

DAFTAR PUSTAKA

- Adamu, I.I., Adebayo, S.A., dan Al-Shahrani, M.S., 2020. *Grewia mollis* Leaf Extracts and Fractions Demonstrated Good Inhibitory Activity on Pro-Inflammatory Enzymes and with Lower Cytotoxicity in vitro. *Journal of Inflammation Research*, **13**: 765–772.
- Adegbola, S.O., Sahnun, K., Warusavitarne, J., Hart, A., dan Tozer, P., 2018. Anti-TNF Therapy in Crohn's Disease. *International Journal of Molecular Sciences*, **19**: 1-21.
- Adelina, R., Daniati, E., Nursinta, D., Sari, I., dan Hasby, H., 2020. Pengaruh Penerapan Aplikasi NMR Pro Trial terhadap Peningkatan Hasil Belajar Mahasiswa pada Materi Spektroskopi NMR. *KATALIS: Jurnal Penelitian Kimia dan Pendidikan Kimia*, **3**: 31–38.
- Adelizzi, R.A., 1999. COX-1 and COX-2 in health and disease. *The Journal of the American Osteopathic Association*, **99**: S7–S12.
- Adnyasari, I.A.P.S., Puspawati, N.M., dan Sukadana, I.M., 2017. Potensi Antiimplamasi Secara In Vivo Ekstrak Etanol Batang Antawali (*Tinospora sinensis*) Pada Tikus Wistar Yang Diinduksi Karagenan. *Cakra Kimia (Indonesian E-Journal of Applied Chemistry)*, **5**: 113–114.
- Aggeletopoulou, I., Kalafateli, M., Tsounis, E.P., dan Triantos, C., 2024. Exploring the role of IL-1 β in inflammatory bowel disease pathogenesis. *Frontiers in Medicine*, **11**: 1307394.
- Agrawal, M. dan Mehta, P., 2024. Isolation and characterization of lupeol from the leaf and flowers of.
- Ahmed, Y., Sohrab, Md.H., Al-Reza, S.M., Tareq, F.S., Hasan, C.M., dan Sattar, M.A., 2010. Antimicrobial and cytotoxic constituents from leaves of *Sapium baccatum*. *Food and Chemical Toxicology*, **48**: 549–552.
- Akoglu, H., 2018. User's guide to correlation coefficients. *Turkish Journal of Emergency Medicine*, **18**: 91–93.
- Akwu, N., Naidoo, Y., Singh, M., Channangihalli Thimmegowda, S., Nundkumar, N., dan Lin, J., 2020. Isolation of lupeol from *Grewia lasiocarpa* stem bark: Antibacterial, antioxidant, and cytotoxicity activities. *Biodiversitas Journal of Biological Diversity*, **21**: 5684-5690.
- Alara, O.R., Abdurahman, N.H., dan Ukaegbu, C.I., 2021. Extraction of phenolic compounds: A review. *Current Research in Food Science*, **4**: 200–214.
- Al-Hamdani, A., Jayasuriya, H., Pathare, P.B., dan Al-Attabi, Z., 2022. Drying Characteristics and Quality Analysis of Medicinal Herbs Dried by an Indirect Solar Dryer. *Foods*, **11**: 4103.
- AL-Jurayyan, N.A.M., AL- Jurayyan, A.N.A., dan Al Issa, S.D.A., 2016. Steroid-Induced Hyperglycemia: A Review. *International Journal of Medical Research Professionals*, **2**: .
- Al-Qahtani, Arwa A., Alhamlan, F.S., dan Al-Qahtani, Ahmed Ali, 2024. Pro-Inflammatory and Anti-Inflammatory Interleukins in Infectious Diseases: A Comprehensive Review. *Tropical Medicine and Infectious Disease*, **9**: 13.

- Armutcu, F., Akyol, S., Ustunsoy, S., dan Turan, F.F., 2015. Therapeutic potential of caffeic acid phenethyl ester and its anti-inflammatory and immunomodulatory effects (Review). *Experimental and Therapeutic Medicine*, **9**: 1582–1588.
- Ashley, N. dan Weil, R., 2012. *Inflammation: Mechanism, Cost, and Natural Variation*.
- Ashmawy, N.S., Gad, H.A., Al-Musayeib, N., El-Ahmady, S.H., Ashour, M.L., dan Singab, A.N.B., 2019. Phytoconstituents from *Polyscias guilfoylei* leaves with histamine-release inhibition activity. *Zeitschrift für Naturforschung C*, **74**: 145–150.
- Ashmawy, N.S., Gad, H.A., Ashour, M.L., El-Ahmady, S.H., dan Singab, A.N.B., 2020b. The genus *Polyscias* (Araliaceae): A phytochemical and biological review. *Journal of Herbal Medicine*, **23**: 100377.
- Attiq, A., Jalil, J., Husain, K., dan Ahmad, W., 2018. Raging the war against inflammation with natural products. *Frontiers in Pharmacology*, **9**: 1–27.
- Atun, S., 2014. Metode Isolasi dan Identifikasi Struktur Senyawa Organik Bahan Alam. *Jurnal Konservasi Cagar Budaya Borobudur*, **8**: 53–61.
- Azzahra, C.M., 2022. 'Uji Analgetika dan Anti Inflamasi Ekstrak dan Fraksi Daun Mangkokan (*Polyscias Scutellaria* (Burm.F.) Fosberg.) Pada Tikus Putih Jantan', *Skripsi*, . Universitas Sriwijaya.
- Bacchi, S., Palumbo, P., Sponta, A., dan Coppolino, M.F., 2012. Clinical Pharmacology of Non-Steroidal Anti-Inflammatory Drugs: A Review. *Anti-Inflammatory & Anti-Allergy Agents in Medicinal Chemistry*, **11**: 52–64.
- Badrey, M.G., Abdel-Aziz, H.M., Gomha, S.M., Abdalla, M.M., dan Mayhoub, A.S., 2015. Design and synthesis of imidazopyrazolopyridines as novel selective COX-2 inhibitors. *Molecules*, **20**: 15287–15303.
- Baliyan, S., Mukherjee, R., Priyadarshini, A., Vibhuti, A., Gupta, A., Pandey, R.P., dkk., 2022. Determination of Antioxidants by DPPH Radical Scavenging Activity and Quantitative Phytochemical Analysis of *Ficus religiosa*. *Molecules*, **27**: 1326.
- Balunas, M.J. dan Kinghorn, A.D., 2005. Drug discovery from medicinal plants. *Life Sciences*, **78**: 431–441.
- Barth, C.R., Funchal, G.A., Luft, C., de Oliveira, J.R., Porto, B.N. and, dan Donadio, M.V.F., 2016. Carrageenan-induced inflammation promotes ROS generation and neutrophil extracellular trap formation in a mouse model of peritonitis. *Eur. J. Immunol.*, **46**: 964–970.
- Bedir, E., Toyang, N.J., Khan, I.A., Walker, L.A., dan Clark, A.M., 2001. A New Dammarane-Type Triterpene Glycoside from *Polyscias fulva*. *Journal of Natural Products*, **64**: 95–97.
- Bigler, P., Gjuroski, I., Chakif, D., dan Furrer, J., 2024. A Versatile Broadband Attached Proton Test Experiment for Routine ¹³C Nuclear Magnetic Resonance Spectroscopy. *Molecules*, **29**: 809.
- Blois, M., 1958. Antioxidant Determinations by the Use of a Stable Free Radical. *Nature*, **181**: 1199–1200.

- Boulebd, H., Carmena-Bargueño, M., dan Pérez-Sánchez, H., 2023. Exploring the Antioxidant Properties of Caffeoylquinic and Feruloylquinic Acids: A Computational Study on Hydroperoxyl Radical Scavenging and Xanthine Oxidase Inhibition. *Antioxidants*, **12**: 1669.
- Bouyahya, A., Guaouguaou, F.-E., El Omari, N., El Menyiy, N., Balahbib, A., El-Shazly, M., dkk., 2022. Anti-inflammatory and analgesic properties of Moroccan medicinal plants: Phytochemistry, *in vitro* and *in vivo* investigations, mechanism insights, clinical evidences and perspectives. *Journal of Pharmaceutical Analysis*, **12**: 35–57.
- Boyer, R.F., 2012. *Biochemistry Laboratory: Modern Theory and Techniques*, 2nd ed. ed. Prentice Hall, Boston.
- Bradley, J., 2008. TNF-mediated inflammatory disease. *The Journal of Pathology*, **214**: 149–160.
- Breton, R.C. dan Reynolds, W.F., 2013. Using NMR to identify and characterize natural products. *Natural Product Reports*, **30**: 501.
- Buchwalow, I.B. dan Böcker, W., 2010. *Immunohistochemistry: Basics and Methods*. Springer, Berlin.
- Budiono, B., Pertami, S.B., Kasiati, Arifah, S.N., dan Atho'illah, M.F., 2022. Lactogenic effect of *Polyscias scutellaria* extract to maintain postpartum prolactin and oxytocin in lactating rats. *Journal of Ayurveda and Integrative Medicine*, 100580.
- Burleigh, M.E., Babaev, V.R., Oates, J.A., Harris, R.C., Gautam, S., Riendeau, D., dkk., 2002. Cyclooxygenase-2 Promotes Early Atherosclerotic Lesion Formation in LDL Receptor-Deficient Mice. *Circulation*, **105**: 1816–1823.
- Busse, W.W., 1998. Leukotrienes and Inflammation. *American Journal of Respiratory and Critical Care Medicine*, **157**: S210–S213.
- Cahyani, L.D., 2017. 'Fraksinasi Senyawa Antituberkulosis dari Ekstrak N-Heksan Daun Jati Merah (*Tectona Grandis* L F)', . UIN Alauddin Makassar, Makassar.
- Calabrese, E.J. dan Baldwin, L.A., 2003. Hormesis: The Dose-Response Revolution. *Annual Review of Pharmacology and Toxicology*, **43**: 175–197.
- Cao, L., Jin, H., Liang, Q., Yang, H., Li, S., Liu, Z., dkk., 2022. A new anti-tumor cytotoxic triterpene from *Ganoderma lucidum*. *Natural Product Research*, **36**: 4125–4131.
- Carvalho, T.C.D., Polizeli, A.M., Turatti, I.C.C., Severiano, M.E., Carvalho, C.E.D., Ambrósio, S.R., dkk., 2010. Screening of Filamentous Fungi to Identify Biocatalysts for Lupeol Biotransformation. *Molecules*, **15**: 6140–6151.
- Catarro, M., Serrano, J.L., Ramos, S.S., Silvestre, S., dan Almeida, P., 2019. Nimesulide analogues: From anti-inflammatory to antitumor agents. *Bioorganic Chemistry*, **88**: 102966.
- Cavanna, D., Righetti, L., Elliott, C., dan Suman, M., 2018. The scientific challenges in moving from targeted to non-targeted mass spectrometric methods for food fraud analysis: A proposed validation workflow to bring

- about a harmonized approach. *Trends in Food Science and Technology*, **80**: 223–241.
- Celis, R., Cuervo, A., Ramírez, J., dan Cañete, J.D., 2019. Psoriatic Synovitis: Singularity and Potential Clinical Implications. *Frontiers in Medicine*, **6**: 14.
- Chair, Otlewska, A., Szpotowicz, G., dan Hackemer, P., 2018b. The effects of steroid therapy on the cardiovascular system. *Pediatrica i Medycyna Rodzinna*, **14**: 267–270.
- Charan, J. dan Biswas, T., 2013. How to Calculate Sample Size for Different Study Designs in Medical Research? *Indian Journal of Psychological Medicine*, **35**: 121–126.
- Chaudhari, S.P. dan Baviskar, D.T., 2021. Anti-inflammatory activity of *Xanthium indicum* on carrageenan-induced paw edema in rats. *Advances in Traditional Medicine*, **21**: 835–840.
- Chiu, C.-Y., Willis-Owen, S.A.G., Wong, K.C.C., Farrow, S.N., Cookson, W.O.C., Moffatt, M.F., dkk., 2024. MAP3K8 is a potential therapeutic target in airway epithelial inflammation. *Journal of Inflammation*, **21**: 27.
- Cho, S.-Y., Kim, H.-W., Lee, M.-K., Kim, H.-J., Kim, J.-B., Choe, J.-S., dkk., 2020. Antioxidant and Anti-Inflammatory Activities in Relation to the Flavonoids Composition of Pepper (*Capsicum annuum* L.). *Antioxidants*, **9**: 1-10.
- Choy, E.H.S. dan Panayi, G.S., 2001. Cytokine Pathways and Joint Inflammation in Rheumatoid Arthritis. *New England Journal of Medicine*, **344**: 907–916.
- Claridge, T.D.W., 2016. *High-Resolution NMR Techniques in Organic Chemistry*, 3rd ed. Elsevier, Oxford.
- Cuman, R.K.N., Bersani-Amado, C.A., dan Fortes, Z.B., 2001. Influence of type 2 diabetes on the inflammatory response in rats. *Inflammation Research*, **50**: 460–465.
- De La Cruz, J.P., Ruiz-Moreno, M.I., Guerrero, A., López-Villodres, J.A., Reyes, J.J., Espartero, J.L., dkk., 2015. Role of the catechol group in the antioxidant and neuroprotective effects of virgin olive oil components in rat brain. *The Journal of Nutritional Biochemistry*, **26**: 549–555.
- De Siqueira Patriota, L.L., De Brito Marques Ramos, D., E Silva, M.G., Dos Santos, A.C.L.A., Silva, Y.A., Paiva, P.M.G., dkk., 2022. Inhibition of Carrageenan-Induced Acute Inflammation in Mice by the *Microgramma vacciniifolia* Frond Lectin (MvFL). *Polymers*, **14**: 1609.
- Decendit, A., Mamani-Matsuda, M., Aumont, V., Waffo-Teguo, P., Moynet, D., Boniface, K., dkk., 2013. Malvidin-3-O- β glucoside, major grape anthocyanin, inhibits human macrophage-derived inflammatory mediators and decreases clinical scores in arthritic rats. *Biochemical Pharmacology*, **86**: 1461–1467.
- Delano, M.J. dan Ward, P.A., 2016. The immune system's role in sepsis progression, resolution, and long-term outcome. *Immunological Reviews*, **274**: 330–353.
- Dias, M.C., Pinto, D.C.G.A., dan Silva, A.M.S., 2021. Plant Flavonoids: Chemical Characteristics and Biological Activity. *Molecules*, **26**: 5377.

- Dong, L., Yin, L., Zhang, Y., Fu, X., dan Lu, J., 2017. Anti-inflammatory effects of ononin on lipopolysaccharide-stimulated RAW 264.7 cells. *Molecular Immunology*, **83**: 46–51.
- Douville, V., Lodi, A., Miller, J., Nicolas, A., Clarot, I., Prilleux, B., dkk., 2006. Evaporative Light Scattering Detection (ELSD): a Tool for Improved Quality Control of Drug Substances. *Pharmeuropa Scientific Notes*, **2006**: 9-15.
- Eden, W.T., Badahdah, N.K., dan Kimia, J., 2016. Aktivitas Antioksidan Ekstrak Metanol Daun Mangkokan (*Polyscias scutellaria* (Burn.f.)Fosberg). *Media Farmasi Indonesia*, **11**: 1126-1135.
- Elewa, M., Shehda, M., Hanna, P.A., Said, M.M., Ramadan, S., Barakat, A., dkk., 2024. Development of a selective COX-2 inhibitor: from synthesis to enhanced efficacy *via* nano-formulation. *RSC Advances*, **14**: 32721–32732.
- Elfahmi, E., M. I, I., dan S, Y., 2018. Isolasi Senyawa Marker dari Ekstrak Air Daun Kelor (*Moringa oleifera* Lamk.). *Acta Pharmaceutica Indonesia*, **43**: 7–14.
- Ericson-Neilsen, W. dan Kaye, A.D., 2014. Steroids: Pharmacology, complications, and practice Delivery Issues. *Ochsner Journal*, **14**: 203–207.
- Faizah, A.K. dan Kresnamurti, A., 2020. Evaluation of Antiinflammatory Activity of Marine Omega-3 in Rats. *Indonesian Journal of Pharmaceutical and Clinical Research*, **2**: 1–5.
- Faridatussaadah, S.N., Lukmayani, Y., dan Dasuki, U.A., 2016a. Isolasi dan Identifikasi Senyawa Flavonoid dari Daun Mangkokan (*Polyscias scutellarium* (Burm.f.) Fosb). *Jurnal Farmasi*, **2**: 111-123.
- Feldman, M., Friedman, L.S., dan Sleisenger, M.H., 2000. *Sleisenger & Fordtran's Gastrointestinal and Liver Disease: Pathophysiology, Diagnosis, Management*, 6th ed. W.B. Saunders Company, Philadelphia.
- Fitriyanti, F., Hikmah, N., dan Astuti, K.I., 2020. Efek Antiinflamasi Infusa Bunga Asoka (*Ixora coccinea* L) pada Tikus Jantan yang Diinduksi Karagenan. *Jurnal Sains dan Kesehatan*, **2**: 355–359.
- Gabay, C., 2006. Interleukin-6 and chronic inflammation. *Arthritis Research & Therapy*, **8**: S3.
- Gan, S.D. dan Patel, K.R., 2013. Enzyme Immunoassay and Enzyme-Linked Immunosorbent Assay. *Journal of Investigative Dermatology*, **133**: 1–3.
- Gan, Z., Liang, Z., Chen, X., Wen, X., Wang, Y., Li, M., dkk., 2016. Separation and preparation of 6-gingerol from molecular distillation residue of Yunnan ginger rhizomes by high-speed counter-current chromatography and the antioxidant activity of ginger oils in vitro. *Journal of Chromatography B*, **1011**: 99–107.
- García-Cáceres, C., Lagunas, N., Calmarza-Font, I., Azcoitia, I., Diz-Chaves, Y., García-Segura, L.M., dkk., 2010. Gender differences in the long-term effects of chronic prenatal stress on the HPA axis and hypothalamic structure in rats. *Psychoneuroendocrinology*, **35**: 1525–1535.
- Gerlach, A.D.C.L., Gadea, A., Silveira, R.M.B.D., Clerc, P., dan Dévéhat, F.L., 2018. The Use of Anisaldehyde Sulfuric Acid as an Alternative Spray

- Reagent in TLC Analysis Reveals Three Classes of Compounds in the Genus *Usnea* Adans. (Parmeliaceae, lichenized Ascomycota).
- Gopalsamy, N., Gueho, J., Julien, H.R., Owadally, A.W., dan Hostettmann, K., 1990. Molluscicidal saponins of *Polyscias dichroostachya*. *Phytochemistry*, **29**: 793–795.
- Guyton, A.C. dan Hall, J.E., 2006. *Textbook of Medical Physiology*, 11th ed. Elsevier Saunders, Philadelphia, PA, USA.
- Halter, J.B., Ouslander, J.G., dan Tinetti, M.E., 2001. *Hazzard's Geriatric Medicine and Gerontology*, 5th ed. McGraw-Hill, New York.
- Harborne, J.B., 1987. *Metode Fitokimia: Penentuan Cara Modern Menganalisis Tumbuhan*. ITB Bandung, Bandung.
- Harirforoosh, S., Asghar, W., dan Jamali, F., 2013. Adverse effects of nonsteroidal antiinflammatory drugs: An update of gastrointestinal, cardiovascular and renal complications. *Journal of Pharmacy and Pharmaceutical Sciences*, **16**: 821–847.
- Harwood, L.M. dan Claridge, T.D.W., 1996. *Introduction to Organic Spectroscopy*, 1st ed. Oxford University Press.
- Hasibuan, A.S., 2021. Anti-Inflammatory Activity Test of Ethanol Extract of Ambarella Fruit Leaves (*Spondias dulcis* Frost) Against Male Rats Induced Carrageenan. *Indonesian Journal of Pharmaceutical Research*, **1**: 38–43.
- Hassanpour, S.H. dan Doroudi, A., 2023. Review of the antioxidant potential of flavonoids as a subgroup of polyphenols and partial substitute for synthetic antioxidants **13**: 354–376.
- He, F., Du, Y., Pan, Z., Zeng, H., Luo, H., Wang, J., dkk., 2023. The correlation between antioxidant, anti-inflammatory activity and the composition of free and bound phenolics in Chinese olive cultivars. *Research Square*, : 1–12.
- He, G., Yin, Y., Yan, X., dan Wang, Y., 2017. Semi-Bionic Extraction of Effective Ingredient from Fishbone by High Intensity Pulsed Electric Fields: Semi-Bionic extraction high intensity pulsed electric fields. *Journal of Food Process Engineering*, **40**: e12392.
- Heim, K.E., Tagliaferro, A.R., dan Bobilya, D.J., 2002. Flavonoid antioxidants: chemistry, metabolism and structure-activity relationships. *The Journal of Nutritional Biochemistry*, **13**: 572–584.
- Hidayat, R. dan Patricia Wulandari, 2021. Enzyme Linked Immunosorbent Assay (ELISA) Technique Guideline. *Bioscientia Medicina: Journal of Biomedicine and Translational Research*, **5**: 447–453.
- Hikariastri, P., Winarno, H., Kusmardi, K., Laksmitawati, D.R., dan Abdillah, S., 2019. Aktivitas Antiinflamasi Crude Extract Fukoidan dari *Sargassum crassifolium* pada Sel RAW 264.7 yang Diinduksi LPS. *Jurnal Kefarmasian Indonesia*, **9**: 97–105.
- Hinz, B. dan Brune, K., 2001. Cyclooxygenase-2—10 years later. *Journal of Pharmacology and Experimental Therapeutics*, **300**: 367–375.
- Hodgson, E., 2015. The effects of corticosteroids and nonsteroidal anti-inflammatory drugs, including aspirin, on coagulation. *South African Family Practice*, **57**: 9–12.

- Horiuchi, T., Mitoma, H., Harashima, S. -i., Tsukamoto, H., dan Shimoda, T., 2010. Transmembrane TNF- α : structure, function and interaction with anti-TNF agents. *Rheumatology*, **49**: 1215–1228.
- Huan, V.D., Yamamura, S., Ohtani, K., Kasai, R., Yamasaki, K., Nham, N.T., dkk., 1998a. Oleanane saponins from *Polyscias fruticosa*. *Phytochemistry*, **47**: 451–457.
- Huang, M., Ma, Z., Luo, X., dan Ren, Q., 2025. Epidemiological assessment of six major immune-mediated inflammatory diseases based on the Global Burden of Disease Study 2021: analyses of age-standardized incidence, prevalence, mortality, and disability-adjusted life years. *Journal of Translational Autoimmunity*, **11**: 100330.
- Husni, E., Ismed, F., dan Afriyandi, D., 2020. Standardization Study of Simplicia and Extract of Calamondin (*Citrus microcarpa* Bunge) Peel, Quantification of Hesperidin and Antibacterial Assay. *Pharmacognosy Journal*, **12**: 777–783.
- Ifora, I., Sintia, B., dan Srangenge, Y., 2021. Pengaruh Penghambatan Enzim Siklooksigenase-2 dan Aktivitas Antiinflamasi dari Ekstrak Daun Ketumbar (*Coriandrum sativum* L.). *Jurnal Kefarmasian Indonesia*, **11**: 17–24.
- Ikawati, Z., 2008. *Farmakologi Molekuler: Target Aksi Obat Dan Mekanisme Kerjanya*. Gadjah Mada University Press, Yogyakarta.
- Islam, M.A., Zilani, M.N.H., Biswas, P., Khan, D.A., Rahman, M.H., Nahid, R., dkk., 2022a. Evaluation of in vitro and in silico anti-inflammatory potential of some selected medicinal plants of Bangladesh against cyclooxygenase-II enzyme. *Journal of Ethnopharmacology*, **285**: 114900.
- Isrul, M., Dewi, C., dan Wahdini, V., 2020. Uji Efek Antiinflamasi Infusa Daun Bayam Merah (*Amaranthus tricolor* L.) Terhadap Tikus Putih (*Rattus norvegicus*) Yang Diinduksi Karagenan. *Jurnal Mandala Pharmacon Indonesia*, **6**: 97–103.
- Jahari, F., 2013. 'Uji Aktivitas Antibakteri Ekstrak Etanol Daun Mangkokan (*Nothopanax scutellarium* Merr.) terhadap Bakteri Penyebab Bau Badan dengan Metode Difusi Agar', . Universitas Islam Negeri Alauddin Makassar.
- Jang, H.-J., Lee, S., Lee, S.-J., Lim, H.-J., Jung, K., Kim, Y.H., dkk., 2017. Anti-inflammatory Activity of Eudesmane-Type Sesquiterpenoids from *Salvia plebeia*. *Journal of Natural Products*, **80**: 2666–2676.
- Jenie, Umar A, Kardono, L.B.S., Hanafi, M., Rumampuk, R.J., dan Darmawan, A., 2014. *Teknik Modern Spektroskopi NMR: Teori Dan Aplikasi Dalam Elusidasi Struktur Molekul Organik*. LIPI Press, Jakarta.
- Jenie, Umar Anggara, Kardono, L.B.S., Hanafi, M., Rumampuk, R.J., dan Darmawan, A., 2014. *Teknik Modern Spektroskopi NMR: Teori Dan Aplikasi Dalam Elusidasi Struktur Molekul Organik*. LIPI Press, Jakarta.
- Jiang, T.A., 2019. Health benefits of culinary herbs and spices. *Journal of AOAC International*, **102**: 395–411.
- Joana Gil-Chávez, G., Villa, J.A., Fernando Ayala-Zavala, J., Basilio Heredia, J., Sepulveda, D., Yahia, E.M., dkk., 2013. Technologies for Extraction and

- Production of Bioactive Compounds to be Used as Nutraceuticals and Food Ingredients: An Overview: Production of nutraceutical compounds: A review.... *Comprehensive Reviews in Food Science and Food Safety*, **12**: 5–23.
- Ju, Z., Li, M., Xu, J., Howell, D.C., Li, Z., dan Chen, F.-E., 2022. Recent development on COX-2 inhibitors as promising anti-inflammatory agents: The past 10 years. *Acta Pharmaceutica Sinica B*, **12**: 2790–2807.
- Jubaidah, S., Indriani, R., Sa'adah, H., dan Wijaya, H., 2018. Formulasi dan Uji Pertumbuhan Rambut Kelinci dari Sediaan Hair Tonic Kombinasi Ekstrak Daun Seledri (*Apium graveolens* Linn) dan Daun Mangkokan (*Polyscias scutellaria* (Burm.f.) Fosberg). *Jurnal Ilmiah Manuntung*, **4**: 8-14.
- Kagan, I.A. dan Flythe, M.D., 2014. Thin-layer Chromatographic (TLC) Separations and Bioassays of Plant Extracts to Identify Antimicrobial Compounds. *Journal of Visualized Experiments*, 51411.
- Kany, S., Vollrath, J.T., dan Relja, B., 2019. Cytokines in Inflammatory Disease. *International Journal of Molecular Sciences*, **20**: 6008.
- Karim, N., Khan, Inamullah, Khan, W., Khan, Imran, Khan, A., Halim, S.A., dkk., 2019. Anti-nociceptive and Anti-inflammatory Activities of Asparacosin A Involve Selective Cyclooxygenase 2 and Inflammatory Cytokines Inhibition: An in-vitro, in-vivo, and in-silico Approach. *Frontiers in Immunology*, **10**: 581.
- Kemenkes RI, 2018. Hasil Riset Kesehatan Dasar Tahun 2018. *Kementrian Kesehatan RI*, **53**: 1689–1699.
- Khan, S., Andrews, K.L., dan Chin-Dusting, J.P.F., 2019. Cyclo-Oxygenase (COX) Inhibitors and Cardiovascular Risk: Are Non-Steroidal Anti-Inflammatory Drugs Really Anti-Inflammatory? *International Journal of Molecular Sciences*, **20**: 4262.
- Khusnul, F., Salomo, S., dan Hamdi, M., 2018. Kajian Komputasi Pola Gelombang Resonansi Magnet Inti (NMR) dengan Transformasi Fourier. *Komunikasi Fisika Indonesia*, **15**: 17-22.
- Koffuor, G.A., Boye, A., Ofori-Amoah, J., Kyei, S., Abokyi, S., Nyarko, R.A., dkk., 2014. Anti-inflammatory and safety assessment of *Polyscias fruticosa* (L.) Harms (Araliaceae) leaf extract in ovalbumin-induced asthma. *The Journal of Phytopharmacology*, **3**: 337–342.
- Krakko, D., Tautenhahn, R., dan Stutts, W.L., 2026. Implementing Annotation Confidence Scoring in Untargeted Mass Spectrometry Workflows for Small Molecule Analysis. *Analytical Chemistry*, **98**: 10352–10359.
- Kumar, A., Khan, F., dan Saikia, D., 2022. Phenolic Compounds and their Biological and Pharmaceutical Activities, dalam: Chaurasia, P.K. dan Bharati, S.L., 2024. The Chemistry inside Spices & Herbs: Research and Development. *Bentham Science Publishers*, **3**: 206–236.
- Lee, S., Shin, S., Kim, H., Han, S., Kim, Kwanghee, Kwon, J., dkk., 2011. Anti-inflammatory function of arctiin by inhibiting COX-2 expression via NF- κ B pathways. *Journal of Inflammation*, **8**: 1-9.

- Lelo, A., 2001. *Farmakologi Dan Terapi*. Bagian Farmakologi Fakultas Kedokteran Universitas Indonesia, Jakarta.
- Levin, A.D., Wildenberg, M.E., dan van den Brink, G.R., 2016. Mechanism of Action of Anti-TNF Therapy in Inflammatory Bowel Disease. *Journal of Crohn's and Colitis*, **10**: 989–997.
- Liga, S., Paul, C., dan Péter, F., 2023. Flavonoids: Overview of Biosynthesis, Biological Activity, and Current Extraction Techniques. *Plants*, **12**: 2732.
- Lindell, D.M. dan Lukacs, N.W., 2010. Cytokines and Chemokines in Inflammation, dalam: Serhan, C.N., Ward, P.A., dan Gilroy, D.W. (Editor), *Fundamentals of Inflammation*. Cambridge University Press, hal. 175–185.
- Lis, K., Kuzawińska, O., dan Bałkowiec-Iskra, E., 2014. State of the art paper Tumor necrosis factor inhibitors – state of knowledge. *Archives of Medical Science*, **6**: 1175–1185.
- Liu, D., Ahmet, A., Ward, L., Krishnamoorthy, P., Mandelcorn, E.D., Leigh, R., dkk., 2013. A practical guide to the monitoring and management of the complications of systemic corticosteroid therapy. *Allergy, Asthma and Clinical Immunology*, **9**: 1–25.
- Lopes, A.H., Silva, R.L., Fonseca, M.D., Gomes, F.I., Maganin, A.G., Ribeiro, L.S., dkk., 2020. Molecular basis of carrageenan-induced cytokines production in macrophages. *Cell Communication and Signaling*, **18**: 1-17.
- López-Vallejo, F., Fragoso-Serrano, M., Suárez-Ortiz, G.A., Hernández-Rojas, A.C., Cerda-García-Rojas, C.M., dan Pereda-Miranda, R., 2011. Vicinal¹ H–¹ H NMR Coupling Constants from Density Functional Theory as Reliable Tools for Stereochemical Analysis of Highly Flexible Multichiral Center Molecules. *The Journal of Organic Chemistry*, **76**: 6057–6066.
- Loram, L.C., Fuller, A., Fick, L.G., Cartmell, T., Poole, S., dan Mitchell, D., 2007. Cytokine Profiles During Carrageenan-Induced Inflammatory Hyperalgesia in Rat Muscle and Hind Paw. *The Journal of Pain*, **8**: 127–136.
- Ma, X., 2022. Recent Advances in Mass Spectrometry-Based Structural Elucidation Techniques. *Molecules*, **27**: 6466.
- Machado, J., Ruiz, A., dan Machado-Duque, M., 2015. Adverse Drug Reactions Associated with The Use of Disease Modifying Anti-Rheumatic Drugs In Patients With Rheumatoid Arthritis. *Value in Health*, **18**: A153.
- Mailafiya, M.M., Pateh, U.U., Hassan, H.S., Sule, M.I., Bila, A.H., Musa, T.L., dkk., 2020. Isolation of lupeol from the stem bark of *Leptadenia hastata* (Pers.) Decne. *Journal of Applied Sciences and Environmental Management*, **24**: 1835–1838.
- Makanjuola, S.A., 2017. Influence of particle size and extraction solvent on antioxidant properties of extracts of tea, ginger, and tea–ginger blend. *Food Science & Nutrition*, **5**: 1179–1185.
- 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.
- Mark-Maria Agatemor, U., Fred Chiligue Nwodo, O., dan Rita Ozah, I., 2019. Inhibition of Phospholipase A2 and Prostaglandin Synthase Activities as

- Possible Mechanisms for the Anti-Inflammatory Effect of *Cucumis sativus* Fruit Homogenate. *Acta Scientific Pharmaceutical Sciences*, **3**: 68–73.
- Mattson, M.P., 2008. Hormesis defined. *Ageing Research Reviews*, **7**: 1–7.
- Mehrzadi, S., Khalili, H., Fatemi, I., Malayeri, A., Siahpoosh, A., dan Goudarzi, M., 2021. Zingerone Mitigates Carrageenan-Induced Inflammation Through Antioxidant and Anti-inflammatory Activities. *Inflammation*, **44**: 186–193.
- Meilawaty, Z., 2013. Efek ekstrak daun singkong (*Manihot utilissima*) terhadap ekspresi COX-2 pada monosit yang dipapar LPS *E. coli* (The effect of *Manihot utilissima* extracts on COX-2 expression of monocytes induced by LPS *E. coli*). *Dental Journal (Majalah Kedokteran Gigi)*, **46**: 196.
- Menkiti, N.D., Isanbor, C., dan Ayejuyo, O.O., 2025. HSQC-NMR spectroscopy and exploratory data analysis of crude oil residue in relation to the time of spill. *RSC Advances*, **15**: 18910–18919.
- Minagar, A., Shapshak, P., Fujimura, R., Ownby, R., Heyes, M., dan Eisdorfer, C., 2002. The role of macrophage/microglia and astrocytes in the pathogenesis of three neurologic disorders: HIV-associated dementia, Alzheimer disease, and multiple sclerosis. *Journal of the Neurological Sciences*, **202**: 13–23.
- Misra, P. dan Dubinski, M.A., 2002. *Ultraviolet Spectroscopy and UV Lasers*, 1st ed. CRC, New York.
- Mitaine-Offer, A.-C., Tapondjou, L.A., Lontsi, D., Sondengam, B.L., Choudhary, M.I., Atta-ur-Rahman, dkk., 2004. Constituents isolated from *Polyscias fulva*. *Biochemical Systematics and Ecology*, **32**: 607–610.
- Mizokami, S.S., Hohmann, M.S.N., Staurengo-Ferrari, L., Carvalho, T.T., Zarpelon, A.C., Possebon, M.I., dkk., 2016. Pimaradienoic Acid Inhibits Carrageenan-Induced Inflammatory Leukocyte Recruitment and Edema in Mice: Inhibition of Oxidative Stress, Nitric Oxide and Cytokine Production. *PLOS ONE*, **11**: e0149656.
- Mohd Ramli, E.S., Tarmizi, N.M., Kamaruddin, N.A., dan Kamaruzzaman, M.A., 2025. *Lepisanthes alata* Attenuates Carrageenan-Induced Inflammation and Pain in Rats: A Phytochemical-Based Approach. *Pharmaceuticals*, **18**: 1142.
- Molyneux, P., 2004. The use of the stable free radical diphenylpicryl- hydrazyl (DPPH) for estimating antioxidant activity. *Songklanakarin Journal of Science and Technology*, **26**: 211-219.
- Mucha, P., Skoczyńska, A., Małecka, M., Hikisz, P., dan Budzisz, E., 2021. Overview of the Antioxidant and Anti-Inflammatory Activities of Selected Plant Compounds and Their Metal Ions Complexes. *Molecules*, **26**: 4886.
- Muhar AM, Velaro AJ, Prananda AT, Nugraha SE, Çamlık G, Wasnik S, Abidin SZ, Sjöfjan O, Harahap MAY, Syahrian MF, Taslim NA, Mayulu N, Permatasari HK, Nurkolis F, Situmorang PC, Syahputra RA, 2023. *Polyscias scutellaria*: An emerging source of natural antioxidants and anti-inflammatory compounds for health. **70**: 1463-1470.
- Murakami, M. dan Hirano, T., 2012. *The Molecular Mechanisms of Chronic Inflammation Development*, 3rd ed. Frontier in Immunology. **3**: 1-3.

- Mutschler, E., 1991. *Dinamika Obat; Buku Ajar Farmakologi Dan Toksikologi*, V. ed. ITB, Bandung.
- Myers, M.J., Deaver, C.M., dan Lewandowski, A.J., 2019. Molecular mechanism of action responsible for carrageenan-induced inflammatory response. *Molecular Immunology*, **109**: 38–42.
- Nakamura, M., Ra, J.-H., Jee, Y., dan Kim, J.-S., 2017. Impact of different partitioned solvents on chemical composition and bioavailability of *Sasa quelpaertensis* Nakai leaf extract. *Journal of Food and Drug Analysis*, **25**: 316–326.
- Nandiyanto, A.B.D., Ragadhita, R., dan Fiandini, M., 2022. Interpretation of Fourier Transform Infrared Spectra (FTIR): A Practical Approach in the Polymer/Plastic Thermal Decomposition. *Indonesian Journal of Science and Technology*, **8**: 113–126.
- Nasution, S.L.R., Awanis, dan Elsafarindo, S., 2021. Effect of Mangkokan (*Polyscias scutellaria*) Leaf Extract on Blood Sugar Levels in Alloxan-Induced Male White Rats. *Majalah Kedokteran Bandung*, **53**: 132–137.
- Nazar, M., 2018. *Spektroskopi Molekul*. Syiah Kuala University Press.
- Nishimoto, N. dan Kishimoto, T., 2006. Interleukin 6: from bench to bedside. *Nature Clinical Practice Rheumatology*, **2**: 619–626.
- Noman, O.M., Mothana, R.A., Al-Rehaily, A.J., Al qatani, A.S., Nasr, F.A., Khaled, J.M., dkk., 2019. Phytochemical analysis and anti-diabetic, anti-inflammatory and antioxidant activities of *Loranthus acaciae* Zucc. Grown in Saudi Arabia. *Saudi Pharmaceutical Journal*, **27**: 724–730.
- Nugroho, A.E., 2012. *Farmakologi: Obat-Obat Penting Dalam Pembelajaran Ilmu Farmasi Dan Dunia Kesehatan*. Yogyakarta: Pustaka Pelajar. Pustaka Pelajar, Yogyakarta.
- Nur, S., Mus, S., Fadri, A., dan Jumaetri, F., 2020. Determination of Total Phenolic and Flavonoid Levels of Mangkokan Leaf Extract (*Polyscias scutellaria*). *Journal of Pharmaceutical and Medicinal Science*, **5**: 24–27.
- Nurbaya, S., Wiratma, D.Y., dan Sitorus, E., 2021. Sosialisasi Kandungan Ekstrak Etanol Daun Mangkokan (*Polyscias scutellaria*) Berkhasiat Sebagai Antibakteri. *Jurnal Abdimas Mutiara*, **2**: 380–385.
- Nurtamin, T., Sudayasa, I.P., dan Tien, 2018. In Vitro Anti-Inflammatory Activities of Ethanolic Extract *Elephantopus scaber* Leaves. *Jurnal Kedokteran dan Kesehatan Indonesia*, **9**: 46–52.
- Oliveira, E.M.S., Freitas, S.L., Martins, F.S., Couto, R.O., Pinto, M.V., Paula, J.R., dkk., 2012. Isolation and quantitative HPLC-PDA analysis of lupeol in phytopharmaceutical intermediate products from *Vernonanthura ferruginea* (Less.) H. Rob. *Química Nova*, **35**: 1041–1045.
- Ou, Z., Zhao, J., Zhu, L., Huang, L., Ma, Y., Ma, C., dkk., 2019. Anti-inflammatory effect and potential mechanism of betulinic acid on λ -carrageenan-induced paw edema in mice. *Biomedicine & Pharmacotherapy*, **118**: 109347.
- Paphassarang, S., Raynaud, J., dan Lussignol, M., 1988. La polysciasaponine P7 de *Polyscias scutellaria* (Burm. f.) Fosb. (Araliaceae); Polysciasaponin P7

- from *Polyscias scutellaria* (Burm. F.) Fosb. (Araliaceae). *Pharmazie*, **43**: 296–297.
- Paphassarang, S., Raynaud, J., Lussignol, M., dan Becchi, M., 1989. Triterpenic glycosides from *Polyscias scutellaria*. *Phytochemistry*, **28**: 1539–1541.
- Paramita, S., Kosala, K., Dzulkifli, D., Saputri, D.I., dan Wijayanti, E., 2017. Anti-inflammatory activities of ethnomedicinal plants from dayak abai in North Kalimantan, Indonesia. *Biodiversitas*, **18**: 1556–1561.
- Pavia, D.L., Lampman, G.M., Kriz, G.S., dan Vyvyan, J.R., 2013. Introduction to Spectroscopy.
- Percie Du Sert, N., Hurst, V., Ahluwalia, A., Alam, S., Avey, M.T., Baker, M., dkk., 2020. The ARRIVE guidelines 2.0: Updated guidelines for reporting animal research. *PLOS Biology*, **18**: e3000410.
- Peres, M.F.S., Ribeiro, F.V., Ruiz, K.G.S., Nociti-Jr, F.H., Sallum, E.A., dan Casati, M.Z., 2012. Steroidal and non-steroidal cyclooxygenase-2 inhibitor anti-inflammatory drugs as pre-emptive medication in patients undergoing periodontal surgery. *Brazilian Dental Journal*, **23**: 621–628.
- Porter, N.A., 1986. Mechanisms for the autoxidation of polyunsaturated lipids. *Accounts of Chemical Research*, **19**: 262–268.
- Posadas, I., Bucci, M., Roviezzo, F., Rossi, A., Parente, L., Sautebin, L., dkk., 2004. Carrageenan-induced mouse paw oedema is biphasic, age-weight dependent and displays differential nitric oxide cyclooxygenase-2 expression. *British Journal of Pharmacology*, **142**: 331–338.
- Pradita, T. intan dan Rejeki, S., 2022. Anti-Inflammatory Test Of Mangkogan Leaves (*Nothopanax scutellarium* err.) Ethanol Extract to Mice by Caragenine Induced. *Indonesian Journal on Medical Science*, **9**: 27–32.
- Prasetya, R.C., 2015. Ekspresi dan Peran Siklooksigenase-2 dalam Berbagai Penyakit di Rongga Mulut. *Stomatognathic*, **12**: 16–19.
- Purnomo, Y. dan Andri Tilaqza, 2022. Analgesic and Anti-inflammatory Activities of *Urena lobata* L. Leaf Extracts. *Indonesian Journal of Pharmacy*, 566–574.
- Putri, J.G. dan Wisan, A.B., 2020. Efek Samping Terapi Kortikosteroid Sistemik Jangka Panjang pada Pasien Lupus Erimatosus Sistemik dan Tatalaksana Dermatologi **47**: 127-129.
- Pye, C.R., Bertin, M.J., Lokey, R.S., Gerwick, W.H., dan Linington, R.G., 2017. Retrospective analysis of natural products provides insights for future discovery trends. *Proceedings of the National Academy of Sciences*, **114**: 5601–5606.
- Qian, H., Yuan, H., Wang, J., Du, Y., Zhang, X., Sun, Y., dkk., 2014. A monoclonal antibody ameliorates local inflammation and osteoporosis by targeting TNF- α and RANKL. *International Immunopharmacology*, **20**: 370–376.
- Ramadhani, N. dan Sumiwi, S.A., 2018. Aktivitas Antiinflamasi Berbagai Tanaman Diduga Berasal dari Flavonoid. *Farmaka*, **14**: 111-123.
- Rarison, R.H.G., Truong, V.-L., Yoon, B.-H., Park, J.-W., dan Jeong, W.-S., 2023. Antioxidant and Anti-Inflammatory Mechanisms of Lipophilic Fractions

- from *Polyscias fruticosa* Leaves Based on Network Pharmacology, In Silico, and In Vitro Approaches. *Foods*, **12**: 3643.
- Ratnayake, W.M.K.M., Suresh, T.S., Abeysekera, A.M., Salim, N., dan Chandrika, U.G., 2019. Acute anti-inflammatory and anti-nociceptive activities of crude extracts, alkaloid fraction and evolitrine from *Acronychia pedunculata* leaves. *Journal of Ethnopharmacology*, **238**: 111827.
- Ravipati, A.S., Zhang, L., Koyyalamudi, S.R., Jeong, S.C., Reddy, N., Bartlett, J., dkk., 2012. Antioxidant and anti-inflammatory activities of selected Chinese medicinal plants and their relation with antioxidant content. *BMC Complementary and Alternative Medicine*, **12**: 1–14.
- Reynolds, W.F., 2017. Natural Product Structure Elucidation by NMR Spectroscopy, dalam: *Pharmacognosy*. Elsevier, hal. 567–596.
- Ribeiro Souto, G., Queiroz, C.M., Nogueira Guimarães De Abreu, M.H., Oliveira Costa, F., dan Alves Mesquita, R., 2014. Pro-inflammatory, Th1, Th2, Th17 cytokines and dendritic cells: A cross-sectional study in chronic periodontitis. *PLoS ONE*, **9**: e91636.
- Rocha, A.C.C. dan Fernandes, E.S., 2006. Relevance of tumour necrosis factor- α for the inflammatory and nociceptive responses evoked by carrageenan in the mouse paw. *British Journal of Pharmacology*, **148**: 688–695.
- Rosa, D., Halim, Y., Kam, N., Sugata, M., dan Samantha, A., 2019. Antibacterial Activity of *Polyscias scutellaria* Fosberg Against *Acinetobacter* SP. *Asian Journal of Pharmaceutical and Clinical Research*, **12**: 516-519.
- Rousdy, D.W., Wardoyo, E.R.P., dan Ifadatin, S., 2022. Anti-inflammatory Activity of Bajakah Stem (*Spatholobus littoralis* Hassk.) Ethanolic Extract in Carrageenan-Induced Paw Edema Mice. *Jurnal Biodjati*, **7**: 66–74.
- Sabrina, A.P., Tania, E., Nurhalifah, N., Alvian, R., Veronita, S.C., Puji, S.I., dkk., 2022. Studi Fitokimia dan Farmakologi Daun Mangkokan (*Nothopanax scutellarium*). *Jurnal Buana Farma*, **2**: 33–39.
- Safayhi, H. dan Sailer, E.-R., 1997. Anti-Inflammatory Actions of Pentacyclic Triterpenes. *Planta Medica*, **63**: 487–493.
- Sahlan, M., Devina, A., Pratami, D.K., Situmorang, H., Farida, S., Munim, A., dkk., 2019. Anti-inflammatory activity of Tetragronula species from Indonesia. *Saudi Journal of Biological Sciences*, **26**: 1531–1538.
- Sakamoto, S., Putalun, W., Vimolmangkang, S., Phoolcharoen, W., Shoyama, Y., Tanaka, H., dkk., 2018. Enzyme-linked immunosorbent assay for the quantitative/qualitative analysis of plant secondary metabolites. *Journal of Natural Medicines*, **72**: 32–42.
- Samuel, S., Nguyen, T., dan Choi, H.A., 2017. Pharmacologic Characteristics of Corticosteroids. *Journal of Neurocritical Care*, **10**: 53–59.
- Sandkühler, J., 2009. Models and Mechanisms of Hyperalgesia and Allodynia. *Physiological Reviews*, **89**: 707–758.
- Sands, B.E. dan Kaplan, G.G., 2007. The Role of TNF α in Ulcerative Colitis. *The Journal of Clinical Pharmacology*, **47**: 930–941.
- Sastrohamidjojo, H., 1991. *Kromatografi*. Liberty, Yogyakarta.

- Satria, D., Waruwu, S.B., Yuandani, Y., Purnomo, H., dan Harahap, U., 2022. The effect of *1.3 bis(p-Hydroxyphenyl)urea* compound on IL-6, IL-1 β , TNF- α and COX-2 protein expression on λ -Carrageenan-induced rats. *Pharmacia*, **69**: 927–934.
- Scheller, J., Chalaris, A., Schmidt-Arras, D., dan Rose-John, S., 2011. The pro- and anti-inflammatory properties of the cytokine interleukin-6. *Biochimica et Biophysica Acta (BBA) - Molecular Cell Research*, **1813**: 878–888.
- Sedger, L.M. dan McDermott, M.F., 2014. TNF and TNF-receptors: From mediators of cell death and inflammation to therapeutic giants – past, present and future. *Cytokine & Growth Factor Reviews*, **25**: 453–472.
- Setianingsih, T. dan Prananto, Y.P., 2020. *Spektroskopi Inframerah Untuk Karakterisasi Material Anorganik*. UB Press, Malang.
- Shah, K. dan Maghsoudlou, P., 2016a. Enzyme-linked immunosorbent assay (ELISA): the basics. *British Journal of Hospital Medicine*, **77**: C98–C101.
- Shah, K. dan Maghsoudlou, P., 2016b. Enzyme-linked immunosorbent assay (ELISA): the basics. *British Journal of Hospital Medicine*, **77**: C98–C101.
- Shaw, M., Meda, V., Tabil, L., dan Opoku, A., 2006. Drying and Color Characteristics of Coriander Foliage Using Convective Thin-Layer and Microwave Drying. *Journal of Microwave Power and Electromagnetic Energy*, **41**: 56–65.
- Shi, Y., 2010. Caught red-handed: Uric acid is an agent of inflammation. *Journal of Clinical Investigation*, **120**: 1809–1811.
- Showalter, H.D.H. dan Denny, W.A., 2008. A roadmap for drug discovery and its translation to small molecule agents in clinical development for tuberculosis treatment. *Tuberculosis*, **88**: S3–S17.
- Shukla, R., Dubey, A., Pandey, V., Golhani, D., dan Jain, A.P., 2012. Chromophore- An Utility in UV Spectrophotometer **2012**: .
- Silbernagl, S. dan Lang, F., 2000. *Color Atlas of Pathophysiology*.
- Silverstein, R.M., Webster, F.X., dan Kiemle, D.J., 2005. *Spectrometric Identification of Organic Compounds*, 7th ed. John Wiley & Sons, Inc., New York.
- Silverstein, R.M., Webster, F.X., Kiemle, D.J., dan Bryce, D.L., 2014. *Spectrometric Identification of Organic Compounds*, 8th ed. John Wiley & Sons, Hoboken, NJ.
- Singh, A., Yau, Y.F., Leung, K.S., El-Nezami, H., dan Lee, J.C.-Y., 2020. Interaction of Polyphenols as Antioxidant and Anti-Inflammatory Compounds in Brain–Liver–Gut Axis. *Antioxidants*, **9**: 669.
- Śliwińska, A.A. dan Tomiczak, K., 2025. Advancing the Potential of *Polyscias fruticosa* as a Source of Bioactive Compounds: Biotechnological and Pharmacological Perspectives. *Molecules*, **30**: 1–63.
- Solomon, D.H., Schneeweiss, S., Glynn, R.J., Kiyota, Y., Levin, R., Mogun, H., dkk., 2004. Relationship Between Selective Cyclooxygenase-2 Inhibitors and Acute Myocardial Infarction in Older Adults. *Circulation*, **109**: 2068–2073.

- Sostres, C., Gargallo, C.J., Arroyo, M.T., dan Lanas, A., 2010. Adverse effects of non-steroidal anti-inflammatory drugs (NSAIDs, aspirin and coxibs) on upper gastrointestinal tract. *Best Practice & Research Clinical Gastroenterology*, **24**: 121–132.
- Sostres, C., Gargallo, C.J., dan Lanas, A., 2013. Nonsteroidal anti-inflammatory drugs and upper and lower gastrointestinal mucosal damage. *Arthritis Research & Therapy*, **15**: 1-8.
- Steeland, S., Libert, C., dan Vandenbroucke, R.E., 2018. A New Venue of TNF Targeting. *International Journal of Molecular Sciences*, **19**: 1442.
- Suryani, A.E., Nisa, K., Handayani, S., Darsih, C., Wuryastuty, H., dan Yanuartono, Y., 2025. The UHPLC-HRMS profiling, in vitro-antioxidant and pancreatic lipase inhibitory activities of *Peronema canescens* leaves extract and fractions from Indonesia. *Journal of Applied Pharmaceutical Science*, 75-89.
- Syarifuddin, A., Nurrochmad, A., dan Fakhruddin, N., 2025. Study on the anti-inflammatory activity of *Polyscias scutellaria* (Burm. F.) fosberg leaves extract and its phytochemical components. *Journal of Applied Pharmaceutical Science*, **15**: 147-155.
- Tanaka, T. dan Kishimoto, T., 2014. The Biology and Medical Implications of Interleukin-6. *Cancer Immunology Research*, **2**: 288–294.
- Tanaka, T., Narazaki, M., dan Kishimoto, T., 2014. IL-6 in Inflammation, Immunity, and Disease. *Cold Spring Harbor Perspectives in Biology*, **6**: a016295–a016295.
- Tang, S., Wang, B., Liu, X., Xi, W., Yue, Y., Tan, X., dkk., 2025. Structural insights and biological activities of flavonoids: Implications for novel applications. *Food Frontiers*, **6**: 218–247.
- Termer, M., Carola, C., Salazar, A., Keck, C.M., Hemberger, J., dan Von Hagen, J., 2021. Activity-Guided Characterization of COX-2 Inhibitory Compounds in *Waltheria indica* L. Extracts. *Molecules*, **26**: 7240.
- Thamkaew, G., Sjöholm, I., dan Galindo, F.G., 2021. A review of drying methods for improving the quality of dried herbs. *Critical Reviews in Food Science and Nutrition*, **61**: 1763–1786.
- Thomford, N., Senthebane, D., Rowe, A., Munro, D., Seele, P., Maroyi, A., dkk., 2018. Natural Products for Drug Discovery in the 21st Century: Innovations for Novel Drug Discovery. *International Journal of Molecular Sciences*, **19**: 1578.
- Tjay, T.H. dan Rahardja, K., 2002. *Obat-Obat Penting*. PT. Elex Media Komputindo, Jakarta.
- Turner, M.D., Nedjai, B., Hurst, T., dan Pennington, D.J., 2014. Cytokines and chemokines: At the crossroads of cell signalling and inflammatory disease. *Biochimica et Biophysica Acta (BBA) - Molecular Cell Research*, **1843**: 2563–2582.
- Viscosi, V. dan Cardini, A., 2011. Leaf Morphology, Taxonomy and Geometric Morphometrics: A Simplified Protocol for Beginners. *PLoS ONE*, **6**: e25630.

- Wang, G., Wang, Y., Yao, L., Gu, W., Zhao, S., Shen, Z., dkk., 2022. Pharmacological Activity of Quercetin: An Updated Review. *Evidence-Based Complementary and Alternative Medicine*, **2022**: 1–12.
- Wang, J., Tan, J., Hu, Q., Mao, S., Chen, H., Luo, W., dkk., 2024. Novel oxicanonsteroidal compound XK01 attenuates inflammation by suppressing the NF- κ B and MAPK pathway in RAW264.7 macrophages. *Heliyon*, **10**: e24004.
- Wang, Y., Gao, J., dan Xing, L.-Z., 2016. Therapeutic potential of Oroxylin A in rheumatoid arthritis. *International Immunopharmacology*, **40**: 294–299.
- Wautier, J.-L. dan Wautier, M.-P., 2023. Pro- and Anti-Inflammatory Prostaglandins and Cytokines in Humans: A Mini Review. *International Journal of Molecular Sciences*, **24**: 9647.
- Williams, D.H. dan Fleming, I., 1995. *Spectroscopic Methods in Organic Chemistry (5th Ed.)*. Retrieved March 24 2023 From, 5th ed. McGraw-Hill.
- Wolfender, J.-L., Ndjoko, K., dan Hostettmann, K., 2003. Liquid chromatography with ultraviolet absorbance-mass spectrometric detection and with nuclear magnetic resonance spectroscopy: A powerful combination for the on-line structural investigation of plant metabolites. *Journal of chromatography. A*, **1000**: 437–55.
- Wootton-Beard, P.C., Moran, A., dan Ryan, L., 2011. Stability of the total antioxidant capacity and total polyphenol content of 23 commercially available vegetable juices before and after in vitro digestion measured by FRAP, DPPH, ABTS and Folin–Ciocalteu methods. *Food Research International*, **44**: 217–224.
- Wutsqa, Y.U., Suratman, S., dan Sari, S.L.A., 2021. Detection of terpenoids and steroids in *Lindsaea obtusa* with thin layer chromatography. *Asian Journal of Natural Product Biochemistry*, **19**: 66–69.
- Xiao, K., Liu, C., Tu, Z., Xu, Q., Chen, S., Zhang, Y., dkk., 2020. Activation of the NF- κ B and MAPK Signaling Pathways Contributes to the Inflammatory Responses, but Not Cell Injury, in IPEC-1 Cells Challenged with Hydrogen Peroxide. *Oxidative Medicine and Cellular Longevity*, **2020**: 1–14.
- Yang, S., Wang, J., Brand, D.D., dan Zheng, S.G., 2018. Role of TNF–TNF Receptor 2 Signal in Regulatory T Cells and Its Therapeutic Implications. *Frontiers in Immunology*, **9**: 784.
- Yoshioka, T., Nagatomi, Y., Harayama, K., dan Bamba, T., 2018. Development of an analytical method for polycyclic aromatic hydrocarbons in coffee beverages and dark beer using novel high-sensitivity technique of supercritical fluid chromatography/mass spectrometry. *Journal of Bioscience and Bioengineering*, **126**: 126–130.
- Yu, T., Ahn, H.M., Shen, T., Yoon, K., Jang, H.-J., Lee, Y.J., dkk., 2011. Anti-inflammatory activity of ethanol extract derived from *Phaseolus angularis* beans. *Journal of Ethnopharmacology*, **137**: 1197–1206.
- Yuan, H., Ma, Q., Ye, L., dan Piao, G., 2016. The Traditional Medicine and Modern Medicine from Natural Products. *Molecules*, **21**: 559.

- Zaragozá, C., Álvarez-Mon, M.Á., Zaragozá, F., dan Villaescusa, L., 2022. Flavonoids: Antiplatelet Effect as Inhibitors of COX-1. *Molecules*, **27**: 1146.
- Zarghi, A. dan Arfaei, S., 2011. Selective COX-2 Inhibitors: A Review of Their Structure-Activity Relationships. *Iranian journal of pharmaceutical research: IJPR*, **10**: 655–683.
- Zhao, Q., Lu, D., Zhang, G., Zhang, D., dan Shi, X., 2021. Recent improvements in enzyme-linked immunosorbent assays based on nanomaterials. *Talanta*, **223**: 121722.
- Zheng, D., Liwinski, T., dan Elinav, E., 2020. Inflammasome activation and regulation: toward a better understanding of complex mechanisms. *Cell Discovery*, **6**: 36.