana Mill.), Jurnal Mipa Unsrat Online, Vol. 1 (1): 5-10.

Manaf, A. (2006). Insulin : Mekanisme Sekresi dan Aspek Metabolisme (W. dkk Aru, Ed.; 4th ed.). FK UI.

Manaf, Asman. 2009. The Common Unifying mechanism :Pathobiologic of Chronic Complication in T2DM. Padang: Universitas Andalas.

Mangkoewidjojo. (1988). Pemeliharaan, pembiakan dan penggunaan hewan percobaan di daerah tropis. UI Press.

Mardiah *et al* 2015. Curcumin attenuates oxidative stress induced NFκB mediated inflammation and endoplasmic reticulum dependent apoptosis of splenocytes in diabetes. Biochemical Pharmacology, 143, 140–155. https://doi.org/10.1016/j.bcp.2017.07.009

Marianne, Yuandani, & Rosnani. (2011). Antidiabetic Activity From Ethanol Extract of Kluwih's Leaf (Artocarpus camansi). Jurnal Natural, 11(2), 64–68.

Marliana, E. 2007. Analisis Senyawa Metabolit Sekunder dari Batang Spatholobus ferrugineus (Zoll & Moritzi) benth yang berfungsi sebagai antioksidan. Jurnal Penelitian Mipa. 1: 23-25.

Maryam, S. M., Suhaenah, A., & Amrullah, N. F. (2020). Uji Aktivitas Penghambatan Enzim α-Glukosidase Ekstrak Etanol Biji Buah Alpukat Sangrai (Persea americana Mill.) Secara *In vitro*. Jurnal Ilmiah As-Syifaa, 12(1), 51–56. https://doi.org/10.33096/jifa.v12i1.619

Meenakshi, M., Veeru, P., Kishor, M. P. 2009. Screening of Medicinal Plant Extracts for Antioxidant Activity. Journal of Medicinal Plant Research. 3: 8-12.

Middleton, E., *et al.,*(2000). "The impact of plant flavonoids on mammalian biology: implications for immunity, inflammation, and cancer." Pharmacological Reviews, 52(4), pp. 673-751.

Middleton, G.R., Johnson, C.A., Mason, N.A. & Peter, W.L.S. (2000). Med facts. Pocket

Mladěnka, P., *et al.,*(2010). "Flavonoids and cardiovascular health: a review of current evidence." Journal of Cellular and Molecular Medicine, 14(12), pp. 2709-2721.

Molyneux, P. (2004). The use of the stable radical Diphenylpicrylhydrazyl (DPPH) for estimating antioxidant activity. Songklanakarin J. Sci. Technol, 26(2), 211–

Muaja, M.G.D., Runtuwene, M. R.J., Kamu, V.S. 2017. Antioxidant Activity of Methanol Extract From Soyogik (Saurauia bracteosa DC) Leaves. Jurnal Ilmiah Sains. 17(1): 68-72.

Mun'im, A., and Hanami, E., 2011, Fitoterapi Dasar, PT. Dian Rakyat, Jakarta Murugesu, S., Khatib, A., Ibrahim, Z., Ahmed, Q. U., Uzir, B. F., Nik-Yusoff, N. I.,

Murugesu S, Khatib A, Ibrahim Z, Ahmed QU, Uzir BF, Nik-Yusoff NI, Perumal V, Abas F, and Saari K. Antidiabetic and antioxidant activities of Clinacanthus nutans (Burm F.) Lindau leaves extracts. Int Food Res J. 2019;26(1):319-327.

Nelson &cox A., Moore, T. W., Hu, F., Brown, A. P., Sun, A., Liotta, D.C., Pace, T. W.W., 2004. Inhibition of the NF-κB signaling pathway by the curcumin analog, 3,5-Bis(2-pyridinylmethylidene)-4-piperidone (EF31): Anti- inflammatory and anti-cancer properties. International Immunopharmacology, 12(2), 368–377. https://doi.org/10.1016/j.intimp.2011.12.009

Niwa, A., Tajiri, T., and Higashino, H., 2011, Ipomoea batatas and Agarics blazei Ameliorate Diabetic Disorders with Therapeutic

Antioxidant Potential in Streptozotocin Induced Diabetic Rats,J. Clin. Biochem. Nutr, 48 (3), 194–202.

Nugent, D. A., Smith, D. M., & Jones, H. B. (2008). A Review of Islet of Langerhans Degeneration in Rodent Models of Type 2 Diabetes. Toxicologic Pathology, 36(4), 529–551. https://doi.org/10.1177/0192623308318209

Nugrahani, R., Andayani, Y., & Hakim, A. (2016). Skrining Fitokimia dari Ekstrak Buah Buncis (Phaseolus vulgaris L) dalam Sediaan Serbuk. Jurnal Penelitian Pendidikan IPA, 2(1), 96–103. http://jurnal.unram.ac.id/index.php/jpp-ipa

Nugraheni, B., Anggraeny, E. N., & Cahyani, I. M. (2021). Penentuan Kadar Flavonoid Total Pada Ekstrak Daun Dandang Gendis (Clinacanthus nutans L.) Segar dan Kering Serta Aktivitas Antioksidannya. REPOSITORY STIFAR.

Nugroho, A. E. (2006). Hewan Percobaan Diabetes Mellitus : Patologi Dan Mekanisme Aksi Diabetogenik. Biodiversitas Journal of Biological Diversity, 7(4), 378–382. https://doi.org/10.13057/biodiv/d070415

Nurulita, Y., Dhanutirto, H., Soemardji, A.A. 2008. Penapisan Aktivitas Dan Senyawa Antidiabetes Ekstrak Air Daun Dandang Gendis (Clinacanthus Nutans). J. Nat. Indones., 10(2), 98-103.

Nurulita, Y., Dhanutirto, H., Soemardji, A.A. 2008. Penapisan Aktivitas Dan Senyawa Antidiabetes Ekstrak Air Daun Dandang Gendis (Clinacanthus Nutans). J. Nat. Indones., 10(2), 98-103.

Oboh, G., Agunloye, O.M., Adefegha, S.A., Akinyemi A.J. & Ademiluyi, A.O. 2015 Caffeic and chlorogenic acids inhibit key enzymes linked to type 2 diabetes (*in vitro*): a

OECD. (2001). "Guidelines for the Testing of Chemicals, Section 4: Health Effects Test No. 423: Acute Oral toxicity - Acute Toxic Class Method." OECD Publishing, Paris.

Ong, W. Y., Herr, D. R., Sun, G. Y., & Lin, T. N. (2022). Anti-inflammatory effects of phytochemical components of Clinacanthus nutans. Molecules, 27(11), 3607.

Oteiza, P.I., A.G. Erlejman, S.V. Verstraeten, C.L. Keen, and C.G. Fraga. 2005. Flavonoid-membrane interactions : A protective role of

flavonoids at the membrane surface ? Clin. & Dev. Immunol. 12(1): 19-25

Oyedemi, S. O., Oyedemi, B. O., Ijeh, I. I., Ohanyerem, P. E., Coopoosamy, R. M., & Aiyegoro, O. A. (2017). Alpha-Amylase Inhibition and Antioxidative Capacity of Some Antidiabetic Plants Used by the Traditional Healers in Southeastern Nigeria. The Scientific World Journal, 2017, 1–11.

Pannangpetch, P., Laupattarakasem, P., Kukongviriyapan, V., Kukongviriyapan, U., Kongyingyoes, B., & Aromdee, C. (2007). Antioxidant activity and protective effect against oxidative hemolysis of Clinacanthus nutans (Burm. f) Lindau. Songklanakarin Journal of Science and Technology, 29(1), 1-9.

Parvez MK, Al-Dosari MS, Rehman MT, Al-Rehaily AJ, Alqahtani AS, Alajmi MF. The anti-hepatitis B virus and anti-hepatotoxic efficacies of solanopubamine, a rare alkaloid from Solanum schimperianum. Saudi Pharm J. 2022;30(4):359-368. doi:10.1016/j.jsps.2022.02.001

Perumal, V., Abas, F., & Saari, K. (2019). Antidiabetic and antioxidants activities of Clinacanthus nutans (Burm F.) Lindau leaves extracts. International Food Research Journal, 26(1), 319–327.

Phan, M. A. T., Wang, J., Tang, J., Lee, Y. Z., & Ng, K. (2013). Evaluation of a- glucosidase inhibition potential of some flavonoids from Epimedium brevicornum. LWT - Food Science and Technology, 53(2), 492–498.

Pokorny, J., Yanishlieva, N., & Gordon, M. (2001). Antioxidant in Food: Practical Application. CRC Press.

Prameswari, Okky Meidiana dan Simon Bambang Widjanarko. 2014. Uji Efek Ekstrak Air Daun Pandan Wangi. Jurnal Pangan dan Agroindustri Vol.2 No.2 p.16-27. Jakarta.

Prasad, K.N., Yang, B., Yang, S.Y., Chen, Y.L., Zhao, M., Ashraf, M., & Jiang, Y. (2010). Flavonoid contents and antioxidant activities from Cinnamomum species. Innovative Food Science & Emerging Technologies, 11(4), 651-657.

Prashant, Verma.,Itankar, Prakash. 2013. Evaluation of antidiabetic antihyperlipidemic and pancreatic regeneration, potential of aerial parts of Clitoria ternatea. Rev Bras Farmacogn 23(2013): 819-

829: Elsevier.

Prayoga, E. 2013. Perbandingan Eefek Ekstrak Daun Sirih Hijau (Piper betle L.) Dengan MetodeDifusi Disk Dan Sumuran Terhadap Pertumbuhan Bakteri Staphylococcus aureus. UIN Jakarta.

Raghavanpillai Sabu K, Sugathan S, Idhayadhulla A, Woldemariam M, Aklilu A, Biresaw G, Tsegaye B, Manilal A. Antibacterial, Antifungal, and Cytotoxic Activity of Excoecaria agallocha Leaf Extract. J Exp Pharmacol. 2022;14:17-26. doi:10.2147/JEP.S339383

Rahmawati, and T. Lestari. 2013. "Penetapan Kadar Total Flavonoid Ekstrak Etanol Dan Fraksi Daun Saliara (Lantana Camara L.) dengan Metode Spektrofotometri". Tasikmalaya: Sekolah Tinggi Ilmu Kesehatan Bakti Tunas Husada Tasikmalaya,

Rajendran, P., Nandakumar, N., & Rengarajan, T. (2018). Antioxidants and human diseases. Clinical Advances in Hematology & Oncology, 16(7), 577-591.

Ridwan Z., *et al.,*(2016). Ketoasidosis Diabetik Di Diabetes Melitus Tipe 1. Indonesian Journal of Clinical Pathologi And Medical Laboratory.Vol. 22.No. 2. Hal: 200- 203.

Rizanti, D. E. (2014). Aktivitas Antidiabetes Ekstrak Kulit Mangium (Acacia mangium Willd.) Melalui Uji Penghambatan Enzim α-Glukosidase Secara *In vitro* [Institut Pertanian Bogor]. https://www.researchgate.net/publication/293639278

Robertson, R. P., Harmon, J., Tran, P. O. T., & Poitout, V. (2004). Oxidative Stress in Type 2 Diabetes. B-Cell Glucose Toxicity, Lipotoxicity, and Chronic Oxidative Stress in Type 2 Diabetes, 53, 119–124.

Rosidah, *et al.,*(2009). "Toxicity Evaluation of Standardized Methanolic Extract of Clinacanthus nutans." International Journal of Pharmacology, 5(2), pp. 196- 202.

Ruhe, R., & McDonald, R. (2001). Use of antioxidant nutrients in the prevention and treatment of type 2 diabetes. Journal of the American College of Nutrition , 20(5 Suppl), 363S-369S.

Rupeskhumar, M., Kunchu, K., and Pallab K., 2014. Role Of Herbal Plants The Diabetes Mellitus Therapy : An Overview. Int J App Pharm. 6(3): 1-3.

Saini, V. (2010). Molecular mechanisms of insulin resistance in type 2

diabetes mellitus. World Journal of Diabetes, 1(3), 68. https://doi.org/10.4239/wjd.v1.i3.68

Sangi, M., Runtuwene, M.R.J., Simbala, H.E.I.& Makang, V.M.A. 2008. Analisis Fitokimia Tumbuhan Obat di KabupatenMinahasa Utara. Chemistry Progress. 1,47-53

Saragih GS. Acute Toxicity of Sterculia quadrifida R.Br Bark Ethanol Extract on Sprague-Dawley Rats. Maj Obat Tradis. 2018;23(2):127. doi:10.22146/mot.34871

Saraswaty, V. (2010). Alpha Glucosidase Inhibitory Activity FromM Syzigium sp. Teknologi Indonesia, 33(1), 33–37. https://www.researchgate.net/publication/267411756

Scalbert, A., *et al.,*(2005). "Polyphenols: antioxidants and beyond." American Journal of Clinical Nutrition, 81(1), pp. 215S-217S.

Sekunder pada Daun Palado (Agave angustifolia) yang Diekstraksi dengan Pelarut Air dan Etanol. J. Akad. Kim, 3(3), 165–172.

Shi, J., *et al.,*(2004). "Saponins from edible legumes: chemistry, processing, and health benefits." Journal of Medicinal Food, 7(1), pp. 67-78.

Siew, P.S., *et al.,*(2014). "Phytochemical analysis and alpha-glucosidase inhibitory activities of Clinacanthus nutans." Journal of Medicinal Plants Research, 8(7), 351-357. DOI: 10.5897/JMPR2014.5378

Siew, Y.Y., Zareisedehizadeh, S., Seetoh, W.G., Neo, S.Y., & Tan, C.H. (2014). Ethnopharmacology of Clinacanthus nutans (Burm. f.) Lindau: A review. Journal of Ethnopharmacology, 150(3), 789-804.

Sifuentes-Franco, S., Pacheco-Moises, F.P., Rodriguez-Carrizalez, A.D., Miranda-Diaz,A.G. 2017. The Role of Oxidative Stress, Mitochondrial Function, and Autophagy in Diabetic Polyneuropathy. J.Diab.Res., 2017(1673081), 15.

Singh, R.P., Sharad. S., Kapur. S. 2004. Free Radicals and Oxidative Stress in Neurodegenerative Diseases. Relevance of Dietary Antioxidants. 5: 218

Siswadi S, Saragih GS. Acute Toxicity of Sterculia quadrifida R.Br Bark Ethanol Extract on Sprague-Dawley Rats. Maj Obat Tradis. 2018;23(2):127.doi:10.22146/mot.34871

Siti, H. N., Kamisah, Y., & Kamsiah, J. (2015). The role of oxidative stress, antioxidants and vascular inflammation in cardiovascular disease (a review). Vascular Pharmacology, 71, 40-56. DOI: 10.1016/j.vph.2015.03.005

Skibola, C.F. dan Smith, M.T. (2000). "Potential health impacts of excessive flavonoid intake." Free Radical Biology and Medicine, 29(3-4), pp. 375-383.

Sofyan, D. (2008) Inhibisi Fraksi Aktif Daun Dandang Gendis (Clinacanthus Nutans) Pada Pertumbuhan Saccharomyces Cerevisiae Sebagai Uji Potensi Antikanker. Institut Pertanian Bogor

Song, J., Kwon, O., Chen, S., Daruwala, R., Eck, P., Park, J. B., & Levine, M. (2002). Flavonoid inhibition of sodium-dependent vitamin C transporter 1 (SVCT1) and glucose transporter isoform 2 (GLUT2), intestinal transporters for vitamin C and glucose. Journal of Biological Chemistry, 277(18), 15252–15260. https://doi.org/10.1074/jbc.M110496200

Stipanuk, M. H. (2000). Biochemical and physiological aspects of human nutrition . W. B. Saunders company.

Suarsana, I., Priosoeryanto, B. P., Bintang, M., & Wresdiyati, T. (2010). Profil Glukosa Darah Dan Ultrastruktur Sel Beta Pankreas Tikus Yang Diinduksi Senyawa Aloksan. Jitv, 15(2), 118-123.

Subroto, A., 2006, Ramuan Herbal untuk Diabetes Melitus, Depok: Penebar Swadaya.

Suharty, SN. (2004) Isolasi Terpenoid Dari Daun Clinacathus Mutans, 1,2, Http//Digilib.Itb/Print.Php?Id=Jbtitbpp-Gdl-S2- 2004-Negrisuh-1734- Diakses Pada 20 Desember 2021.

Sujono, T.A., & Munawaroh, R., 2009, Antaraksi Quercetin dengan Tolbutamid: Kajian Terhadap Perubahan Kadar Glukosa Darah pada Tikus Jantan yang Diinduksi Aloksan, Jurnal Penelitian Sains & Teknologi, Vol.10 (2): 121-129.

Sulandi, A. (2013). Aktivitas Antioksidan Ekstrak Kloroform Buah Lakum (Cayratia trifolia) dengan Metode DPPH (2,2-Difenil-1-Pikrilhidrazil). Universitas Tanjungpura

Svehla, G. (1985). Buku Teks Analisis Anorganik Kualitatif Mikro dan Semimikro. PT. Kalman Media Pustaka.

Szkudelski, T. (2001). "The mechanism of alloxan and streptozotocin

action in B cells of the rat pancreas." Physiological Research, 50(6), pp. 537-546.

Szkudelski, T. (2001). The Mechanism of Alloxan and Streptozotocin Action in B Cells of the Rat Pancreas. Journal Physiol. Res, 50, 536–546. http://www.biomed.cas.cz/physiolres/s.htmPhysiol.Res.50:536-546,2001

Tan, L. H., Chan, L. W., Ng, C. Y., *et al.,*(2021). Standardization and evaluation of Clinacanthus nutans leaf extract for anti-diabetic activities. Frontiers in Pharmacology, 12, 666349. DOI: 10.3389/fphar.2021.666349

Tang, Y., *et al.,*(2015). "Safety evaluation of Clinacanthus nutans in healthy volunteers: a phase I clinical trial." Journal of Ethnopharmacology, 174, pp. 425-431.

Teoh, P.L., *et al.,*(2013). "Genetic diversity among Clinacanthus nutans (Acanthaceae) accessions in Malaysia using RAPD and ISSR markers." Tropical Life Sciences Research, 24(2), pp. 99-109.

Teoh, P.L., Liau, M., & Zandi, K. (2017). "Bioactive compounds and biological activities of Clinacanthus nutans in medical applications: a review." International Journal of Molecular Sciences, 18(8), 1673. DOI: 10.3390/ijms18081673

Thent, Z. C., Das, S., & Das, N. (2012). Anti-diabetic potential of Clinacanthus nutans in diabetic rats induced by a high-fat diet and streptozotocin. Journal of Ethnopharmacology, 143(2), 319-326. DOI: 10.1016/j.jep.2012.06.027

Thompson E. Drug Bioscreening Fundamental of Drug Evaluation Techniques in Pharmacology, Graceway Publ.,Inc.,New York, 1985;87-112.

Thongphichai W, Uttarawichien T, Chanvorachote P, Pitiporn S, Charoen-Ame T, Kwankhao P, Towiwat P, Sukrong S. Standardisation of the ethanolic extract of Crinum latifolium leaves by two bioactive markers with antiproliferative activity against TGF-β-promoted prostate stromal cells (WPMY-1). BMC Complement Med Ther. 2022;22(1):139. doi:10.1186/s12906-022-03617-x

Thongrakard, V., & Tencomnao, T. (2010). Modulatory effects of Phyllanthus emblica and Clinacanthus nutans on oxidative stress and inflammation in human endothelial cells. Evidence-Based

Complementary and Alternative Medicine, 2010, 510290. DOI: 10.1155/2010/510290

Thongrakard, V., *et al.,*(2010). "Hypoglycemic effects of Clinacanthus nutans (Burm. f.) Lindau leaves in alloxan-induced diabetic mice." Phytotherapy Research, 24(1), pp. 201-205.

Thorens B, 2015. GLUT2, glucose sensing and glucose homeostatis, Journal Diabetologia. 58 (2): 221-232

Thorens, B. (2015). GLUT2, glucose sensing and glucose homeostasis. Diabetes & Metabolism, 41(2), 91-101. DOI: 10.1016/j.diabet.2014.11.005

Ukieyanna, E. 2012. Aktivitas antioksidan, kadar fenolik, dan Flavonoid total tumbuhan suruhan (Peperomia pellucida L. Kunth). ITB, Bogor.

Vermerris, W., & Nicholson, R. (2006). Phenolic Compound Biochemistry . Springer. Ergina, Nuryanti, S., & Pursitasari, I. D. (2014). Uji Kualitatif Senyawa Metabolit

Vessal, M., Hemmati, M., Vasei, M., & Hajighasemi, S. (2003). Antidiabetic effects of quercetin in streptozotocin-induced diabetic rats. Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology, 135(3), 357-364.

Vinayagam R., Xu B. 2015. Antidiabetic Properties of dietary Flavonoids: a cellularmechanism review. Nutr. Metab. 12(1): 60-79.

Vinayagam, R.,Xu, B. 2015. Antidiabetic properties of dietary flavonoids: a cellular mechanism review. Nutr.Metab., 12(1), 60-79.

Wang, G. G., Lu, X. H., Li, W., Zhao, X., & Zhang, C. (2011). Protective effects of luteolin on diabetic nephropathy in STZ-induced diabetic rats. Evidence- Based Complementary

Wang, H., Du, Y.-J., & Song, H.-C. (2010). α-Glucosidase and α-amylase inhibitory activities of guava leaves. Food Chemistry, 123(1), 6–13.

Wang, Y., Zhu, J. X., Kong, L. M., Chen, S. G., & Zhang, L. L. (2011). Inhibitory effects of luteolin on high glucose-induced proliferation and collagen synthesis in cardiac fibroblasts. Canadian Journal of Physiology and Pharmacology, 89(1), 45-52.

Watkins D., Cooperstein S. & Lazarow A. 2018. Effect of Alloxan on

Permeability of Pancreatic Islet Tissue *in vitro*. American Physiological Society. 207(2): 436- 440

Watkins D., Cooperstein S. & Lazarow A. 2018. Effect of Alloxan onPermeability of Pancreatic Islet Tissue *in vitro*. American Physiological Society. 207(2): 436- 440

Widowati, Wahyu. 2008. Potensi Antioksidan sebagai Antidiabetes. Jurnal Kedokteran Maranatha, 2 (7): Hal. 193 – 202.

Widyasti H.J., Marlina D., Dewi Eka. A.A.P. 2016. The Antihyperglycemic Activity of Ethanol Catappa's Leaves Extract (Terminalia Catappa L) In Alloxan Induced Mice. Jurnal Farmasi Indonesia. 13(2): 133-138

Williams, L. K., Li, C., Withers, S. G., & Brayer, G. D. (2012). Order and Disorder: The Differential Structural Impacts of Myricetin and Ethyl Caffeate on Human Amylase, an Anti-Diabetic Target. Journal of Medicinal Chemistry, 55, 10177– 10186.

Wong, F.C., *et al.,*(2013). "Anti-diabetic properties of Clinacanthus nutans in streptozotocin-induced diabetic rats." BMC Complementary and Alternative Medicine, 13(1), 2-10. DOI: 10.1186/1472-6882-13-346

Wong, K. C., Tan, C. P., Ho, C. W., & Cheah, Y. K. (2014). Identification of bioactive compounds in Clinacanthus nutans Lindau leaves using HPLC-ESI-MS/MS. Journal of Ethnopharmacology, 152(1), 210-218. DOI: 10.1016/j.jep.2013.08.025.

World Health Organization, 2013, WHO Traditional Medicine Strategy 2014- 2023.Hongkong: World Health Organization.

World Health Organization, 2016. Global Report on Diabetes, France: World Health Organization.

Wresdiyati, Astawan, T. M., Kesenja, R., & Lestari, P. A. (2008). pengaruh pemberian tepung buah pare (momordica charantia L) pada sel B dan SOD pankreas tikus diabetes melitus. J. Bahan Alam Ind, 6, 193–200.

Wulandari, Septian dan M. Dwitiyanti, N., (2020). Implementasi Algoritma Clustering Partitioning Around Medoid (PAM) Dalam Clustering Virus MERS-CoV

Wulandari, Septian dan M. Dwitiyanti, N., (2020). Implementasi Algoritma Clustering Partitioning Around Medoid (PAM) Dalam Clustering

Virus MERS-CoV.

Xiong, J., Yang, Q., Kang, J., Sun, Y., Zhang, T., Margaret, G., & Ding, W. (2011). Simultaneous isolation of DNA, RNA, and protein from Medicago truncatula L. Electrophoresis , 32(2), 321–330. https://doi.org/doi: 10.1002/elps.201000425

Xu, H. (2010). Inhibition kinetics of flavonoids on yeast α-glucosidase merged with docking simulations. Protein Pept Lett, 17(10), 1270–1279.

Xu, X., & Zhu, Q. (2009). Development of LC-MS/MS methods for determination of organic pollutants in environmental water samples: A review. Journal of Chromatography A, 1216(21), 4059-4070.

Yahaya R., Dash, G. K., Abdullah, M. S., Mathews, A. 2015. Clinacanthus nutans (burm, F.) Lindau: An Useful Medicinal Plant of South-East Asia. International Journal of Pharmacognosy and Phytochemical Research. 7(6): 1244-1250.

Yamamoto, K., Miyake, H., Kusunoki, M., & Osaki, S. (2010). Crystal structures of isomaltase from Saccharomyces cerevisiae and in complex with its competitive inhibitor maltose: Crystal structure of isomaltase. FEBS Journal, 277(20), 4205–4214.

Yin, Z., Zhang, W., Feng, F., Zhang, Y., & Kang, W. (2014). α-Glucosidase inhibitors isolated from medicinal plants. Food Science and Human Wellness, 3(3–4), 136–174

Yong, Y. K., Tan, J. J., Teh, S. S., Mah, S. H., Ee, G. C. L., Chiong, H. S., & Ahmad, Z.(2013). Clinacanthus nutans extracts are antioxidant with antiproliferative effect on cultured human cancer cell lines. Evidence-Based Complementary and Alternative Medicine, 2013, 462751. DOI: 10.1155/2013/462751

Yong, Y.K., Tan, J.J., Teh, S.S., Mah, S.H., Ee, G.C., Chiong, H.S., & Ahmad, Z. (2013). Clinacanthus nutans extracts are antioxidant with antiproliferative effect on cultured human cancer cell lines. Evidence-Based Complementary and Alternative Medicine, 2013.

Yuana N, *et al.,*2007. Penapisan Aktivitas dan Senyawa Antidiabetes Ekstrak Air Daun Dandang Gendis (Clinacanthus nutans). Jurnal Natur Indonesia.

Zhang, X., Yang, Y., & Liang, X. (2014). "Nanoencapsulation enhances the oral bioavailability of bioactive compounds from Clinacanthus nutans." Journal of Agricultural and Food Chemistry, 62(49), 11995-12000. DOI: 10.1021/jf503553r

Zhao, L., Li, L., Zhu, Y., *et al.,*(2018). Antioxidant activities of steroidal saponins isolated from Dioscorea zingiberensis C.H. Wright *in vitro* and in vivo. Antioxidants, 7(8), 104. DOI: 10.3390/antiox7080104

Zulkipli I. N., R. Rajabalaya, A. Idris, N. A. Sulaiman and David, S.R. 2017.Clinacanthus nutans: A Review on Ethnomedicinal Uses, Chemical Constand Pharmacological Prorerties. Pharmaceutical Biology 55(1): 1093-1113.

N. LAMPIRAN

Lampiran 1. Hasil uji statistik pengaruh EDDG terhadap penurunan kadar glukosa darah pada mencit

	Statistic	Df	Sig
MH	949	4	708
MS	981	4	911
M50	984	4	922
M100	984	4	926
M150	979	4	896
MG	989	4	952

Lampiran 2. Hasil uji normalitas rerata keluar kadar glukosa darah mencit untuk 6 kelompok dengan menggunakan uji *Shapiro wilk*

Hasil uji Anova

	Sum of Squares	Df	Mean Square	F	sig
Between Groups	129.588	5	25.912	4.142	0.011
Within Groups	112.61	18	6.256		
Total	242.169	23			

Hasil post test

(I) PERLAKUAN	(J) PERLAKUAN	Mean Difference (I-J)	Std.Error	Sig
Turkey HSD	**MH (NaCMC)**	MS (Aloksan)	-137.15000*	12.42728	.000
		M50 (CN50)	-100.47500*	12.42728	.000
		M100 (CN100)	-84.85000*	12.42728	.000
		M150 (CN150)	-93.72500*	12.42728	.000
		MG (Glibenclamide)	-83.22500*	12.42728	.000
	MS (Aloksan)	MH (NaCMC)	137.15000*	12.42728	.000
		M50 (CN50)	36.67500*	12.42728	.078
		M100 (CN100)	52.30000*	12.42728	.006
		M150 (CN150)	43.42500*	12.42728	.026
		MG (Glibenclamide)	53.92500*	12.42728	.005
	M50 (CN50)	MH (NaCMC)	100.47500*	12.42728	.000
		MS (Aloksan)	-36.67500*	12.42728	.078
		M100 (CN100)	15.62500*	12.42728	.803
		M150 (CN150)	6.75000*	12.42728	.993
		MG (Glibenclamide)	17.25000*	12.42728	.733
	M100 (CN100)	MH (NaCMC)	84.85000*	12.42728	.000
		MS (Aloksan)	-52.30000*	12.42728	.006

	M50 (CN50)	-15.62500*	12.42728	.803
	M150 (CN150)	-8.87500*	12.42728	.978
	MG (Glibenclamide)	1.62500*	12.42728	.1000
M150 (CN150)	MH (NaCMC)	93.72500*	12.42728	.000
	MS (Aloksan)	-43.42500*	12.42728	.026
	M50 (CN50)	-6.75000	12.42728	.993
	M100 (CN100)	8.87500	12.42728	.978
	MG (Glibenclamide)	10.50000	12.42728	.955
MG	MH (NaCMC)	83.22500*		.000
(Glibenclamide)	MS (Aloksan)	-53.92500*		.005
	M50 (CN50)	-17.25000		.733
	M100 (CN100)	-1.62500		1.000
	M150 (CN150)	-10.50000		.955

Lampiran 3. Uji statistik pengaruh pemberian EDDG terhadap perkembangan bobot badan mencit Hasil uji normalitas rerata kadar bobot badan mencit untuk 6 Kelompok dengan menggunakan uji Shapiro-Wilk

Tests of Normality			
	Shapiro-Wilk		
	Statistic	**Df**	**Sig.**
MH	.957	4	.762
MS	.934	4	.617
M50	.988	4	.946
M100	.884	4	.356
M150	.958	4	.767
MG	.967	4	.822

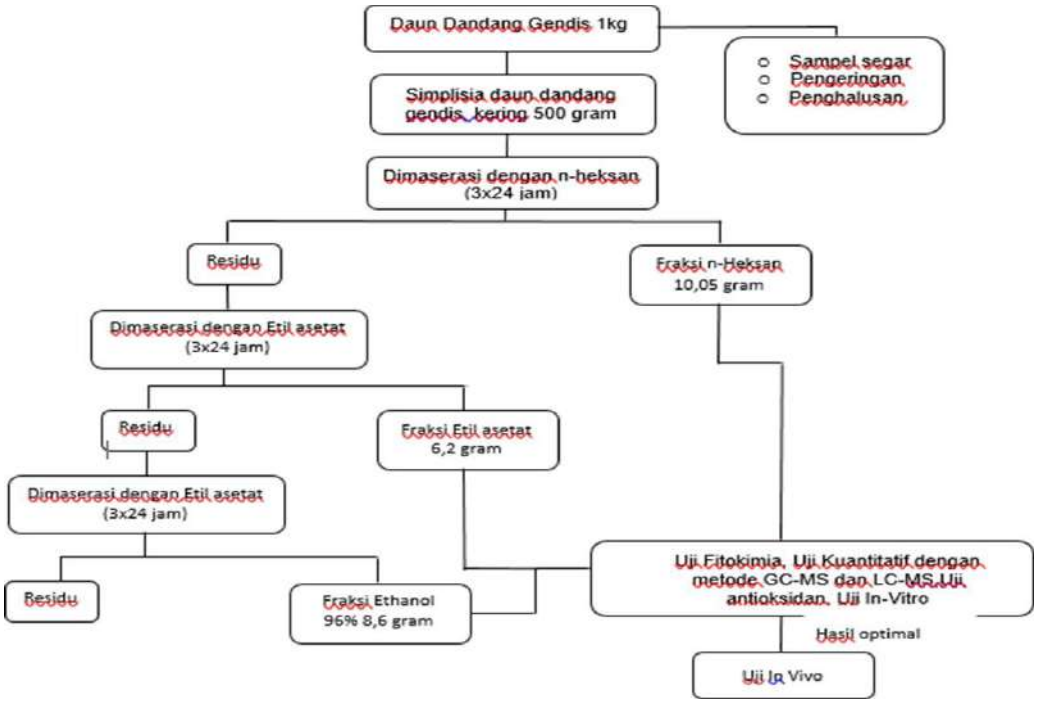
Hasil uji Anova

Sum of Squares		**Df**	**Mean Square**	**F**	**Sig.**
Between Groups	129.558	5	25.912	4.142	.011
Within Groups	112.610	18	6.256		
Total	242.169	23			

Lampiran 4
Hasil post test

(I) PERLAKUAN	(J) PERLAKUAN		Mean Difference (I- J)	Std. Error	Sig.
Tukey HSD	**MH (NaCMC)**	MS (Aloksan)	7.80500*	1.76863	.004
		M50 (CN50)	4.63750	1.76863	.142
		M100 (CN100)	2.79500	1.76863	.621
		M150 (CN 150)	4.10750	1.76863	.236
		MG (	4.26000	1.76863	.205
		Glibenclamide)			
	MS (Aloksan)	MH (NaCMC)	-7.80500*	1.76863	.004
		M50 (CN50)	-3.16750	1.76863	.495
		M100 (CN100)	-5.01000	1.76863	.097
		M150 (CN 150)	-3.69750	1.76863	.335
		MG (	-3.54500	1.76863	.378
		Glibenclamide)			
	M50 (CN50)	MH (NaCMC)	-4.63750	1.76863	.142
		MS (Aloksan)	3.16750	1.76863	.495
		M100 (CN100)	-1.84250	1.76863	.897
		M150 (CN 150)	-.53000	1.76863	1.000
		MG (	-.37750	1.76863	1.000
		Glibenclamide)			
	M100 (CN100)	MH (NaCMC)	-2.79500	1.76863	.621
		MS (Aloksan)	5.01000	1.76863	.097
		M50 (CN50)	1.84250	1.76863	.897
		M150 (CN 150)	1.31250	1.76863	.974
		MG (	1.46500	1.76863	.958
		Glibenclamide)			
	M150 (CN 150)	MH (NaCMC)	-4.10750	1.76863	.236
		MS (Aloksan)	3.69750	1.76863	.335
		M50 (CN50)	.53000	1.76863	1.000
		M100 (CN100)	-1.31250	1.76863	.974
		MG (	.15250	1.76863	1.000
		Glibenclamide)			
	MG (Glibenclamide)	MH (NaCMC)	-4.26000	1.76863	.205
		MS (Aloksan)	3.54500	1.76863	.378
		M50 (CN50)	.37750	1.76863	1.000
		M100 (CN100)	-1.46500	1.76863	.958
		M150 (CN 150)	-.15250	1.76863	1.000

Lampiran 5. Alur Kerja Ekstraksi Daun Dandang Gendis



Lampiran 6. Perhitungan Rendemen Ekstrak

$$\text{Rendemen} = \frac{\text{berat ekstrak yang didapat (g)}}{berat\ bahan\ yang\ di\ ekstrak} \text{x } 100$$

1. Ekstrak n-Heksana Daun Dandang Gendis

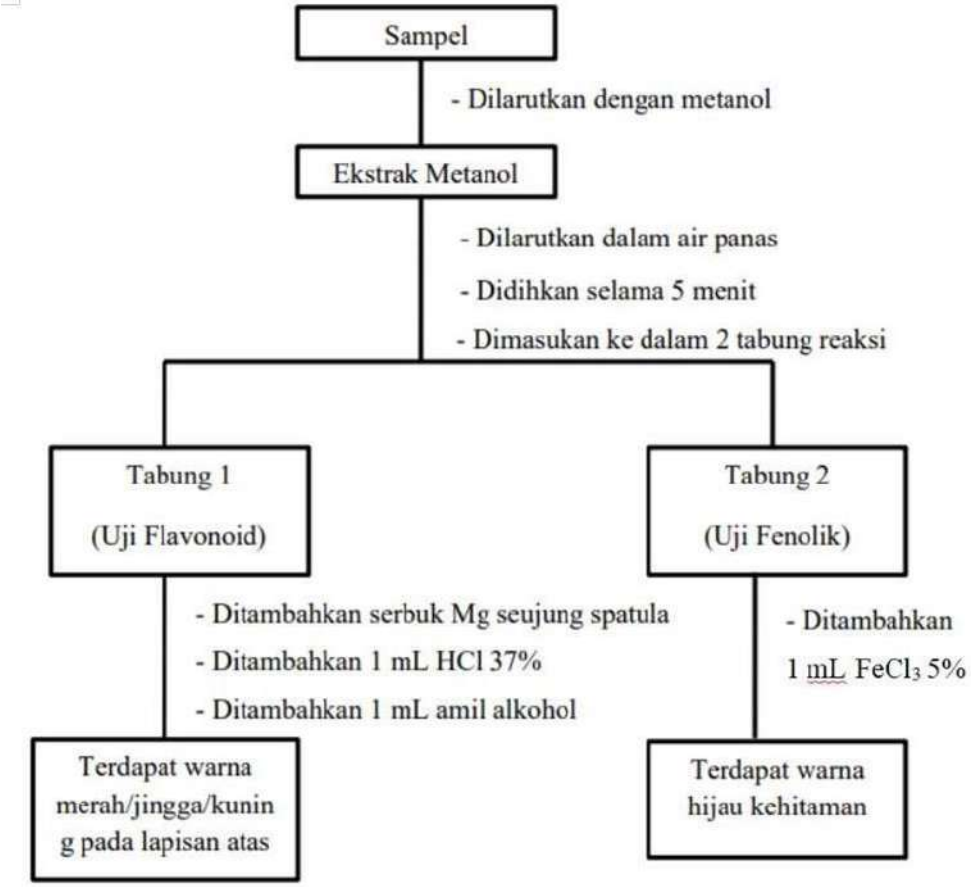
   $$\text{Rendemen} = \frac{10{,}05}{500\ gram} \text{ x } 100 = 2{,}01\%$$

2. Ekstrak Etil asetat Daun Dandang Gendis

   $$\text{Rendemen} = \frac{6{,}2}{500\ gram} \text{ x } 100 = 1{,}24\%$$

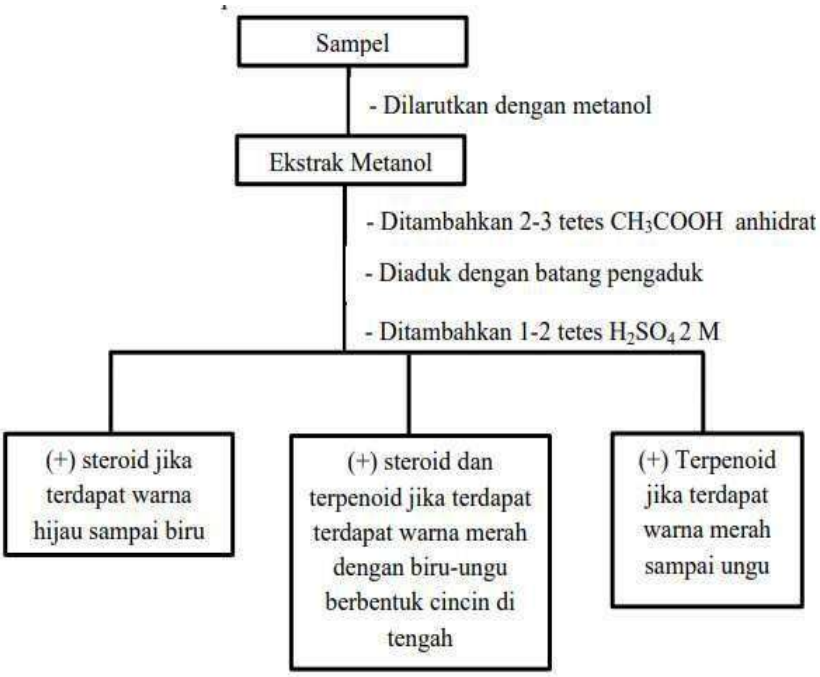
3. Ekstrak Etil asetat Daun Dandang Gendis

Lampiran 7. Prosedur Kerja Uji Fitokimia Fenolik dan Flavonoid



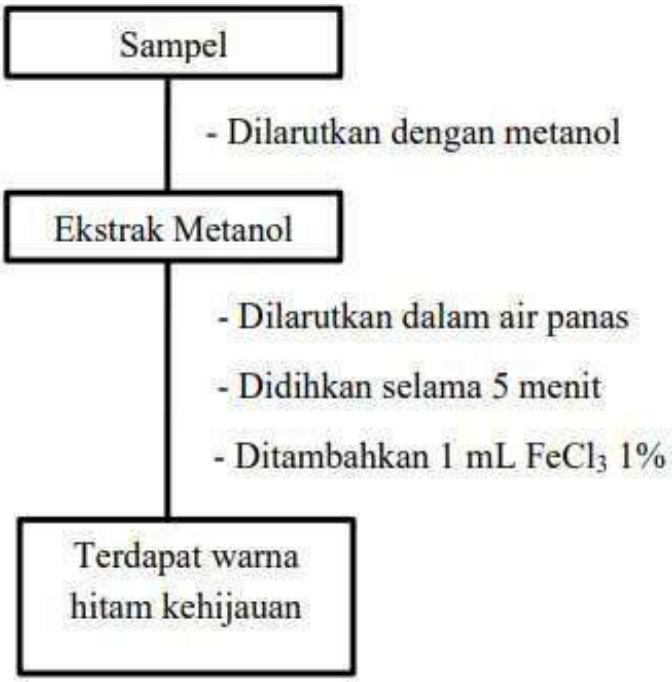
A. Alkaloid

B. Steroid dan Terpenoid



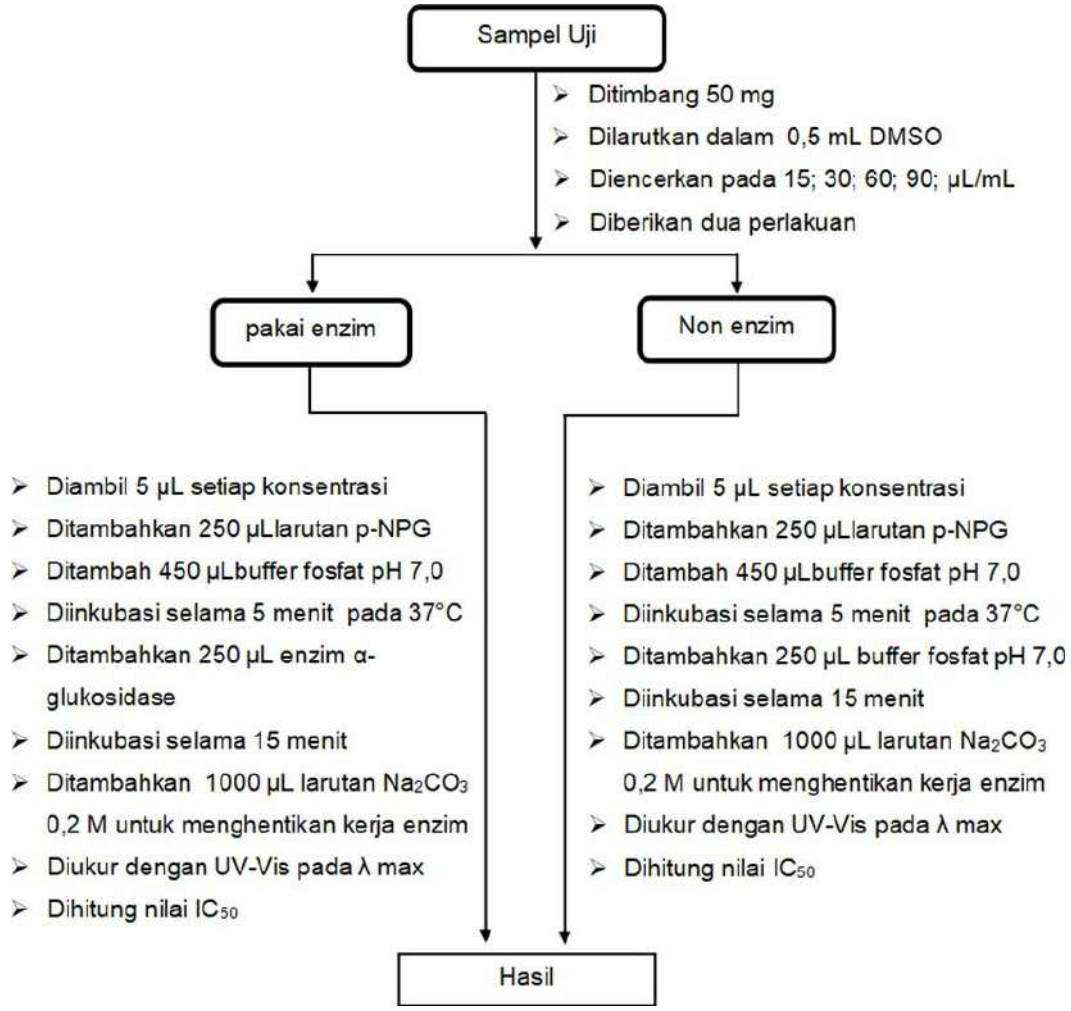
C. Saponin

D. Tanin

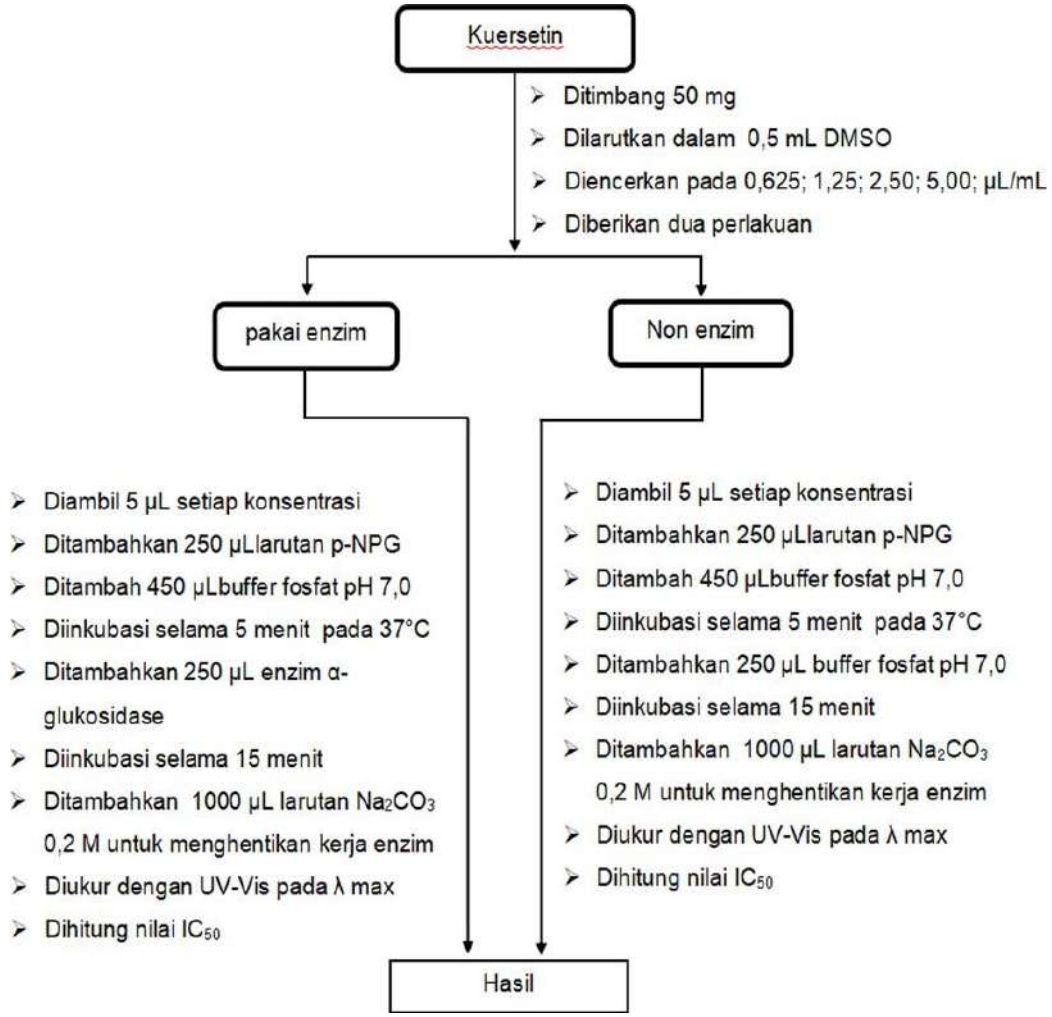


Lampiran 8. Prosedur Kerja Uji Aktivitas Penghambatan Enzim α-glukosidase

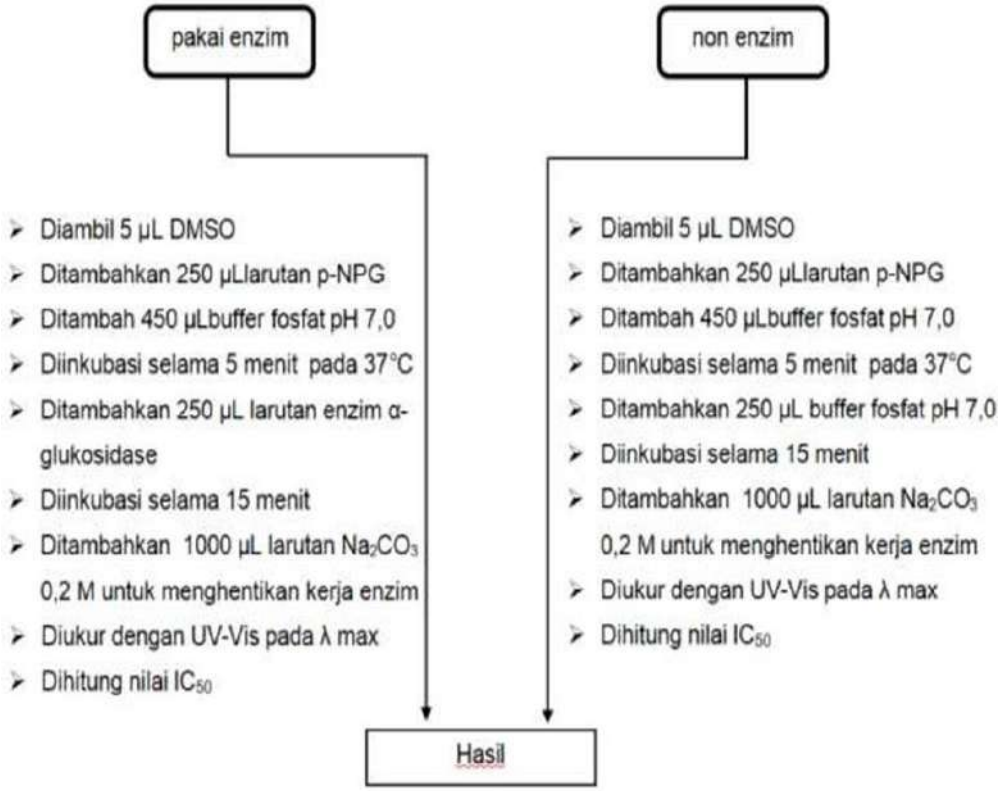
A. Sampel Uji


Sampel Uji
Ditimbang 50 mg
Dilarutkan dalam 0,5 mL DMSO
Diencerkan pada 15; 30; 60; 90; µL/mL
Diberikan dua perlakuan
pakai enzim
Non enzim
Diambil 5 µL setiap konsentrasi
Ditambahkan 250 µLlarutan p-NPG
Ditambah 450 µLbuffer fosfat pH 7,0
Diinkubasi selama 5 menit pada 37°C
Ditambahkan 250 µL enzim α-glukosidase
Diinkubasi selama 15 menit
Ditambahkan 1000 µL larutan Na_2CO_3 0,2 M untuk menghentikan kerja enzim
Diukur dengan UV-Vis pada λ max
Dihitung nilai IC_{50}
Diambil 5 µL setiap konsentrasi
Ditambahkan 250 µLlarutan p-NPG
Ditambah 450 µLbuffer fosfat pH 7,0
Diinkubasi selama 5 menit pada 37°C
Ditambahkan 250 µL buffer fosfat pH 7,0
Diinkubasi selama 15 menit
Ditambahkan 1000 µL larutan Na_2CO_3 0,2 M untuk menghentikan kerja enzim
Diukur dengan UV-Vis pada λ max
Dihitung nilai IC_{50}
Hasil

B. Larutan Pembanding

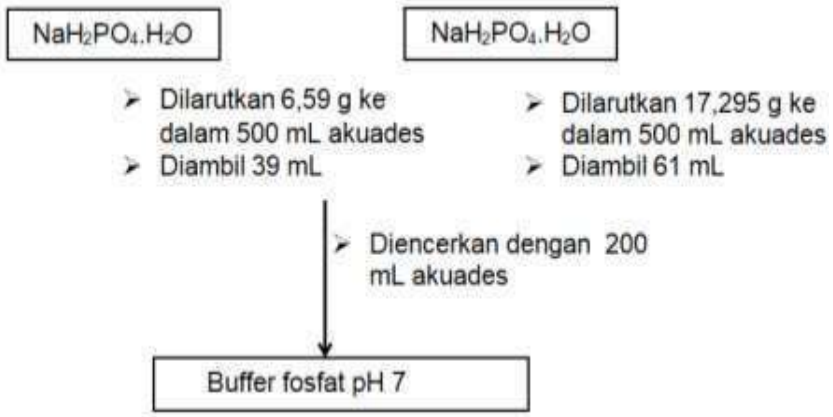


C. Blanko

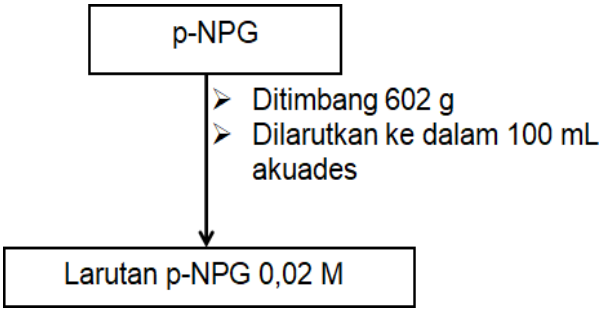

pakai enzim
non enzim
Diambil 5 µL DMSO
Ditambahkan 250 µLlarutan p-NPG
Ditambah 450 µLbuffer fosfat pH 7,0
Diinkubasi selama 5 menit pada 37°C
Ditambahkan 250 µL larutan enzim α-glukosidase
Diinkubasi selama 15 menit
Ditambahkan 1000 µL larutan Na_2CO_3 0,2 M untuk menghentikan kerja enzim
Diukur dengan UV-Vis pada λ max
Dihitung nilai IC_{50}
Diambil 5 µL DMSO
Ditambahkan 250 µLlarutan p-NPG
Ditambah 450 µLbuffer fosfat pH 7,0
Diinkubasi selama 5 menit pada 37°C
Ditambahkan 250 µL buffer fosfat pH 7,0
Diinkubasi selama 15 menit
Ditambahkan 1000 µL larutan Na_2CO_3 0,2 M untuk menghentikan kerja enzim
Diukur dengan UV-Vis pada λ max
Dihitung nilai IC_{50}
Hasil

Lampiran 9 Prosedur Pembuatan Reagen

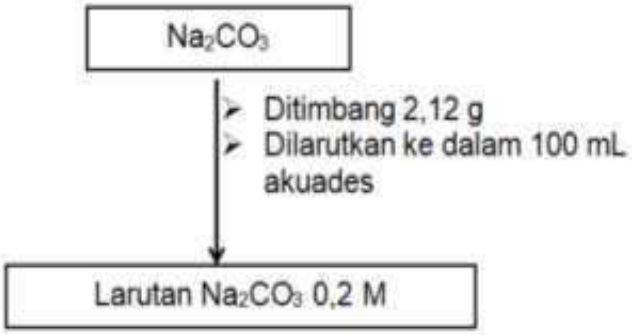
1. Larutan buffer posfat pH 7



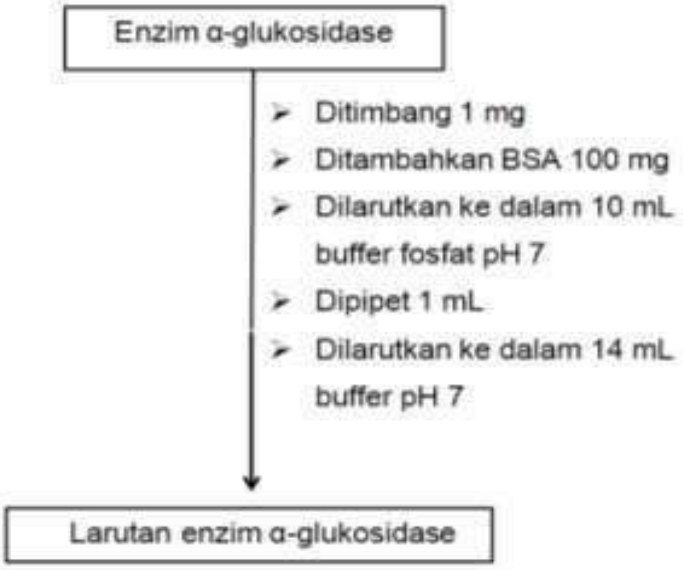
2. Larutan p-NPG



3. Larutan Na2CO3 0,2 M



4. Larutan enzim α-glukosidase



5. Pembuatan Larutan Uji

a. Larutan uji induk ekstrak

Sampel ekstrak ditimbang sebanyak 50 mg, dilarutkan dalam 0,5 mL (0,0005 liter) dimetil sulfoksida (DMSO) dan akan diperoleh konsentrasi

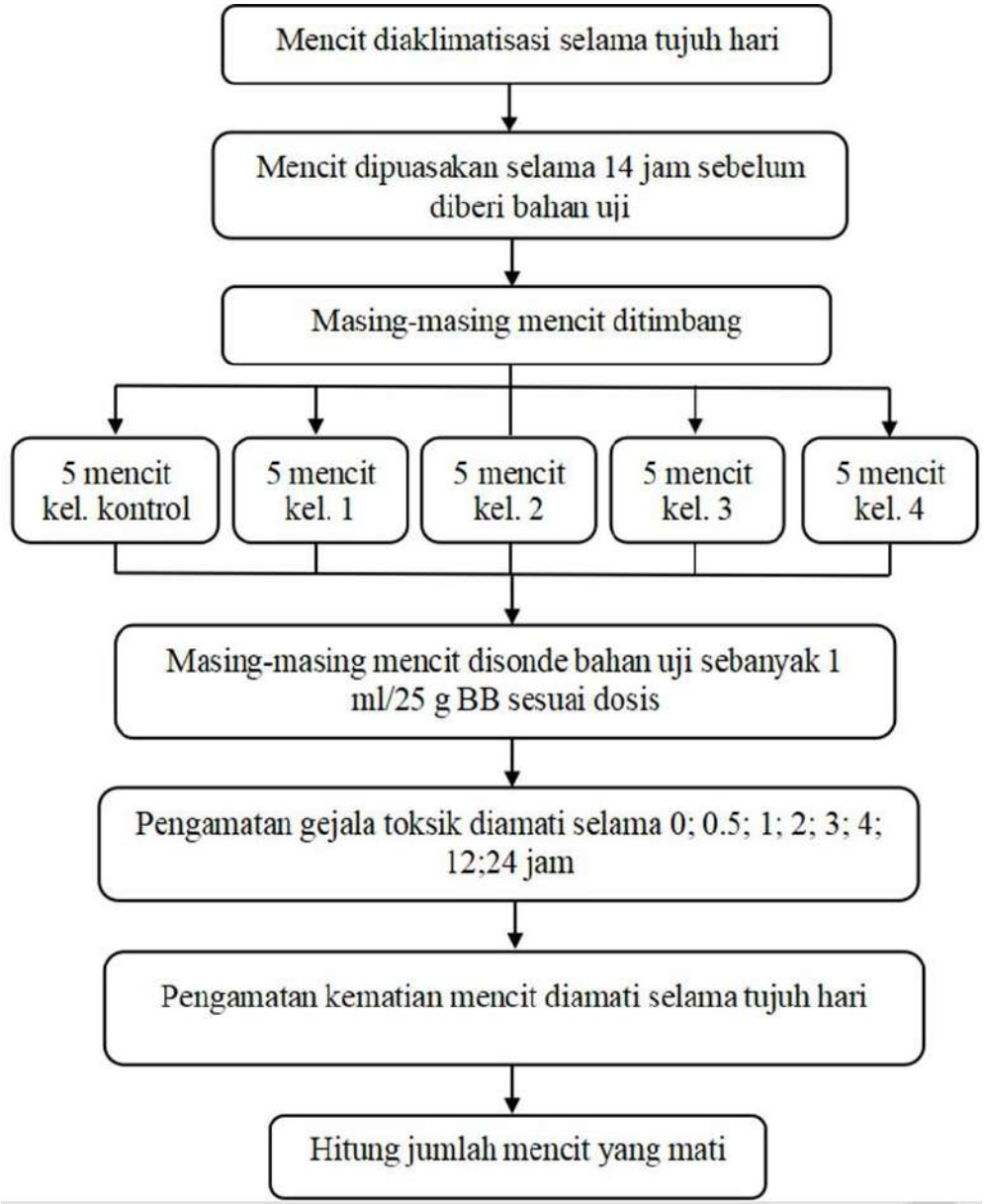
$$Konsentrasi = \frac{50mg}{0{,}0005liter} = 100.000\ ppm$$

b. Larutan uji induk pembanding

Kuersetin ditimbang sebanyak 50 mg, dilarutkan dalam 0,5 mL (0,0005 liter) dimetil sulfoksida (DMSO) dan akan diperoleh konsentrasi larutan 100.000 ppm

$$Konsentrasi = \frac{50mg}{0{,}0005liter} = 100.000\ ppm$$

Lampiran 10 Prosedur Kerja Uji Toksisitas Akut LD50



Lampiran 11. Perhitungan Nilai LD_{50} Pada Toksisitas Akut

Log M = Log D + d (f + q)

Ket :

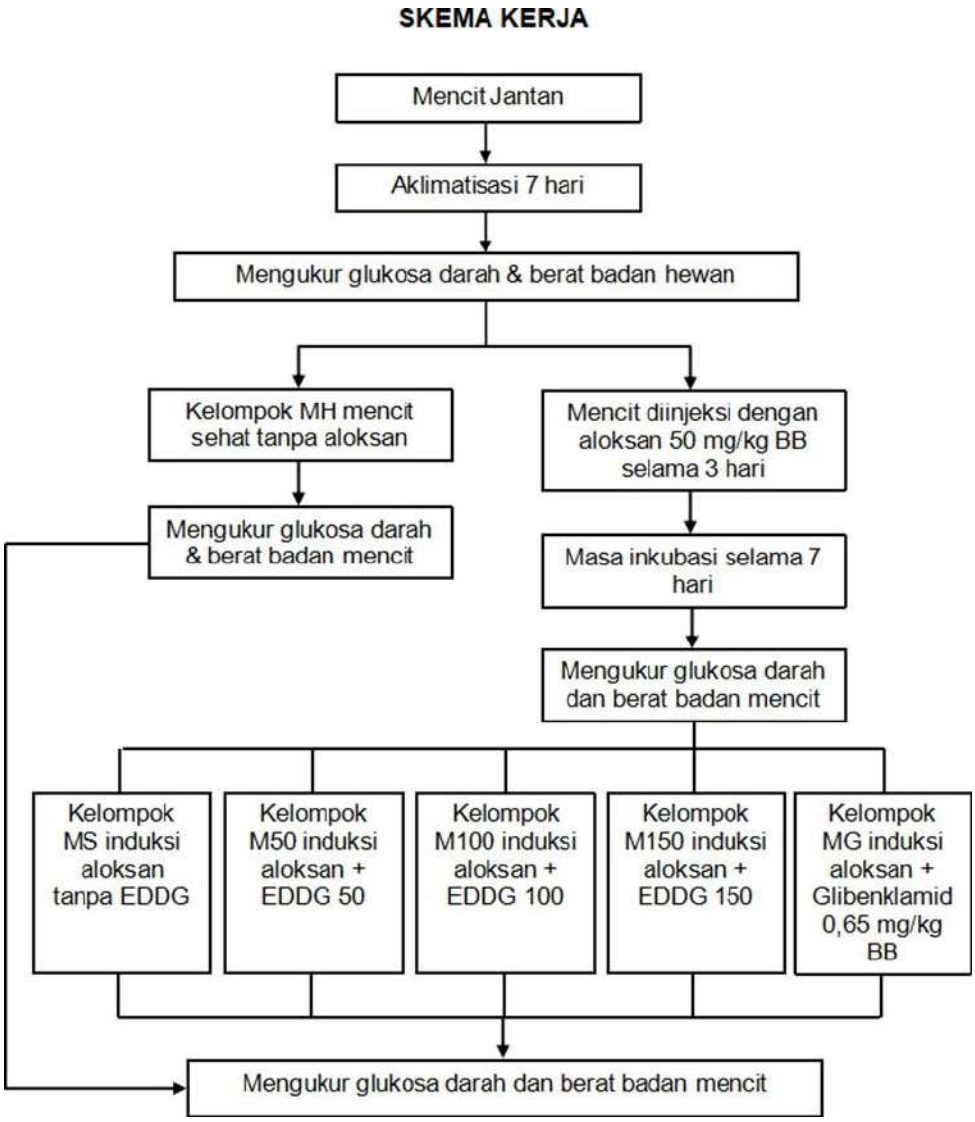
M = harga LD_{50}
D = Dosis terkecil yang digunakan
d = log r (kelipatan dosis)
f = faktor

Jadi

Log M = Log D + d (f + 1)
= log 2.5 + log 2 (f +1)
= 0.398 + 0.3 (0.3000 + 1)
= 0.398 + 0.3 (1.3)
= 0.398 + 0.39
= 0.788

antilog 0.788 = 6.15

Lampiran 12 Uji Kadar Glukosa Darah pada Mencit



Lampiran 13 Perhitungan Uji Glukosa Darah pada Mencit

Kelompok	Berat Badan (gram)	Dosis Aloksan (mg/ml)	Dosis Glibenklamide (mg/0,5 ml)	EDDG (mg)
MH	33,52	–	–	–
MS	32,76	16,4	–	–
M50	32,86	16,4	–	1,64
M100	32,97	16,5	–	3,30
M150	31,48	15,7	–	4,72
MG	31,76	15,9	0,04	–

1. **Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MH Observasi H0**
   a. Dosis Aloksan (50 mg/kg BB) : –
   b. Dosis Glibenklamide (0,65 mg/kg BB) : –
   c. EDDG : –
2. **Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MS Observasi H0**
   a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 50\ mg$$

$$= \frac{32{,}76}{1000\ \text{g}} x\ 50\ mg$$

$$= 1{,}64\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}64\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 16{,}4\ \text{mg/ml}$$

   b. Dosis Glibenklamide (0,65 mg/kg BB) : –
   c. EDDG : –

3. **Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M50 Observasi H0**

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 50\ mg$$

$$= \frac{32{,}86}{1000\ \text{g}}\ x\ 50\ mg$$

$$= 1{,}64\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}64\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 16{,}4\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}}\ x\ 50\ mg$$

$$= \frac{32{,}86}{1000\ \text{g}}\ x\ 50\ mg$$

$$= 1{,}64\ \text{mg}$$

4. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M100 Observasi H0

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}}\ x\ 50\ mg$$

$$= \frac{32{,}97}{1000\ \text{g}}\ x\ 50\ mg$$

$$= 1{,}65\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}65\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 16{,}5\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (100 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}}\ x\ 100\ mg$$

$$= \frac{32{,}97}{1000\ \text{g}}\ x\ 100\ mg$$

$$= 3{,}30\ \text{mg}$$

5. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M150 Observasi H0

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 50\ mg$$

$$= \frac{31{,}48}{1000\ \text{g}} x\ 50\ mg$$

$$= 1{,}57\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}57\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}7\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (150 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 150\ mg$$

$$= \frac{31{,}48}{1000\ \text{g}} x\ 150\ mg$$

$$= 4{,}72\ \text{mg}$$

OBSERVASI H3

6. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MG Observasi H0

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 50\ mg$$

$$= \frac{31{,}76}{1000\ \text{g}} x\ 50\ mg$$

$$= 1{,}59\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}59\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}9\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 0{,}65\ mg$$

$$= \frac{31{,}76}{1000\ \text{g}} x\ 0{,}65\ mg$$

$$= 0{,}02\ \text{mg}$$

Volume lambung mencit = 0,5 ml

$$= \frac{0{,}02\ \text{mg}}{0{,}5\ \text{ml}}$$

$$= 0{,}04\ \text{mg/ml}$$

Kelompok	Berat Badan (gram)	Dosis Aloksan (mg/ml)	Dosis Glibenklamid e (mg/0,5 ml)	EDDG (mg)
MH	34, 53	□	□	□
MS	30, 82	15, 4	□	□
M50	30, 73	15, 4	□	1, 54
M100	31, 01	15, 5	□	3, 10
M150	30, 52	15, 3	□	4, 58
MG	30, 53	15, 3	0, 04	□

1. **Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MH Observasi H3**
   a. Dosis Aloksan (50 mg/kg BB) : –
   b. Dosis Glibenklamide (0,65 mg/kg BB) : –
   c. EDDG : –
2. **Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MS Observasi H3**
   a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\,\text{g}} x\ 50\ mg$$

$$= \frac{30{,}82}{1000\,\text{g}} x\ 50\ mg$$

$$= 1{,}54\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}54\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}4\ \text{mg/ml}$$

   b. Dosis Glibenklamide (0,65 mg/kg BB) : –
   c. EDDG : –
3. **Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M50 Observasi H3**
   a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\,\text{g}} x\ 50\ mg$$

$$= \frac{30{,}73}{1000\ \text{g}}\ x\ 50\ mg$$

$$= 1{,}54\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}54\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}4\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}}\ x\ 50\ mg$$

$$= \frac{30{,}73}{1000\ \text{g}}\ x\ 50\ mg$$

$$= 1{,}54\ \text{mg}$$

4. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M100 Observasi H3

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}}\ x\ 50\ mg$$

$$= \frac{31{,}01}{1000\ \text{g}}\ x\ 50\ mg$$

$$= 1{,}55\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}55\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}5\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (100 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}}\ x\ 100\ mg$$

$$= \frac{31{,}01}{1000\ \text{g}}\ x\ 100\ mg$$

$$= 3{,}10\ \text{mg}$$

5. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M150 Observasi H3

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 50\ mg$$

$$= \frac{30{,}52}{1000\ \text{g}} x\ 50\ mg$$

$$= 1{,}53\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}53\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}3\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (150 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 150\ mg$$

$$= \frac{30{,}52}{1000\ \text{g}} x\ 150\ mg$$

$$= 4{,}58\ \text{mg}$$

6. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MG Observasi H3

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 50\ mg$$

$$= \frac{30{,}53}{1000\ \text{g}} x\ 50\ mg$$

$$= 1{,}53\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}53\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}3\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 0{,}65\ mg$$

$$= \frac{30{,}53}{1000\ \text{g}} x\ 0{,}65\ mg$$

$$= 0{,}02\ \text{mg}$$

Volume lambung mencit = 0,5 ml

$$= \frac{0{,}02 \text{ mg}}{0{,}5 \text{ ml}}$$

$$= 0{,}04 \text{ mg/ml}$$

c. EDDG : –

OBSERVASI H7

Kelompok	Berat Badan (gram)	Dosis Aloksan (mg/ml)	Dosis Glibenklamide (mg/0,5 ml)	EDDG (mg)
MH	35,77	–	–	–
MS	24,59	12,3	–	–
M50	29,70	14,8	–	1,48
M100	32,32	16,1	–	3,23
M150	30,72	15,3	–	4,60
MG	30,81	15,4	0,04	–

1. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MH Observasi H7

a. Dosis Aloksan (50 mg/kg BB) : –

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG : –

2. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MS Observasi H7

a. Dosis Aloksan (50 mg/kg BB)

Rumus $= \frac{\text{Rata} - \text{Rata BB Mencit}}{1000 \text{ g}} x\ 50\ mg$

$= \frac{24{,}59}{1000 \text{ g}} x\ 50\ mg$

$= 1{,}23$ mg/mencit

$$= \frac{29{,}70}{1000\text{ g}} x\ 50\ mg$$

$$= 1{,}48\text{ mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}48\text{ mg}}{0{,}1\text{ ml}}$$

$$= 14{,}8\text{ mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\text{ g}} x\ 50\ mg$$

$$= \frac{29{,}70}{1000\text{ g}} x\ 50\ mg$$

$$= 1{,}48\text{ mg}$$

4. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M100 Observasi H7

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\text{ g}} x\ 50\ mg$$

$$= \frac{32{,}32}{1000\text{ g}} x\ 50\ mg$$

$$= 1{,}616\text{ mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}61\text{ mg}}{0{,}1\text{ ml}}$$

$$= 16{,}1\text{ mg/ml}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}61\text{ mg}}{0{,}1\text{ ml}}$$

$$= 16{,}1\text{ mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (100 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\text{ g}} x\ 100\ mg$$

$$= \frac{32{,}32}{1000\text{ g}} x\ 100\ mg$$

$$= 3{,}23\text{ mg}$$

5. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M150 Observasi H7

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\text{ g}} x\ 50\ mg$$

$$= \frac{30{,}72}{1000\ \text{g}}\ x\ 50\ mg$$

$$= 1{,}53\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}53\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}3\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (150 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}}\ x\ 150\ mg$$

$$= \frac{30{,}72}{1000\ \text{g}}\ x\ 150\ mg$$

$$= 4{,}60\ \text{mg}$$

6. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MG Observasi H7

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}}\ x\ 50\ mg$$

$$= \frac{30{,}81}{1000\ \text{g}}\ x\ 50\ mg$$

$$= 1{,}54\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}54\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}4\ \text{mg/ml}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}54\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 15{,}4\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}}\ x\ 0{,}65\ mg$$

$$= \frac{30{,}81}{1000\ \text{g}}\ x\ 0{,}65\ mg$$

$$= 0{,}02\ \text{mg}$$

Volume lambung mencit = 0,5 ml

$$= \frac{0{,}02\ \text{mg}}{0{,}5\ \text{ml}}$$

$$= 0{,}04\ \text{mg/ml}$$

c. EDDG : –

OBSERVASI H14

Kelompok	Berat Badan (gram)	Dosis Aloksan (mg/ml)	Dosis Glibenklamide (mg/0,5 ml)	EDDG (mg)
MH	36,32	–	–	–
MS	20,75	10,4	–	–
M50	28,30	14,2	–	1,42
M100	32,66	16,3	–	3,27
M150	30,99	15,5	–	4,65
MG	30,00	15,0	0,04	–

1. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MH Observasi H14

a. Dosis Aloksan (50 mg/kg BB) : –

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG : –

2. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MS Observasi H14

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 50\ mg$$

$$= \frac{20{,}75}{1000\ \text{g}} x\ 50\ mg$$

$$= 1{,}04\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}04\ \text{mg}}{0{,}1\ \text{ml}}$$

$$= 10{,}4\ \text{mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG : –

3. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M50 Observasi H14

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000\ \text{g}} x\ 50\ mg$$

$$= \frac{28{,}30}{1000\ \text{g}} x\ 50\ mg$$

$$= 1{,}42\ \text{mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}42 \text{ mg}}{0{,}1 \text{ ml}}$$

$$= 14{,}2 \text{ mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000 \text{ g}} x\ 50\ mg$$

$$= \frac{28{,}30}{1000 \text{ g}} x\ 50\ mg$$

$$= 1{,}42 \text{ mg}$$

4. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M100 Observasi H14

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000 \text{ g}} x\ 50\ mg$$

$$= \frac{32{,}66}{1000 \text{ g}} x\ 50\ mg$$

$$= 1{,}63 \text{ mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}63 \text{ mg}}{0{,}1 \text{ ml}}$$

$$= 16{,}3 \text{ mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB) : –

c. EDDG (100 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000 \text{ g}} x\ 100\ mg$$

$$= \frac{32{,}66}{1000 \text{ g}} x\ 100\ mg$$

$$= 3{,}27 \text{ mg}$$

5. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok M150 Observasi H14

a. Dosis Aloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000 \text{ g}} x\ 50\ mg$$

$$= \frac{30{,}99}{1000 \text{ g}} x\ 50\ mg$$

$$= 1{,}55 \text{ mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}55 \text{ mg}}{0{,}1 \text{ ml}}$$

$$= 15{,}5 \text{ mg/ml}$$

b. DosisGlibenklamide (0,65 mg/kg BB) : –

c. EDDG (150 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000 \text{ g}} x\ 150\ mg$$

$$= \frac{30{,}99}{1000 \text{ g}} x\ 150\ mg$$

$$= 4{,}65 \text{ mg}$$

6. Perhitungan Dosis Aloksan, Glibenklamide dan EDDG Untuk Kelompok MG Observasi H14

a. DosisAloksan (50 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000 \text{ g}} x\ 50\ mg$$

$$= \frac{30{,}00}{1000 \text{ g}} x\ 50\ mg$$

$$= 1{,}50 \text{ mg/mencit}$$

Volume maksimal dosis intravena mencit 0,1 ml

$$= \frac{1{,}50 \text{ mg}}{0{,}1 \text{ ml}}$$

$$= 15{,}0 \text{ mg/ml}$$

b. Dosis Glibenklamide (0,65 mg/kg BB)

$$\text{Rumus} = \frac{\text{Rata} - \text{Rata BB Mencit}}{1000 \text{ g}} x\ 0{,}65\ mg$$

$$= \frac{30{,}00}{1000 \text{ g}} x\ 0{,}65\ mg$$

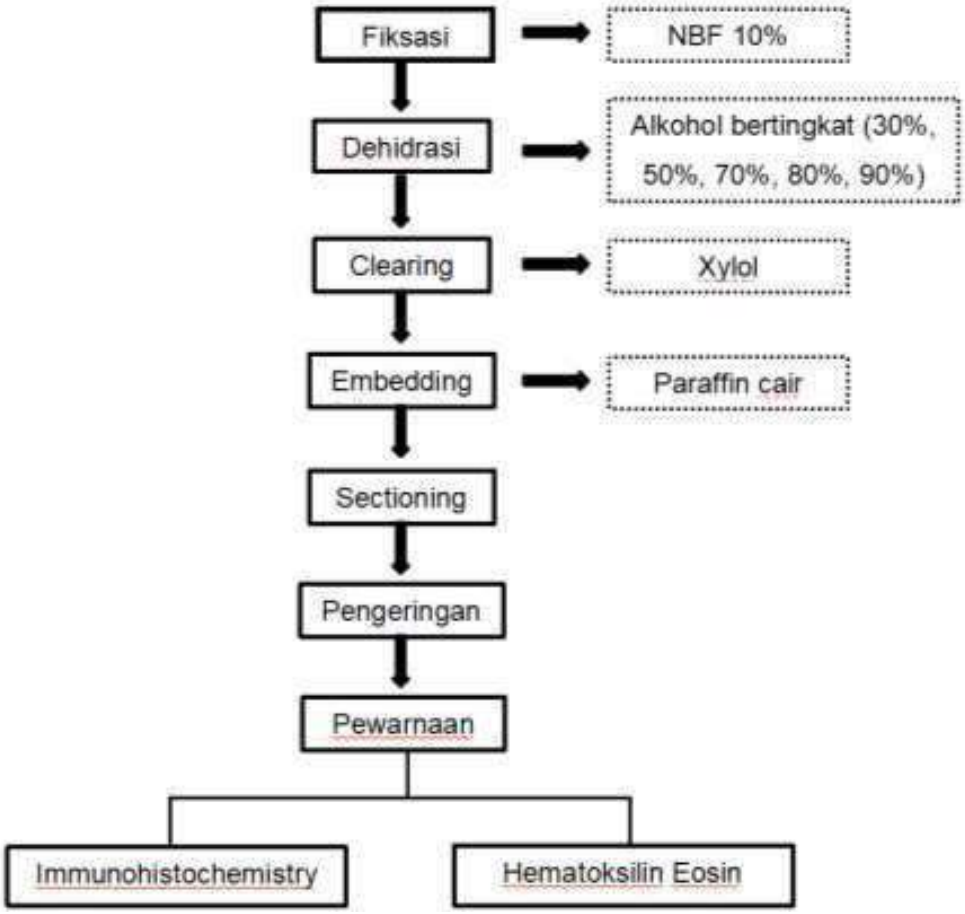
$$= 0{,}02 \text{ mg}$$

Volume lambung mencit = 0,5 ml

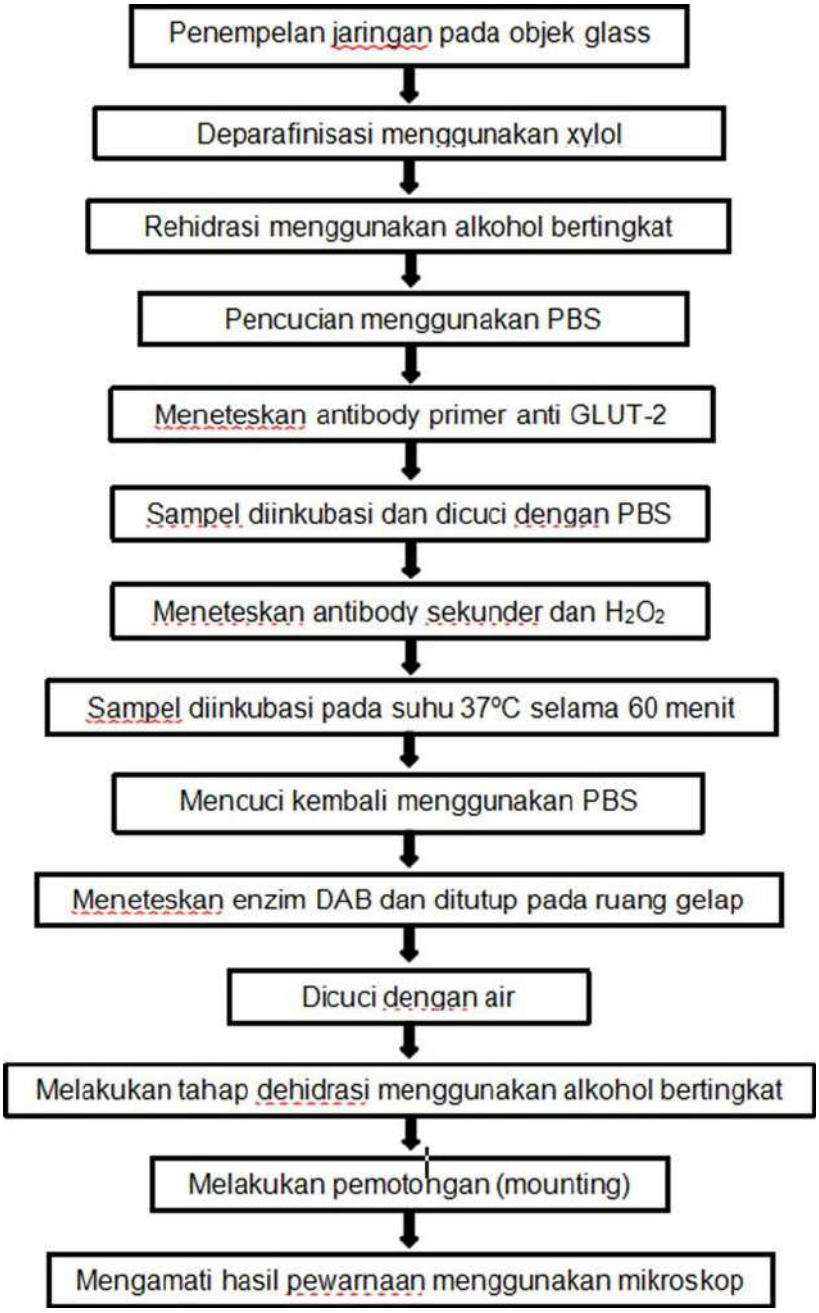
$$= \frac{0{,}02 \text{ mg}}{0{,}5 \text{ ml}}$$

$$= 0{,}04 \text{ mg/ml}$$

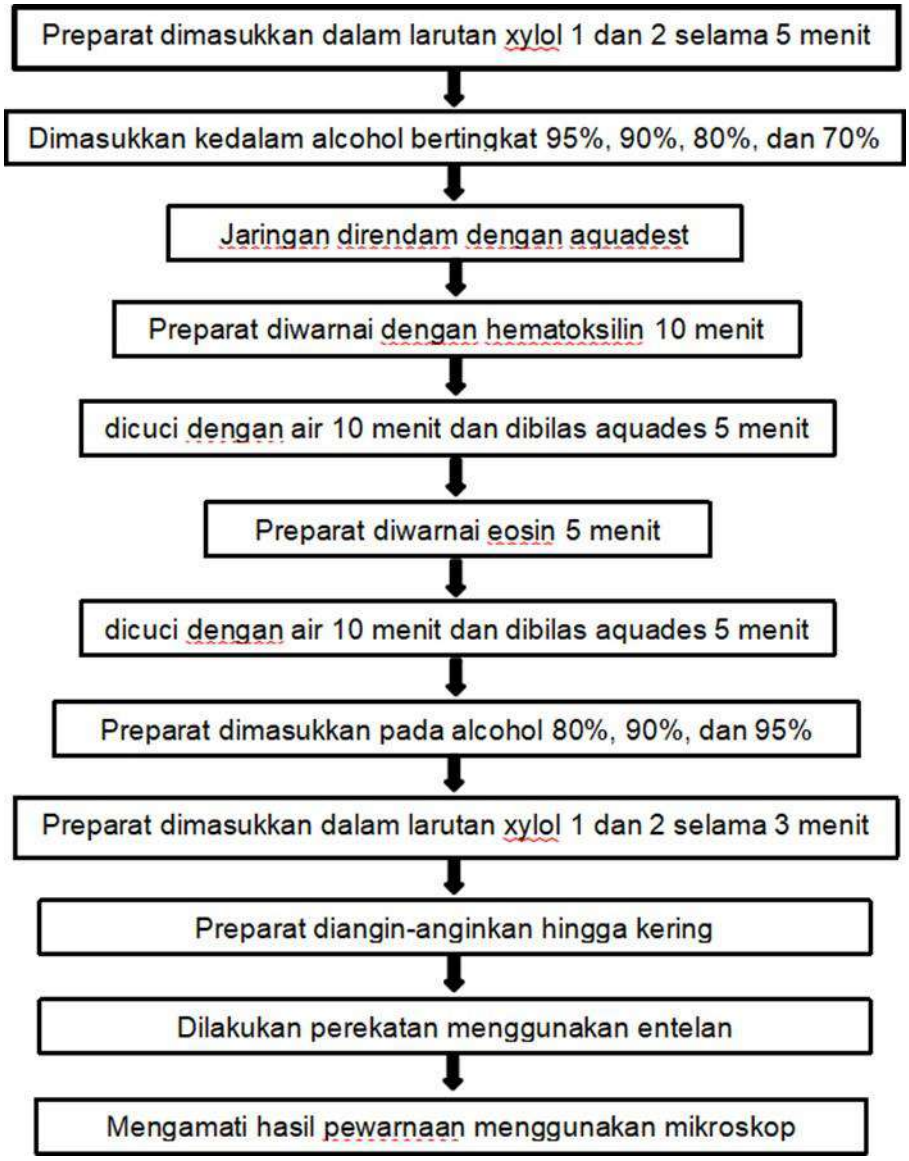
Lampiran 14 Pembuatan Preparat Histopatologi Organ Pankreas Mencit



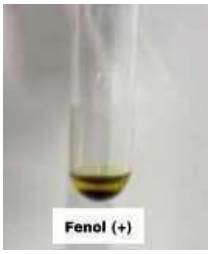
Lampiran 15. Analisis Ekspresi Glut-2 Pada Mencit Menggunakan Immunohistochemistry (IHC)



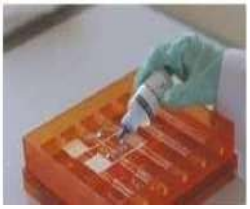
Lampiran 16 Pemeriksaan Histopatologik Sel Beta Pankreas

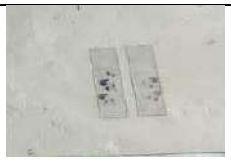


			
Daun dandang gendis	Daun dandang gendis dikeringkan	Proses penyerbukan	Proses penyaringan
			
Proses penguapan dengan menggunakan rotary evavorator	Proses maserasi dengan menggunakan metode MAE	Hasil maserasi (ekstrak pekat)	Flavanoid
			
Alkaloid	Steroid	Saponin	Terpenoid

			
Tanin	Fenol	DPPH	larutan induk DPPH
			
Ascorbic Acid	Larutan induk vitamin C	Pembuatan larutan uji	Persiapan inkubasi larutan uji dengan membungkus tabung menggunakan *aluminium foil*
			
Pembacaan absorbansi	Memipet 5 µL sampel kedalam tabung	Memipet 5 µL larutan DMSO kedalam tabung	Memipet 250 µL buffer

			
Memipet 250 µL enzim	Melakukan inkubasi pada suhu 37° C	Memipet larutan 1000 µL Na_2CO_3	Mengukur absorbansi menggunakan spektrofotometer 400 mm.
			
Pengelompokan mencit	Pemberian Na CMC 1%	Pemberian larutan ekstrak	Mengamati gejala pada 5 kelompok selama 24 jam
			
Pengukuran bobot badan mencit	Aklimatisasi mencit	Larutan aloksan	Na CMC 1,25%
			
Larutan ekstrak	Pengambilan darah	Fiksasi Sampel	Preparasi Sampel

	pada mencit		
			
Dehidrasi (Menggunakan Alat Tissue Processor)	Clearing	Embedding (Blok Paraffin menggunakan embedding center)	Sectioning (Mikrotom)
			
Persiapan Pewarnaan	Deparafinisasi menggunakan xylol	Deparafinisasi menggunakan alkohol bertingkat	Pencucian dengan PBS
			
Meneteskan antibody primer anti GLUT-2	Inkubasi preparat	Preparat dicuci menggunakan PBS	Meneteskan anitbody sekunder dan H_2O_2

			
Mencuci kembali preparat menggunakan PBS	Melakukan tahap dehidrasi menggunakan alkohol bertingkat	Melakukan tahap pemotongan (mounting)	Melakukan pengamatan dibawah mikroskop
			
Preparat dimasukkan dalam xylol 1 dan 2 selama 5 menit	Dimasukkan kedalam alkohol bertingkat	Pencucian dengan aquadest	Melakukan pewarnaan dengan hematoksilin 10 menit
			
Dicuci menggunakan air 10 menit	Dibilas dengan aquadest	Preparat diwarnai dengan eosini 5 menit	Preparat dicuci kembali menggunakan air
			
Preparat dimasukkan dalam alkohol 80%, 90% dan 95%	Preparat dimasukkan dalam xylol 1 dan xylol 2 selama 3 menit	Preparat diangin-anginkan hingga kering	Melakukan perekatan menggunakan entelan