

## DAFTAR PUSTAKA

- 'RCSB PDB: <https://www.rcsb.org/>', , 2023. URL: <https://www.rcsb.org/> (diakses tanggal 19/12/2023).
- Abdullah, S.S., Putra, P.P., Antasionasti, I., Gerald, R., Suoth, E.J., Abdullah, R.P.I., dkk., 2021. Analisis Sifat Fisikokimia, Farmakokinetik dan Toksikologi Pada Pericarpium Pala (*Myristica fragrans*) Secara Artificial Intelligence. *Chem. Prog*, **14**: 81–92.
- Aberg, J.A., Lacy, C., Armstrong, L., Goldman, M., dan Lance, L.L., 2009. *Drug Information Handbook 17th Edition*. American.
- Ado, M.A., 2010. 'Screening of Malaysian Medicinal/Herbs and Aquatic Plants for Pancreatic Lipase Inhibitory Activities and Identification of Active Constituent', . Universiti Putra Malaysia.
- Ado, M.A., Abas, F., Mohammed, A.S., dan Ghazali, H.M., 2013. Anti- and pro-lipase activity of selected medicinal, herbal and aquatic plants, and structure elucidation of an anti-lipase compound. *Molecules*, **18**: 14651–14669.
- Agristika, A. dan Carolia, N., 2017. Agonis Reseptor GLP 1 untuk Terapi Diabetes Mellitus Tipe 2. *Jurnal Kesehatan dan Agromedicine*, **4**: 338–341.
- Ahmed, A., Nagarajan, S., Doddareddy, M.R., Cho, Y.-S., dan Pae, A.-N., 2011. Binding Mode Prediction of 5-Hydroxytryptamine 2C Receptor Ligands by Homology Modeling and Molecular Docking Analysis. *Bulletin of the Korean Chemical Society*, **32**: 1–7.
- Akarchariya, N., Sirilun, S., Julsrigival, J., dan Chansakaowa, S., 2017. Chemical profiling and antimicrobial activity of essential oil from *Curcuma aeruginosa* Roxb., *Curcuma glans* K. Larsen & J. Mood and *Curcuma cf. xanthorrhiza* Roxb. collected in Thailand. *Asian Pacific Journal of Tropical Biomedicine*, **7**: 881–885.
- Alias, N., Ghazali, S.N.A., dan Hamid, A.A.A., 2020. Molecular Docking and Dynamic Simulation of Astragalin Reveals Inhibitory Potential Againsts Pancreatic Lipase. *International Journal of Allied Health Sciences*, **4**: 1174–1190.
- Alias, N., Leow, T.C., Shukuri, M., Ali, M., Noor, R., Raja, Z., dkk., 2017. Anti-obesity Potential of Selected Tropical Plants via Pancreatic Lipase Inhibition. *Advances in Obesity, Weight Management & Control*, **6**: 122–131.
- Allal, H., Nemdili, H., Zerizer, M., dan Zouchoune, B., 2023. Molecular Structures, Chemical Descriptors, and Pancreatic Lipase (1LPB) Inhibition By Natural Products: a DFT Investigation and Molecular Docking Prediction. *Struct Chem.*, **29**: 1–17.
- Aloulou, A. dan Carrière, F., 2008. Gastric lipase: An extremophilic interfacial enzyme with medical applications. *Cellular and Molecular Life Sciences*, **65**:

851–854.

- American Diabetes Association Professional Practice Committee, 2022. Obesity and Weight Management for the Prevention and Treatment of Type 2 Diabetes: Standards of Medical Care in Diabetes-2022. *Diabetes Care*, **45**: 113–124.
- Andriani, T., Mawaddah, N., Erlina, L., Anggraeini, R., Ibrahim, N., dan Siagian, M., 2023. In Silico Study of *Hibiscus sabdariffa* Linn. Active Compounds in GLP-1R: Potential AS Antidiabetic Drug. *Jurnal Kimia (Journal of Chemistry)*, **17**: 118–128.
- Ansel, H.C., 1989. *Pengantar Bentuk Sediaan Farmasi*, 4th ed. Universitas Indonesia, Jakarta.
- Arba, M., 2019. *Buku Ajar Farmasi Komputasi*. Deepublish, Yogyakarta.
- Arulmozhi, D.K., Sridhar, N., Veeranjanyulu, A., dan Arora, S.K., 2006. Preliminary Mechanistic Studies on the Smooth Muscle Relaxant Effect of Hydroalcoholic Extract of *Curcuma caesia*. *Journal of Herbal Pharmacotherapy*, **6**: 117–124.
- Atun, S., Arianingrum, R., Aznam, N., dan Malek, S.N.A., 2016. Isolation of sesquiterpenes lactone from *Curcuma aeruginosa* rhizome and the cytotoxic activity against human cancer cell lines. *International Journal of Pharmacognosy and Phytochemical Research*, **8**: 1168–1172.
- Batubara, I., Mitsunaga, T., dan Ohashi, H., 2009. Screening antiacne potency of Indonesian medicinal plants: antibacterial, lipase inhibition, and antioxidant activities.
- Bentz, A.B., 2017. A Review of Quercetin: Chemistry, Antioxident Properties, and Bioavailability. *Journal of Young Investigators*, .
- Berdan, C.A., Erion, K.A., Burritt, N.E., Corkey, B.E., dan Deeney, J.T., 2016. Inhibition of Monoacylglycerol Lipase Activity Decreases Glucose-Stimulated Insulin Secretion in INS-1 (832/13) Cells and Rat Islets. *PLOS ONE*, **11**: e0149008.
- Berry, M.D., Gainetdinov, R.R., Hoener, M.C., dan Shahid, M., 2017. Pharmacology of human trace amine-associated receptors: Therapeutic opportunities and challenges. *Pharmacology & Therapeutics*, **180**: 161–180.
- Billes, S.K., Sinnayah, P., dan Cowley, M.A., 2014. Naltrexone/bupropion for obesity: An investigational combination pharmacotherapy for weight loss. *Pharmacological Research*, **84**: 1–11.
- Bin Jantan, I., Mohd Yassin, M.S., Chin, C.B., Chen, L.L., dan Sim, N.L., 2003. Antifungal activity of the essential oils of nine Zingiberaceae species. *Pharmaceutical Biology*, **41**: 392–397.
- Birari, R.B. dan Bhutani, K.K., 2007. Pancreatic lipase inhibitors from natural

- sources: unexplored potential. *Drug Discovery Today*, **12**: 879–889.
- Blois, M., 1958. Antioxidant Determinations by the Use of a Stable Free Radical. *Nature*, **181**: 1199–1200.
- Boden, G., 2011. Obesity, insulin resistance and free fatty acids. *Current Opinion in Endocrinology, Diabetes and Obesity*, **18**: 139–143.
- Bordoloi, P.K., Phukan, D., dan Singh, S., 2012. Study of The Anti-Ulcerogenic Activity of The Ethanolic Extracts of Rhizome of *Curcuma caesia* (EECC) Againts Gastric Ulcers in Experimental Animals. *Asian Journal of Pharmaceutical and Clinical Research*, **5**: 200–203.
- Bos, R., Windono, T., Woerdenbag, H.J., Boersma, Y.L., Koulman, A., dan Kayser, O., 2007. HPLC-photodiode array detection analysis of curcuminoids in *Curcuma* species indigenous to Indonesia. *Phytochemical Analysis*, **18**: 118–122.
- Boutsada, P., Giang, V.H., Linh, T.M., Mai, N.C., Cham, P.T., Hanh, T.T.H., dkk., 2018. Sesquiterpenoids from the rhizomes of *Curcuma aeruginosa*. *Vietnam Journal of Chemistry*, **56**: 721–725.
- Brashier, D.B.S., Sharma, A.K., Dahiya, N., Singh, S.K., dan Khadka, A., 2014. Lorcaserin: A novel antiobesity drug. *Journal of Pharmacology & Pharmacotherapeutics*, **5**: 175.
- Bray, G.A. dan Bouchard, C., 2014. *OBESITY Clinical Applications Second Edition*. CRC Press, USA.
- Breton, R.C. dan Reynolds, W.F., 2013. Using NMR to identify and characterize natural products. *Natural Product Reports*, .
- Brown, W.V., Fujioka, K., Wilson, P.W.F., dan Woodworth, K.A., 2009. Obesity: Why be concerned? *American Journal of Medicine*, **122**: 4–11.
- Butarbutar, M.R., 2019. 'Uji Aktivitas Antioksidan Ekstrak Etanol Bawang Batak (*Allium chinense* L.) dengan Metode DPPH dan ABTS'. Universitas Sumatera Utara.
- Caron, A. dan Michael, N.J., 2021. New Horizons: Is Obesity a Disorder of Neurotransmission? *The Journal of Clinical Endocrinology & Metabolism*, **106**: 4872–4886.
- Chandra, S. dan Dave, R., 2009. In vitro models for antioxidant activity evaluation and some medicinal plants possessing antioxidant properties: An overview. *African Journal of Microbiology Research*, **3**: 981–996.
- Chen, D., Li, H., Li, W., Feng, S., dan Deng, D., 2018. *Kaempferia parviflora* and Its Methoxyflavones: Chemistry and Biological Activities. *Evidence-based Complementary and Alternative Medicine*, **2018**: 1–15.
- Coronado-Cáceres, L., G, R.-C., Mojica, L., Hernández-Ledesma, B., Quevedo-

- Corona, L., dan E, L.C., 2020. Cocoa (*Theobroma cacao* L.) Seed Proteins' Anti-Obesity Potential through Lipase Inhibition Using In Silico, In Vitro and In Vivo Models. *Foods*, **9**: 1359.
- De La Garza, A.L., Milagro, F.I., Boque, N., Campión, J., dan Martínez, J.A., 2011. Natural inhibitors of pancreatic lipase as new players in obesity treatment. *Planta Medica*, **77**: 773–785.
- Depkes RI, 1986. *Sediaan Galenika*. Depkes RI, Jakarta.
- Depkes RI, 2000. *Parameter Standar Umum Ekstrak Tumbuhan Obat - Free Download PDF*. Depkes RI. Direktorat Jenderal Pengawasan Obat dan Makanan, Jakarta.
- Devi, H.P., Mazumder, P.B., dan Devi, L.P., 2015. Antioxidant and Antimutagenic Activity of *Curcuma caesia* Roxb. Rhizome Extracts. *Toxicology Reports*, **2**: 423–428.
- Djauhariya, E. dan Sufiani, S., 2001. Observasi Keragaman Tanaman Temu Ireng (*Curcuma aeruginosa* Roxb) Pada Berbagai Jarak Tanam. *Warta Tumbuhan Obat Indonesia*, **7**: 6.
- Dolan, J.W. dan Snyder, L.R., 2006. Gradient Elution Chromatography, dalam: *Encyclopedia of Analytical Chemistry*. John Wiley & Sons, Ltd, Chichester, UK.
- Dwyer, J.T., Melanson, K.J., Sriprachy-anunt, U., Cross, P., dan Wilson, M., 2000. *Dietary Treatment of Obesity*, Endotext. MDText.com, Inc., USA.
- Egloff, M.P., Marguet, F., Buono, G., Verger, R., Cambillau, C., dan van Tilbeurgh, H., 1995. The 2.46 Å resolution structure of the pancreatic lipase-colipase complex inhibited by a C11 alkyl phosphonate. *Biochemistry*, **34**: 2751–2762.
- Emelda, 2019. *Farmakognosi Untuk Mahasiswa Kompetensi Keahlian Farmasi*. Pustaka Baru Press, Yogyakarta.
- Etoundi CB, Kuaté D, Ngondi JL, dan Oben J, 2010. 'Anti-amylase, anti-lipase and antioxidant effects of aqueous extracts of some Cameroonian spices', , *Journal of Natural Products*. **3**: 165-171.
- Evizal, R., 2013. *Tanaman Rempah Dan Fitofarmaka*. Lembaga Penelitian Universitas Lampung.
- Faridah, 2020. 'Molecular Docking Derivat Asam Klorogenat pada Hormon Ghrelin sebagai Antiobesitas', . Universitas Pancasila.
- Faridah, F., Mumpuni, E., Purnomo, H., Laksmiawati, D.R., dan Simanjuntak, P., 2024. Study Of The Anti-Obesity Potential Of Chlorogenic Acid Through Molecular Docking. *Journal of Social Research*, **3**: 1–7.
- Fernández-Sánchez, A., Madrigal-Santillán, E., Bautista, M., Esquivel-Soto, J.,

- Morales-González, Á., Esquivel-Chirino, C., dkk., 2011. Inflammation, oxidative stress, and obesity. *International Journal of Molecular Sciences*, **12**: 3117–3132.
- Fernando, W.I.T., Attanayake, A.M.K.C., Perera, H.K.I., Sivakanesan, R., Jayasinghe, L., Araya, H., dkk., 2019. Isolation, identification and characterization of pancreatic lipase inhibitors from *Trigonella foenum-graecum* seeds. *South African Journal of Botany*, **121**: 418–421.
- Fitria, R., Seno, D.S.H., Priosoeryanto, B.P., Hartanti, dan Nurcholis, W., 2019. Volatile compound profiles and cytotoxicity in essential oils from rhizome of *Curcuma aeruginosa* and *Curcuma zanthorrhiza*. *Biodiversitas*, **20**: 2943–2948.
- Fitriana, W.D., Fatmawati, S.T., dan Ersam, T., 2015. 'Uji Aktivitas Antioksidan terhadap DPPH dan ABTS dari Fraksi-fraksi Daun Kelor (*Moringa oleifera*)', , dalam: *Prosiding Simposium Nasional Inovasi Dan Pembelajaran Sains 2015 (SNIPS 2015)*. hal. 657–660.
- Flock, M.R., Green, M.H., dan Kris-Etherton, P.M., 2011. Effects of adiposity on plasma lipid response to reductions in dietary saturated fatty acids and cholesterol. *Advances in Nutrition*, **2**: 261–274.
- Frengki, F., Prima, D., Wahyuni, F.S., Khambri, D., Vanda, H., Zakiah, N., dkk., 2018. Uji in Vitro Dan in Silico Senyawa 5,7,2',5'-Tetrahydroxy Flavan-3-Ol Terhadap Enzim Alpha Glucosidase. *Jurnal Fitofarmaka Indonesia*, **5**: 279–283.
- Frimayanti, N., Lukman, A., dan Nathania, L., 2021. Studi Molecular Docking Senyawa 1,5-Benzothiazepine sebagai Inhibitor dengue DEN-2 NS2B/NS3 Serine Protease. *Chempublish Journal*, **6**: 54–62.
- Fruh, S.M., 2017. Obesity: Risk factors, complications, and strategies for sustainable long-term weight management. *Journal of the American Association of Nurse Practitioners*, **29**: S3–S14.
- Fujioka, K., 2002. Management of Obesity as a Chronic Disease: Nonpharmacologic, Pharmacologic, and Surgical Options. *Obesity Research*, **10**: 116S-123S.
- Gadde, K.M., Martin, C.K., Berthoud, H.R., dan Heymsfield, S.B., 2018. Obesity: Pathophysiology and Management. *Journal of the American College of Cardiology*, **71**: 69–84.
- Galato, D., Ckless, K., Susin, M.F., Giacomelli, C., Ribeiro-do-Valle, R.M., dan Spinelli, A., 2001. Antioxidant capacity of phenolic and related compounds: correlation among electrochemical, visible spectroscopy methods and structure-antioxidant activity. *Redox report : communications in free radical research*, **6**: 243–250.
- Gauglitz, G. dan Vo-Dinh, T., 2003. *Handbook of Spectroscopy*, Handbook of



Spectroscopy. Wiley, Germany.

- Greenberg, I., Chan, S., dan Blackburn, G.L., 1999. Nonpharmacologic and Pharmacologic Management of Weight Gain. *The Journal of Clinical Psychiatry*, **60**: 12862.
- Gulua, L., Nikolaishvili, L., Jgenti, M., Turmanidze, T., dan Dzeladze, G., 2018. Polyphenol content, anti-lipase and antioxidant activity of teas made in Georgia. *Annals of Agrarian Science*, **16**: 357–361.
- Hairulazam, A., Samian, I., Hamid, A., dan Alias, N., 2021. In Silico Docking of Epicatechin, Corilagin and Quercetin as Potential Pancreatic Lipase Inhibitor for Obesity Treatment. *IJAHS*, **5**: 2193-2200.
- Hakim, L., Prayogi, S., Kartikasari, M., Kanti Rahayu, F., dan Studi Farmasi Fakultas Kesehatan, P., 2023. Study of Molecular Docking Ligands in Glucagon Like-Peptide-1 Receptor (GLP-1R). *Pharmacy Peradaban Journal*, **3**: 64-74.
- Halvorsen, B.L., Holte, K., W Myhrstad, M.C., Barikmo, I., Hvattum, E., Fagertun Remberg, S., dkk., 2002. A Systematic Screening of Total Antioxidants in Dietary Plants 1. *J. Nutr*, **132**: 461–71.
- Hamdi, O.A.A., Ye, L.J., Kamarudin, M.N.A., Hazni, H., Paydar, M., Looi, C.Y., dkk., 2015. Neuroprotective and Antioxidant Constituents from *Curcuma zedoaria* Rhizomes. *Records of Natural Products*, **9**: 349–355.
- Harbone, J., 1987. *Metode Fitokimia, Edisi Ke Dua*. ITB, Bandung.
- Hartono, H., Fadli, Z., dan Bintari, Y.R., 2022. Uji In Silico : Aktivitas Antibakteri Senyawa Aktif *Gracilaria verrucosa* Terhadap *Staphylococcus aureus*. *Jurnal Bio Komplementer Medicine*, **9**: 1-12.
- Hassan, A.M.S., 2012. TLC Bioautographic Method for Detecting Lipase Inhibitors. *Phytochemical Analysis*, **23**: 405–407.
- Hastuti, B., Ibrahim, S., dan Efendi, M., 2016. Isolation structure and elucidation of flavone from Temu Hitam rhizome (*Curcuma aeruginosa* Roxb.). *Journal of Chemical and Pharmaceutical Research*, **8**: 302–304.
- He, X., Du, X., Zang, X., Dong, L., Gu, Z., Cao, L., dkk., 2016. Extraction, identification and antimicrobial activity of a new furanone, grifolaone A, from *Grifola frondosa*. *Natural product research*, **30**: 941–947.
- Heck, A.M., Yanovski, J.A., dan Calis, K.A., 2000. Orlistat, a new lipase inhibitor for the management of obesity. *Pharmacotherapy*, **20**: 270–279.
- Herdini dan Setyawati, I.R., 2023. Studi In Silico : Senyawa Aktif Akar Senggugu (*Clerodendrum serratum*) terhadap Penghambatan Reseptor Human Chitotriosidase-1 ( hCHIT1 ) sebagai Antiasma. *Sainstech*, **33**: 81–97.
- Hikino, H., Takahashi, S., Sakurai, Y., Takemoto, T., dan Bhacca, N., 1968.

Structure of Zederone. *Chemical & Pharmaceutical Bulletin*, **16**: 1081–1087.

- Ho, J.N., Jang, J.Y., Yoon, H.G., Kim, Y., Kim, S., Jun, W., dkk., 2012. Anti-obesity effect of a standardised ethanol extract from *Curcuma longa* L. fermented with *Aspergillus oryzae* in ob/ob mice and primary mouse adipocytes. *Journal of the Science of Food and Agriculture*, **92**: 1833–1840.
- Hossain, C.F., Al-Amin, M., Sayem, A.S.M., Siragee, I.H., Tunan, A.M., Hassan, F., dkk., 2015. Antinociceptive principle from *Curcuma aeruginosa*. *BMC Complementary and Alternative Medicine*, **15**: 1–7.
- <https://byjus.com>, 2021. 'NMR Spectroscopy (Nuclear Magnetic Resonance) - Principle, Working, Chemical Shift, Instrumentation & Applications', . URL: <https://byjus.com/chemistry/nmr-spectroscopy/> (diakses tanggal 20/1/2021).
- <https://gpatindia.com>, 2021. 'MASS SPECTROSCOPY: Principle, Theory, Instrumentation and MCQ for GPAT, GATE - Gpatindia: Pharmacy Jobs, Admissions, Scholarships, Conference, Grants, Exam Alerts', . URL: <https://gpatindia.com/mass-spectroscopy-principle-theory-instrumentation-and-mcq-for-gpat-gate/> (diakses tanggal 20/1/2021).
- <https://sites.science.oregonstate.edu>, 2021. 'FTIR instrumentation and theory', . URL: <https://sites.science.oregonstate.edu/~gablek/CH362/irinstrs.htm> (diakses tanggal 20/1/2021).
- <https://www.ssi.shimadzu.com>, 2021. 'Instrument Design Shimadzu UV-Vis Spectroscopy FAQ', . URL: <https://www.ssi.shimadzu.com/products/uv-vis-spectrophotometers/faqs/instrument-design.html> (diakses tanggal 20/1/2021).
- Husain, A., Khan, S.A., Iram, F., Iqbal, M.A., dan Asif, M., 2019. Insights Into The Chemistry and Therapeutic Potential of Furanones: A Versatile Pharmacophore. *European Journal of Medicinal Chemistry*, **171**: 66–92.
- Ilyasov, I.R., Beloborodov, V.L., Selivanova, I.A., dan Terekhov, R.P., 2020. ABTS/PP Decolorization Assay of Antioxidant Capacity Reaction Pathways. *International Journal of Molecular Sciences*, **21**: 1131.
- Imaniyah, I.F.N., 2020. 'Kajian Etnobiologi Asupan yang Dianjurkan untuk Ibu Hamil, Pasca Melahirkan, dan Balita Masyarakat Pulau Bawean serta Pemanfaatannya sebagai Buku Ilmiah Populer', . Program Studi Pendidikan Biologi; Jurusan Pendidikan MIPA, Fakultas Keguruan dan Ilmu Pendidikan.
- Indriyah, S.N., Permatasari, D.A.I., dan Pratama, K.J., 2023. Penetapan Kadar Fenolik Serta Uji Aktivitas Antioksidan Ekstrak Dan Fraksi Batang Bajakah Kalalawit (*Uncaria gambir* Roxb) Dengan Metode Frap. *Usada Nusantara : Jurnal Kesehatan Tradisional*, **1**: 147–158.
- Ismail, I.A., Riga, R., Suryani, O., Insani, M., Pernadi, N.L., dan Febriyanti, A., 2022. Analisis Spektrum 1 H-NMR: Penjelasan Sederhana. *International Journal of Academic Multidisciplinary Research (IJAMR)*, **6**: 336–342.

- Istyastono, E.P., Margono, S.A., dan Pranowo, H.D., 2003. The Keto-Enol Tautomerism of Curcumin and Some 4-substituted Curcumin Derivatives : A Theoretical Study Based on Computational Chemistry Approach. *Indonesian Journal of Pharmacy*, **14**: 107–113.
- Jenie, U.A., Kardono, L.B., Hanafi, M., Rumampuk, R.J., dan Darmawan, A., 2014. *Teknik Modern Spektroskopi NMR: Teori Dan Aplikasi Dalam Elusidasi Struktur Molekul Organik*. Lipi Press, anggota Ikapi, Jakarta.
- Jha, V., Biagi, M., Spinelli, V., Di Stefan, M., Macchia, M., Minutolo, F., dkk., 2020. Discovery of Monoacylglycerol Lipase (MAGL) Inhibitors Based on a Pharmacophore-Guided Virtual Screening Study. *Molecules*, **26**: 78.
- Jose, S. dan Thomas, T.D., 2014. Comparative Phytochemical and Antibacterial Studies of Two Indigenous Medicinal Plants *Curcuma caesia* Roxb. and *Curcuma aeruginosa* Roxb. *International Journal of Green Pharmacy (IJGP)*, **8**: 65–71.
- Kashyap, A., Rani, D., Kumar, S., dan Bhatt, S., 2023. Design and Computational Evaluation of New Carbamate Derivatives For The Inhibition of Monoacylglycerol Lipase Enzyme By Using Docking. *International Journal of Pharmaceutical Sciences and Drug Research*, **15**: 665–674.
- Kayumova, A.R., Sharafutdinova, I.S., Triznaa, E.Y., dan Bogacheva, M.I., 2020. Antistaphylococcal Activity of 2(5H)-Furanone Derivatives. *Current Research and Future Trends in Microbial Biofilms*, 77–89.
- Kemenkes RI, 2017. *Panduan Pelaksanaan Gerakan Tekan Angka Obesitas (Gentas)*. Jakarta.
- Kementrian Kesehatan RI, 2020. *Farmakope Indonesia Edisi VI*. Kementrian Kesehatan RI. Direktorat Jenderal Kefarmasian dan Alat Kesehatan, Jakarta.
- Kemkes RI, 2018. 'Hasil Utama RISKESDAS 2018', . Jakarta.
- Khumaida, N., Syukur, M., Bintang, M., dan Nurcholis, W., 2019. Phenolic and flavonoid content in ethanol extract and agro-morphological diversity of *Curcuma aeruginosa* accessions growing in west java, Indonesia. *Biodiversitas*, **20**: 656–663.
- Klop, B., Elte, J.W.F., dan Cabezas, M.C., 2013. Dyslipidemia in Obesity: Mechanisms and Potential Targets. *Nutrients*, **5**: 1218–1240.
- Krihariyani, D., Sasongkowati, R., dan Haryanto, E., 2020. Studi In Silico Sifat Farmakokinetika, Toksisitas, Dan Aktivitas Imunomodulator Brazilein Kayu Secang Terhadap Enzim 3-Chymotrypsin-Like Cysteine Protease Coronavirus. *Journal of Indonesian Medical Laboratory and Science*, **1**: 76–90.
- Kurang, R.Y., 2016. 'Isolasi dan Bioaktivitas Penghambat Lipase Pankreas Turunan Flavonoid dari Tumbuhan Tong-Tong (*Artocarpus elasticus*) Pulau



Alor NTT 2016', . Institut Teknologi Sepuluh Nopember Surabaya.

Kusuma, D., 2007. 'Uji Aktivitas Penangkap Radikal bebas Fraksi Non Polar Ekstrak Etanol Daun Dewandaru (*Eugenia uniflora* L.) Dengan Metode DPPH Beserta Penetapan Kadar Fenol dan Flavonoid', . Universitas Muhammadiyah Surakarta.

Lakshmanan, M., 2021. Pharmacotherapy of Obesity. *Introduction to Basics of Pharmacology and Toxicology: Volume 2: Essentials of Systemic Pharmacology: From Principles to Practice*, **2**: 741–749.

le Blanc, E.S., O'Connor, E., Whitlock, E.P., Patnode, C.D., dan Kapka, T., 2011. Effectiveness of primary care-relevant treatments for obesity in adults: A systematic evidence review for the U.S. preventive services task force. *Annals of Internal Medicine*, **155**: 434–447.

Leba, M.A.U., 2017. *Ekstraksi Dan Real Kromatografi*. Deepublish, Yogyakarta.

Lewis, S.W. dan Lenehan, C.E., 2013. Liquid and Thin-Layer Chromatography, dalam: *Encyclopedia of Forensic Sciences: Second Edition*. Elsevier Inc., hal. 586–589.

Li, M. dan Cheung, B.M.Y., 2009. Pharmacotherapy for obesity. *British Journal of Clinical Pharmacology*, **68**: 804.

Liu, T.-T., Liu, X.-T., Chen, Q.-X., dan Shi, Y., 2020. Lipase Inhibitors for Obesity: A Review. *Biomedicine and Pharmacotherapy*, **128**: 110314.

Liu, T.T., Liu, X.T., Chen, Q.X., dan Shi, Y., 2020. Lipase Inhibitors for Obesity: A Review. *Biomedicine and Pharmacotherapy*, .

Lo, J.Y., Kamarudin, M.N.A., Hamdi, O.A.A., Awang, K., dan Kadir, H.A., 2015. Curcumenol isolated from *Curcuma zedoaria* suppresses Akt-mediated NF- $\kappa$ B activation and p38 MAPK signaling pathway in LPS-stimulated BV-2 microglial cells. *Food & Function*, **6**: 3550–3559.

Lobstein, T., Jackson-Leach, R., Powis, J., Brinsden, H., dan Gray, M., 2023. 'World Obesity Atlas 2023', , World Obesity Federation.

Lowet, M.E., 2002. The triglyceride lipases of the pancreas. *Journal of Lipid Research*, **43**: 2007–2016.

Lyons, T. ese, Gahan, C.G., dan O'Sullivan, T.P., 2020. Structure–Activity Relationships of Furanones, Dihydropyrrolones and Thiophenones as Potential Quorum Sensing Inhibitors. *Future Medicinal Chemistry*, **12**: 0244.

Maftucha, N., Manalu, R., Amelia, R., Cordia, P., dan Bupu, R., 2022. Potensi Senyawa Turunan Xanton dari Kulit Buah Manggis ( *Garcinia mangostana* L .) Sebagai Inhibitor Protein Mycobacterium tuberculosis : Studi In Silico. *Pharmaceutical Journal Of Indonesia*, **7**: 123–128.

Malviya, N. dan Malviya, S., 2017. Bioassay guided fractionation-an emerging

technique influence the isolation, identification and characterization of lead phytomolecules. *International Journal of Hospital Pharmacy*, **2**: 1–6.

- Manning, S., Pucci, A., dan Finer, N., 2014. Pharmacotherapy for obesity: novel agents and paradigms. *Ther Adv Chronic Dis*, **5**: 135–48.
- Mardisiswojo, S. dan Rajakmangunsudarso, H., 1985. *Cabe Puyang Warisan Nenek Moyang*, Koleksi Buku UPT Perpustakaan Universitas Negeri Malang. Balai Pustaka, Jakarta.
- Marinova, G. dan Batchvarov, V., 2011. Evaluation Of The Methods For Determination Of The Free Radical Scavenging Activity By Dpph. *Bulgarian Journal of Agricultural Science*, **17**: 11–24.
- Masuda, T., Jitoe, A., dan Nakatani, N., 1991. Structure of Aerugidiol, a New Bridge-head Oxygenated Guaiane Sesquiterpene. *Chemistry Letters*, **20**: 1625–1628.
- Mathus-Vliegen, E.M.H., Van Ierland-Van Leeuwen, M.L., dan Terpstra, A., 2004. Lipase inhibition by orlistat: Effects on gall-bladder kinetics and cholecystokinin release in obesity. *Alimentary Pharmacology and Therapeutics*, **19**: 601–611.
- Mauer, Y., Parker, M., dan Kashyap, S.R., 2021. Antiobesity drug therapy: An individualized and comprehensive approach. *Cleveland Clinic Journal of Medicine*, **88**: 440–448.
- Mclaren, J., McKay, G., dan Fisher, M., 2020. Lorcaserin. *Practical Diabetes*, **30**: 136–137.
- Michael, E.S., Covic, L., dan Kuliopulos, A., 2019. Trace amine–associated receptor 1 (TAAR1) promotes anti-diabetic signaling in insulin-secreting cells. *The Journal of Biological Chemistry*, **294**: 4401.
- Molyneux, P., 2004. The Use of The Stable Radical Diphenylpicrylhydrazyl (DPPH) for Estimating Antioxidant Activity. *Songklanakarin J. Sci. Technology*, **26**: 211–219.
- Molyneux, Philip, 2004. The Use of the Stable Free Radical Diphenylpicrylhydrazyl (DPPH) for Estimating Antioxidant Activity. *Songklanakarin Journal of Science and Technology*, **26**: 211–219.
- Montan, P.D., Sourlas, A., Olivero, J., Silverio, D., Guzman, E., dan Kosmas, C.E., 2019. Pharmacologic therapy of obesity: mechanisms of action and cardiometabolic effects. *Annals of Translational Medicine*, **7**: 393–393.
- Muhammad, H.F.L., 2017. *Obesitas Translasional: Aspek Klinis Dan Molekuler Dari Kejadian Obesitas - Harry Freitag Luglio Muhammad - Google Buku*. Gadjah Mada University Press, Yogyakarta.
- Müller, T.D., Blüher, M., Tschöp, M.H., dan DiMarchi, R.D., 2021. Anti-obesity drug discovery: advances and challenges. *Nature Reviews Drug Discovery*

2021 21:3, 21: 201–223.

- Naibaho, F.G., Putra, E.D., Panjaitan<sup>4</sup>, D., dan Wardhana, V.W., 2022. Analisis Molecular Docking Senyawa dari Jamur Endofit Bawang Dayak (*Eleutherine bulbosa*) Sebagai Inhibitor Lipase Pankreas. *Biosaintropis (Bioscience-Tropic)*, **7**: 133–141.
- Nair, P., Miners, J., McKinnon, R., Langmead, C., Gregory, K., Copolov, D., dkk., 2022. Binding of SEP-363856 within TAAR1 and the 5HT1A receptor: implications for the design of novel antipsychotic drugs. *Mol Psychiatry*, **27**: 88–94.
- Nasution, P., Batubara, R., dan Surjanto, 2015. Level of Antioxidants Power and Society Interest of Aloes Tea (*Aquilaria malaccensis* Lamk) Based of Induction Tree and Non-Induction Treatment. *Peronema Forestry Science Journal*, **4**: 10–21.
- Nisar, T., Iqbal, M., Raza, A., Safdar, M., Iftikhar, F., dan Waheed, M., 2015. Estimation of Total Phenolics and Free Radical Scavenging of Turmeric (*Curcuma longa*). *American-Eurasian J. Agric. & Environ. Sci*, **15**: 1272–1277.
- Noer, S. dan Pratiwi, R., 2019. 'Penetapan Kadar Flavonoid sebagai Kuersetin dan Aktivitas Antioksidan Ekstrak Metanol Daun Inggu (*Ruta angustifolia* L.)', , dalam: *Simposium Nasional Ilmiah Dengan Tema: (Peningkatan Kualitas Publikasi Ilmiah Melalui Hasil Riset Dan Pengabdian Kepada Masyarakat)*. hal. 590–595.
- Nurcholis, W., Khumaida, N., Syukur, M., dan Bintang, M., 2016a. Variability of total phenolic and flavonoid content and antioxidant activity among 20 *Curcuma aeruginosa* Roxb. Accessions of Indonesia. *Asian Journal of Biochemistry*, **11**: 142–148.
- Nurcholis, W., Khumaida, N., Syukur, M., dan Bintang, M., 2016b. Variability of curcuminoid content and lack of correlation with cytotoxicity in ethanolic extracts from 20 accessions of *Curcuma aeruginosa* RoxB. *Asian Pacific Journal of Tropical Disease*, **6**: 887–891.
- Nurcholis, W., Khumaida, N., Syukur, M., dan Bintang, M., 2017. Evaluation of Free Radical Scavenging Activity of Ethanolic Extract from Promising Accessions of *Curcuma aeruginosa* RoxB. *Molekul*, **12**: 133–138.
- Nurcholis, W., Khumaida, N., Syukur, M., dan Bintang, M., 2019. Variability of curcumin, demethoxycurcumin and bisdemethoxycurcumin contents in ethanolic extract from ten *Curcuma aeruginosa* roxb. Cultivated in West Java, Indonesia. *Asian Journal of Chemistry*, **31**: 2461–2465.
- Nurcholis, W., Khumaida, N., Syukur, M., Bintang, M., dan I. D.A.A.C., A., 2015. Phytochemical screening, antioxidant and cytotoxic activities in extracts of different rhizome parts from *Curcuma aeruginosa* Roxb. *International*

*Journal of Research in Ayurveda and Pharmacy*, **6**: 634–637.

- Nusantoro, Y. dan Fadlan, A., 2020. Analisis Sifat Mirip Obat, Prediksi ADMET, dan Penambatan Molekular Isatinil-2- Aminobenzoilhidrazon dan Kompleks Logam Transisi Co(II), Ni(II), Cu(II), Zn(II) Terhadap BCL2-XL. *Akta Kimindo*, **5**: 114–126.
- Odoemelam, C.S., Hunter, E., Simms, J., Ahmad, Z., Chang, M.-W., Percival, B., dkk., 2022. In Silico Ligand Docking Approaches to Characterise the Binding of Known Allosteric Modulators to the Glucagon-Like Peptide 1 Receptor and Prediction of ADME/Tox Properties. *Applied Biosciences 2022, Vol. 1, Pages 143-162*, **1**: 143–162.
- Pandey, S.K., Yadav, S., Goel, Y., Temre, M.K., Singh, V.K., dan Singh, S.M., 2019. Molecular docking of anti-inflammatory drug diclofenac with metabolic targets: Potential applications in cancer therapeutics. *Journal of theoretical biology*, **465**: 117–125.
- Panthi, P.M.S.D., 2018. Tren Terapi Diabetes dengan GLP-1 Receptor Agonist. *CDK-263*, **45**: 291–296.
- Pavia, D.L., Lampman, G.M., dan Kriz, G.S., 2001. *Introduction To Spectroscopy : A Guide For Students Of Organic Chemistry*. Thomson Learning Inc, United States of America.
- Pedersen, D.S. dan Rosenbohm, C., 2001. Dry column vacuum chromatography. *Synthesis*, **2001**: 2431–2434.
- Peng, Y., McCorvy, J.D., Harpsøe, K., Lansu, K., Yuan, S., Popov, P., dkk., 2018. 5-HT<sub>2C</sub> Receptor Structures Reveal the Structural Basis of GPCR Polypharmacology. *Cell*, **172**: 719-730.e14.
- Permadi, A., 2008. *Membuat Kebun Tanaman Obat : Ciptakan Perkarangan Sehat Nan Asri*, Cet. 1. ed. Pustaka Bunda.
- Perry, L. dan Metzger, J., 1980. *Medicinal Plants of East and Southeast Asia : Attributed Properties and Uses*. MIT Press, Cambridge.
- Pham, T.O., Nguyen, T.T., Do, T.X., Le, T.H., Opeyemi, N.A., dan Isiaka, A.O., 2018. The rhizome essential oil of *Curcuma aeruginosa* Roxb. (Zingiberaceae) from Vietnam. *Trends in Phytochemical*, **2**: 179–184.
- Philip, W., James, T., Jackson-Leach, R., Mhurchu, C.N., Kalamara, E., Shayeghi, M., dkk., 2004. Overweight and obesity (high body mass index), dalam: *Comparative Quantification of Health Risks*. WHO, hal. 497–596.
- Pires, D.E. V, Blundell, T.L., dan Ascher, D.B., 2015. pkCSM: Predicting Small\_Molecule Pharmacokinetic and Toxicity Properties Using Graph-Based Signatures. *Journal of Medicinal Chemistry*, **58**: 4066–4072.
- Pliego, J., Mateos, J.C., Rodriguez, J., Valero, F., Baeza, M., Femat, R., dkk., 2015. Monitoring Lipase/Esterase Activity by Stopped Flow in a Sequential

Injection Analysis System Using p-Nitrophenyl Butyrate. *Sensors* 2015, Vol. 15, Pages 2798-2811, **15**: 2798–2811.

- Prabawa, K.A. dan Widiastuti, N.N.A., 2019. 'Studi Docking Molekuler Potensi Antiobesitas dari Senyawa Aktif Jamu Indonesia terhadap Reseptor Leptin | NextGen.web.id', . URL: <https://nextgen.web.id/studi-docking-molekuler-potensi-antiobesitas-dari-senyawa-aktif-jamu-indonesia-terhadap-reseptor-leptin/> (diakses tanggal 21/12/2023).
- Prasetyo, N.F., Kepel, B.J., Bodhi, W., Fatimawati, Manampiring, A., dan Budiarto, F., 2021. Molecular Docking terhadap Senyawa Isoeuletherin dan Isoeuletherol sebagai Penghambat Pertumbuhan SARS-CoV-2. *eBiomedik*, **9**: 101–106.
- Pratama, A.B., Herowati, R., dan Ansory, H.M., 2021. Studi Docking Molekuler Senyawa Dalam Minyak Atsiri Pala (*Myristica fragrans* H.) Dan Senyawa Turunan Miristisin Terhadap Target Terapi Kanker Kulit. *Majalah Farmaseutik*, **17**: 233–242.
- Prieto-Rodríguez, J.A., Lévuok-Mena, K.P., Cardozo-Muñoz, J.C., Parra-Amin, J.E., Lopez-Vallejo, F., Cuca-Suárez, L.E., dkk., 2022. In Vitro and In Silico Study of the  $\alpha$ -Glucosidase and Lipase Inhibitory Activities of Chemical Constituents from *Piper cumanense* (Piperaceae) and Synthetic Analogs. *Plants (Basel, Switzerland)*, **11**: 2188.
- Puska, P., Nishida, C., dan Porter, D., 2003. 'Obesity And Overweight. Report', . WHO.
- Puspita, P.J., Liliyani, N.P.P., dan Ambarsari, L., 2022. In Silico Analysis of Active Compounds of Avocado Fruit (*Persea americana* Mill.) as Tyrosinase Enzyme Inhibitors. *Curr. Biochem*, **9**: 73–87.
- Rahardhian, MRR, Susilawati, Y., Musfiroh, I., Febriyanti, R.M., dan Muchtaridi, S.A.S., 2022. In Silico Study of Bioactive Compounds From Sungkai (*Peronema canescens*) As Immunomodulator. *International Journal of Applied Pharmaceutics*, **14**: 135–141.
- Rahmawati, A., 2014. Mekanisme Terjadinya Inflamasi Dan Stres Oksidatif Pada Obesitas. *el-Hayah*, **5**: 1.
- Rajan, L., Palaniswamy, D., dan Mohankumar, S.K., 2020. Targeting obesity with plant-derived pancreatic lipase inhibitors: A comprehensive review. *Pharmacological Research*, **155**: 104681.
- Rajawat, J. dan Jhingan, G., 2019. Mass spectroscopy, dalam: *Data Processing Handbook for Complex Biological Data Sources*. Elsevier, hal. 1–20.
- Ratnasari, Y., Sunarti, dan Huriyati, E., 2019. 'Pengaruh Makanan Ringan Kaya Antioksidan terhadap Peroksidasi Lipid pada Individu Obese', . Universitas Gadjah Mada Yogyakarta.



- Re, R., Pellegrini, N., Proteggente, A., Pannala, A., Yang, M., dan Rice-Evans, C., 1999. Antioxidant activity applying an improved ABTS radical cation decolorization assay. *Free radical biology & medicine*, **26**: 1231–1237.
- Reynolds, W.F., 2017. Natural Product Structure Elucidation by NMR Spectroscopy, dalam: *Pharmacognosy: Fundamentals, Applications and Strategy*. Elsevier Inc., hal. 567–596.
- Rogge, M.M., 2009. The role of impaired mitochondrial lipid oxidation in obesity. *Biological Research for Nursing*, **10**: 356–373.
- Rohman, A. dan Gandjar, I., 2012. *Analisis Obat Secara Spektrofotometri Dan Kromatografi*. Pustaka Pelajar, Yogyakarta.
- Rössner, S., Sjöström, L., Noack, R., Meinders, A.E., dan Nosedá, G., 2000. Weight Loss, Weight Maintenance, and Improved Cardiovascular Risk Factors after 2 Years Treatment with Orlistat for Obesity. *Obesity Research*, **8**: 49–61.
- RS, P., D, R., SK, L., C, C., dan DCW, L., 2010. Cochrane Library Cochrane Database of Systematic Reviews Long-term pharmacotherapy for obesity and overweight (Review). *Cochrane Database of Systematic Reviews*, **2004**: 1–73.
- Rubiyanto, D., 2013. *Teknik Dasar Kromatografi*. Deepublish, Yogyakarta.
- Ruswanto, S., Richa, M., Tita, N., dan Tresna, L., 2017. Molecular Docking of *l-Benzoyl-3-Methylthiourea* as Anti Cancer Candidate and Its Absorption, Distribution, and Toxicity Prediction. *Journal of Pharmaceutical Sciences and Research; Cuddalore*, **9**: 680–684.
- Sagitasa, S., Elizabeth, K., Sulaeman, L.I., Rafasafly, A., Syafrá, D.W., Kristande, A., dkk., 2021. Studi In Silico Senyawa Aktif Daun Singawalang (*Petiveria alliacea*) Sebagai Penurun Kadar Glukosa Darah Untuk Pengobatan Penyakit Diabetes Melitus Tipe-2. *Chimica et Natura Acta*, **9**: 58–66.
- Sangi, M.S. dan Katja, D.G., 2011. Aktivitas Antioksidan Pada Beberapa Rempah-Rempah Masakan Khas Minahasa. *Chemistry Progress*, **4**: 66–74.
- Santoso, B., Hanwar, D., dan Suhendi, A., 2015. 'Prediksi 3D-Molekular Aktivitas Turunan Senyawa Polihidroksi Zerumbon Terhadap Glikogen Sintase Kinase-3 Beta (GSK-3 beta) Menggunakan Dock6', . Universitas Muhammadiyah Semarang, hal. 1–7.
- Saokaew, S., Wilairat, P., Raktanyakan, P., Dilokthornsakul, P., Dhippayom, T., Kongkaew, C., dkk., 2017. Clinical Effects of *Krachaoidum* (*Kaempferia parviflora*): A Systematic Review. *Journal of Evidence-Based Complementary and Alternative Medicine*, **22**: 413–428.
- Saputra, R.R. dan Kalalinggi, S.Y., 2022. Pengaruh Gugus terhadap Keseimbangan Keto Enol pada Senyawa Turunan Kurkumin. *Bohr: Jurnal*

*Cendekia Kimia*, **1**: 42–52.

- Sarker, S.D., Latif, Z., dan Gray, A.I., 2006. Natural Product Isolation, dalam: *Natural Products Isolation*. Humana Press, hal. 1–25.
- Sasaki, T., Yamakoshi, J., Saito, M., Kasai, K., Koga, T., Matsudo, T., dkk., 1998. Antioxidative Activities of 4-Hydroxy-3(2H)-furanones and Their Anticataract Effect on Spontaneous Cataract Rat (ICR/f). *Bioscience, Biotechnology, and Biochemistry*, **62**: 1865–1869.
- Sastroamidjojo, A., 1997. *Obat Asli Indonesia*. Dian Rakyat, Jakarta.
- Sawant, S., Bihani, G., Sci, S.M.-I.J.P.P., dan 2014, U., 2014. Evaluation of Analgesic and Anti-Inflammatory Activity of Methanolic Extract of *Curcuma caesia* Roxb. Rhizomes in Laboratory Animals. *International Journal of Pharmacy and Pharmaceutical Sciences*, **6**: 243–247.
- Schellinger, A.P. dan Carr, P.W., 2006. 'Isocratic and gradient elution chromatography: A comparison in terms of speed, retention reproducibility and quantitation', , dalam: *Journal of Chromatography A*. Elsevier, hal. 253–266.
- Sharafutdinov, I.S., Trizna, E.Y., Baydamshina, D.R., Sibgatullina, R.R., Khabibrakhmanova, A.M., Latypova, L.Z., dkk., 2017. Antimicrobial Effects of Sulfonyl Derivative of 2(5H)-Furanone Against Planktonic and Biofilm Associated Methicillin-Resistant and Susceptible *Staphylococcus aureus*. *Frontiers in Microbiology*, **8**: 2246.
- Sherma, J. dan Fried, B., 2003. *Handbook of Thin-Layer Chromatography*, Third Edit. ed. Lafayette College, Easton, Pennsylvania, U.S.A.
- Shofi, M., 2021a. Analisis Senyawa  $\alpha$ -spinasterol Pada Biji Trembesi (*Samanea saman* (jacq.) Merr) Terhadap Penghambatan 3C-like Protease SARS-CoV-2 Melalui Uji In Silico Analysis of  $\alpha$ -spinasterol Compounds in Trembesi Seeds (*Samanea saman* (jacq.) Merr) Against Inhibition of. *Jurnal Sintesis*, **2**: 74–88.
- Shofi, M., 2021b. Uji In Silico Aktivitas Sitotoksik dan Toksisitas Senyawa Bioaktif Biji Trembesi (*Samanea saman* (jacq.) Merr) Sebagai Kandidat Obat Diabetes Mellitus. *Jurnal Pharma Bhakta*, **1**: 1–14.
- Simoh, S. dan Zainal, A., 2015. Chemical profiling of *Curcuma aeruginosa* Roxb. rhizome using different techniques of solvent extraction. *Asian Pacific Journal of Tropical Biomedicine*, **5**: 412–417.
- Sinala, S. dan Dewi, S., 2019. Penentuan Aktivitas Antioksidan secara In Vitro dari Ekstrak Etanol Propolis dengan Metode DPPH (1,1-Difenil-2-Pikrilhidrazil). *Media Farmasi*, **15**: 1–6.
- Sirat, H.M., Jamil, S., dan Hussain, J., 1998. Essential oil of *Curcuma aeruginosa* Roxb. From Malaysia. *Journal of Essential Oil Research*, **10**: 453–458.

- Smith, S., Meyer, M., dan Trinkley, K., 2013. Phentermine/Topiramate for the Treatment of Obesity. *Annal of Pharmacotherapy*, **47**: 340–9.
- Smith, S.R., Weissman, N.J., Anderson, C.M., Sanchez, M., Chuang, E., Stubbe, S., dkk., 2010. Multicenter, Placebo-Controlled Trial of Lorcaserin for Weight Management. *New England Journal of Medicine*, **363**: 245–256.
- Sombra, L.R.S. dan Anastasopoulou, C., 2022. Pharmacologic Therapy for Obesity. *StatPearls*, Treasure Island (FL): StatPearls Publishing.
- Sosnowska, D., Podśędek, A., Kucharska, A.Z., Redzynia, M., Opęchowska, M., dan Koziółkiewicz, M., 2016. Comparison of in vitro anti-lipase and antioxidant activities, and composition of commercial chokeberry juices. *European Food Research and Technology*, **242**: 505–515.
- Srivastava, S., Chitranshi, N., Mathew, D., Kumar, A., dan Rawat, S., 2006. Pharmacognostic evaluation of *Curcuma aeruginosa* Roxb. *Natural Product Sciences*, **12**: 162–165.
- Srivilai, J., Khorana, N., Waranuch, N., dan Ingkaninan, K., 2011. Anti-androgenic Activity of Furanodiene Isolated from *Curcuma aeruginosa* Roxb. Extract. *Naresuan University Journal*, 33–37.
- Srivilai, J., Khorana, N., Waranuch, N., Suphrom, N., dan Ingkaninan, K., 2014. Conformational analysis of an anti-androgenic, (E,E)-8-hydroxygermacrene B, using NOESY and dynamic NMR spectroscopy. *Bioorganic and Medicinal Chemistry Letters*, **24**: 3526–3529.
- Srivilai, J., Nontakhot, K., Nutuan, T., Waranuch, N., Khorana, N., Wisuthiprot, W., dkk., 2018a. Sesquiterpene-Enriched Extract of *Curcuma aeruginosa* Roxb. Retards Axillary Hair Growth: A Randomised, Placebo-Controlled, Double-Blind Study. *Skin Pharmacology and Physiology*, **31**: 99–106.
- Srivilai, J., Phimnuan, P., Jaisabai, J., Luangtoomma, N., Waranuch, N., Khorana, N., dkk., 2017. *Curcuma aeruginosa* Roxb. essential oil slows hair-growth and lightens skin in axillae; a randomised, double blinded trial. *Phytomedicine*, **25**: 29–38.
- Srivilai, J., Waranuch, N., Tangsumranjit, A., Khorana, N., dan Ingkaninan, K., 2018b. Germacrene and sesquiterpene-enriched extracts from *Curcuma aeruginosa* Roxb. increase skin penetration of minoxidil, a hair growth promoter. *Drug Delivery and Translational Research*, **8**: 140–149.
- Stefaniu, A., 2019. *Molecular Docking and Molecular Dynamic*. Intech Open.
- Sugita, P., Octaviana, N., Wukirsari, T., dan Rahayu, D.U., 2018. Chemical constituent and antioxidant activity of methanol extract from Indonesian *Curcuma aeruginosa* roxb. rhizome. *Journal of Pharmacy Research*, **10**: 293–297.
- Suharsanti, R., Astuti, P., Yuniarti, N., dan Wahyuono, S., 2022. Review of

Isolation Methods, Chemical Composition and Biological Activities of *Curcuma aeruginosa* Roxb Rizhome. *Tropical Journal of Natural Product Research (TJNPR)*, **6**: 1538–1546.

Suharsanti, R., Wahyuono, S., Astuti, P., dan Yuniarti, N., 2023. Isolation and Characterization of Curcumenotone, a Sesquiterpene from *Curcuma aeruginosa* Roxb as Antioxidant. *Indonesian Journal of Pharmacy*, **34**: 593–602.

Sukandarsyah, F., Purwaningsih, I., dan Ratnawaty, G.J., 2023. Aktivitas Antioksidan Ekstrak Metanol dan n-Heksana Rimpang Temu Ireng (*Curcuma aeruginosa* Roxb.) Metode DPPH. *Jurnal Mandala Pharmacon Indonesia (JMPI)*, **9**: 62–70.

Sumaryada, T., Roslia, A.W., Afifah, A., Wahyudi, S.T., dan Kartono, A., 2021. In-silico design of novel glucagon-like peptide 1 mutants as candidate for new peptide agonist drugs. *HAYATI Journal of Biosciences*, **28**: 92–104.

Suphrom, N., Pumthong, G., Khorana, N., Waranuch, N., Limpeanchob, N., dan Ingkaninan, K., 2012. Anti-androgenic effect of sesquiterpenes isolated from the rhizomes of *Curcuma aeruginosa* Roxb. *Fitoterapia*, **83**: 864–871.

Susantiningih, T., Biokimia, B., dan Kedokteran, F., 2015. Obesitas dan Stres Oksidatif. *JUKE Unila*, **5**: 89–93.

Taghavi, S., VM, W., Jahanfar, S., dan Bazarganipour, F., 2017. Pharmacological and Non-Pharmacological Strategies for Obese Women with Subfertility. *Cochrane Database Syst Rev*, **2017**: 1–19.

Tambunan, G.U.F., Nurlelasari, N., dan Gaffar, S., 2021. Senyawa Golongan Limonoid dari Tanaman Genus *Chisocheton* dan Aktivitas Antikankernya. *ALCHEMY Jurnal Penelitian Kimia*, **17**: 10–26.

Tantry, M., Radwan, M., Akbar, S., dan Khan, I., 2012. 5, 6 Dihydropyranobenzopyrone: A previously undetermined antioxidant isolated from *Polygonum amplexicaule*. *Chinese Journal of Natural Medicines*, **10**: 28–31.

Tetty, M., 2014. Ekstraksi, Pemisahan Senyawa dan Identifikasi Semyawa Aktif. *Jurnal Kesehatan*, **7**: 361–367.

Theafelicia, Z. dan Wulan, S.N., 2023. Perbandingan Berbagai Metode Pengujian Aktivitas Antioksidan (DPPH, ABTS DAN FRAP) Pada Teh Hitam (*Camellia sinensis*). *Jurnal Teknologi Pertanian*, **24**: 35–44.

Tonelli, M., Espinoza, S., Gainetdinov, R.R., dan Cichero, E., 2017. Novel biguanide-based derivatives scouted as TAAR1 agonists: Synthesis, biological evaluation, ADME prediction and molecular docking studies. *European Journal of Medicinal Chemistry*, **127**: 781–792.

Tristantini, D., Ismawati, A., Pradana, B., dan Jonathan, G.J., 2017. 'Pengujian

Aktivitas Antioksidan Menggunakan Metode DPPH pada Daun Tanjung (*Mimusops elengi* L)', , dalam: *Prosiding Seminar Nasional Teknik Kimia "Kejuangan" ISSN 1693-4393 Pengembangan Teknologi Kimia Untuk Pengolahan Sumber Daya Alam Indonesia*. hal. 1–7.

Vastiani, F.Z., Lestari, R.D., dan Damayanti, D.S., 2022. Potensi Antilipemika Senyawa Aktif Kombucha Daun Sirsak (*Annona Muricata* Linn.) Terhadap Protein Target PPAR- $\alpha$  Dan Lipoprotein Lipase dengan Studi In Silico. *Jurnal Kedokteran Komunitas*, **10**: 1–10.

Veeramachaneni, G., Raj, K., Chalasani, L., Annamraju, S., Js, B., dan Talluri, V., 2015. Shape Based Virtual Screening and Molecular Docking Towards Designing Novel Pancreatic Lipase Inhibitors. *Bioinformation*, **11**: 535–42.

Vorsanger, M.H., Subramanyam, P., Weintraub, H.S., Lamm, S.H., Underberg, J.A., Gianos, E., dkk., 2016. Cardiovascular Effects of the New Weight Loss Agents. *Journal of the American College of Cardiology*, **68**: 849–859.

Waras, N., Nurul, K., Muhamad, S., Maria, B., dan Ardyani, I.D.A.A.C., 2015. Phytochemical screening, antioxidant and cytotoxic activities in extracts of different rhizome parts from *Curcuma aeruginosa* RoxB. *International Journal of Research in Ayurveda and Pharmacy*, **6**: 634–637.

Widodo, Utomo, D., Ramadhani, A., Hasanah, A., dan Fitriah, A., 2018. *Cara Mudah Melakukan Docking Dengan PyRx*. Global Science, Malang.

Winkler, F.K., D'Arcy, A., dan Hunziker, W., 1990. Structure of human pancreatic lipase. *Nature*, **343**: 771–774.

Wong, C., Kaneda, T., Hadi, A., dan Morita, H., 2014. Ceramicine B, a Limonoid with Anti-Lipid Droplets Accumulation Activity from *Chisocheton ceramicus*. *J Nat Med*, **68**: 22–30.

Wulandari, L., 2011. *Kromatografi Lapis Tipis*. PT. Taman Kampus Presindo, Jember.

Xiao, S., Yu, R., Ai, N., dan Fan, X., 2015. Rapid screening natural-origin lipase inhibitors from hypolipidemic decoctions by ultrafiltration combined with liquid chromatography-mass spectrometry. *Journal of Pharmaceutical and Biomedical Analysis*, **104**: 67–74.

Yuen, H., Hung, A., Yang, A.W.H., dan Lenon, G.B., 2020. Mechanisms of Action of Cassiae Semen for Weight Management: A Computational Molecular Docking Study of Serotonin Receptor 5-HT<sub>2C</sub>. *International Journal of Molecular Science*, **21**: 1–18.

Yunarto, N., Aini, N., Oktoberia, I.S., Sulistyowati, I., dan Kurniatri, A.A., 2019. Aktivitas Antioksidan serta Penghambatan HMG CoA dan Lipase dari Kombinasi Ekstrak Daun Binahong-Rimpang Temu Lawak. *Jurnal Kefarmasian Indonesia*, **9**: 89–96.



- Zaid, A.N., Zohud, N., E'layan, B., Aburadi, T., Jaradat, N., Ali, I., dkk., 2017. Pharmacodynamic Testing and New Validated HPLC Method to Assess the Interchangeability Between Multi-Source Orlistat Capsules. *Drug Design, Development and Therapy*, **2017**: 3291—3298.
- Zhang, L.S., Shen, S.N., Gao, Y.L., Shi, S.Y., Zhou, C.X., Mo, J.X., dkk., 2019. Tautomerism and bioactivities of curcumenol, a common sesquiterpenoid widely existing in edible plants. *Food & Function*, **10**: 1288–1294.
- Zhang, Q.W., Lin, L.G., dan Ye, W.C., 2018a. Techniques for extraction and isolation of natural products: A comprehensive review. *Chinese Medicine (United Kingdom)*, **13**: 20.
- Zhang, S., Yu, . J., Chan, Y., Fang, H., dan Chen, J., 1986. Isolation and Identification Of Four Chemical Constituents From Turmeric (*Curcuma aeruginosa*). *Chinese Curcuma. WZ.*, **17**: 6–7.
- Zhang, Y., Liu, J., Yao, J., Ji, G., Qian, L., Wang, J., dkk., 2014. Obesity: Pathophysiology and intervention. *Nutrients*, **6**: 5153–5183.
- Zwaving, J.H. dan Bos, R., 1992. Analysis of the Essential Oils of Five Curcuma Species. *Flavour and Fragrance Journal*, **7**: 19–22.