

## DAFTAR PUSTAKA

- Adom, M.B., Taher, M., Mutalabisin, M.F., Amri, M.S., Abdul Kudos, M.B., Wan Sulaiman, M.W.A., dkk., 2017. Chemical constituents and medical benefits of *Plantago major*. *Biomedicine & Pharmacotherapy*, **96**: 348–360.
- Alaca, K., Okumuş, E., Bakkalbaşı, E., dan Javidipour, I., 2022. Phytochemicals and antioxidant activities of twelve edible wild plants from Eastern Anatolia, Turkey. *Food Science and Technology*, **42**: e18021.
- Al-kuraishy, H.M., Al-Gareeb, A.I., Negm, W.A., Alexiou, A., dan Batiha, G.E.-S., 2022. Ursolic acid and SARS-CoV-2 infection: a new horizon and perspective. *Inflammopharmacology*, **30**: 1493–1501.
- Anfuso, C.D., Giurdanella, G., Longo, A., Cosentino, A., Agafonova, A., Rusciano, D., dkk., 2022. Antioxidant Activity of Cyanidin-3-O-Glucoside and Verbascoside in an in Vitro Model of Diabetic Retinopathy. *Frontiers in Bioscience-Landmark*, **27**: 308.
- Anju, V.T., Busi, S., Mohan, M.S., Ranganathan, S., Ampasala, D.R., Kumavath, R., dkk., 2022. In vivo, in vitro and molecular docking studies reveal the anti-virulence property of hispidulin against *Pseudomonas aeruginosa* through the modulation of quorum sensing. *International Biodeterioration & Biodegradation*, **174**: 105487.
- Archibong, A.E., Rideout, M.L., Harris, K.J., dan Ramesh, A., 2018. Oxidative stress in reproductive toxicology. *Current Opinion in Toxicology*, **7**: 95–101.
- Arrebola-Liébanas, F.J., Romero-González, R., dan Garrido Frenich, A., 2017. HRMS, dalam: *Applications in High Resolution Mass Spectrometry*. Elsevier, hal. 1–14.
- Aryal, B., Adhikari, B., Aryal, N., Bhattarai, B.R., Khadayat, K., dan Parajuli, N., 2021. LC-HRMS Profiling and Antidiabetic, Antioxidant, and Antibacterial Activities of *Acacia catechu* (L.f.) Willd. *BioMed Research International*, **2021**: 1–16.
- Behbahani, A., Fooladi, I., dan Ali, A., 2021. Modeling of Ultrasound-Assisted Extraction, Chemical Composition, Antioxidant Activity, Rheological Aspects, and Biological Properties of “Barhang-e-Kabir” Mucilage. *Iran. J. Chem. Chem. Eng.*, **40**: .
- Bento, D., Borchard, G., Gonçalves, T., dan Borges, O., 2013. Validation of a New 96-Well Plate Spectrophotometric Method for the Quantification of Compound 48/80 Associated with Particles. *AAPS PharmSciTech*, **14**: 649–655.

- Biancolillo, A. dan Marini, F., 2018. Chemometric Methods for Spectroscopy-Based Pharmaceutical Analysis. *Frontiers in Chemistry*, **6**: 576.
- Butkeviciute, A., Petrikaite, V., Jurgaityte, V., Liaudanskas, M., dan Janulis, V., 2021. Antioxidant, Anti-Inflammatory, and Cytotoxic Activity of Extracts from Some Commercial Apple Cultivars in Two Colorectal and Glioblastoma Human Cell Lines. *Antioxidants*, **10**: 1098.
- Buvé, C., Saeys, W., Rasmussen, M.A., Neckebroek, B., Hendrickx, M., Grauwet, T., dkk., 2022. Application of multivariate data analysis for food quality investigations: An example-based review. *Food Research International*, **151**: 110878.
- Campos, A.M. dan Lissi, E.A., 1997. Kinetics of the reaction between 2,2'-azinobis (3-ethylbenzothiazoline-6-sulfonic acid (ABTS) derived radical cations and phenols. *International Journal of Chemical Kinetics*, **29**: 219–224.
- Carrasco-Sandoval, J., Falcó, I., Sánchez, G., Fabra, M.J., López-Rubio, A., Rodriguez, A., dkk., 2022. Multivariable optimization of ultrasound-assisted extraction for the determination of phenolic and antioxidants compounds from arrayan (*Luma apiculata* (DC.) Burret) leaves by microplate-based methods and mass spectrometry. *Journal of Applied Research on Medicinal and Aromatic Plants*, **28**: 100356.
- Chang, C.-J., Hung, Y.-L., Chen, T.-C., Li, H.-J., Lo, Y.-H., Wu, N.-L., dkk., 2021. Anti-Proliferative and Anti-Migratory Activities of Hispidulin on Human Melanoma A2058 Cells. *Biomolecules*, **11**: 1039.
- Chen, Y., Sun, J., Zhang, Z., Liu, X., Wang, Q., dan Yu, Y., 2022. The potential effects and mechanisms of hispidulin in the treatment of diabetic retinopathy based on network pharmacology. *BMC Complementary Medicine and Therapies*, **22**: 141.
- Costea, L., Chițescu, C.L., Boscencu, R., Ghica, M., Lupuliasa, D., Mihai, D.P., dkk., 2022. The Polyphenolic Profile and Antioxidant Activity of Five Vegetal Extracts with Hepatoprotective Potential. *Plants*, **11**: 1680.
- Dadi, D.W., Emire, S.A., Hagos, A.D., dan Eun, J.B., 2019. Effect of Ultrasound-Assisted Extraction of *Moringa stenopetala* Leaves on Bioactive Compounds and Their Antioxidant Activity. *Food technology and biotechnology*, **57**: 77–86.
- Dai, L.-M., Zhao, C.-C., Jin, H., Tang, J., Shen, Y.-H., Li, H.-L., dkk., 2008. A new ferulic acid ester and other constituents from *Dracocephalum peregrinum*. *Archives of Pharmacal Research*, **31**: 1325–1329.

- De Stefani, C., Vasarri, M., Salvatici, M.C., Grifoni, L., Quintela, J.C., Bilia, A.R., dkk., 2022. Microemulsions Enhance the In Vitro Antioxidant Activity of Oleanolic Acid in RAW 264.7 Cells. *Pharmaceutics*, **14**: 2232.
- Dong, W., Hong, Q., Cheng, J., He, H., Li, Y., Hu, R., dkk., 2023. Simultaneous analysis of the oxidation of solvent-extracted and cold-pressed green coffee oil during accelerated storage using 1H NMR and 13C NMR spectroscopy. *Food Research International*, **165**: 112470.
- Du, Y., Han, Y., Zhang, R., Zhang, Y., Bao, S., dan Cao, Y., 2022. Dietary baicalein improves growth performance, antioxidant activity, and intestinal flora of koi carp (*Cyprinus carpio*). *Aquaculture Reports*, **27**: 101421.
- Engelsen, S.B., Savorani, F., dan Rasmussen, M.A., 2013. Chemometric Exploration of Quantitative NMR Data, dalam: Harris, R.K. dan Wasylishen, R.L. (Editor), *eMagRes*. John Wiley & Sons, Ltd, Chichester, UK, hal. emrstml304.
- Erel, O., 2004. A novel automated direct measurement method for total antioxidant capacity using a new generation, more stable ABTS radical cation. *Clinical Biochemistry*, **37**: 277–285.
- Farcaș, A.D., Moț, A.C., Pârvu, A.E., Toma, V.Al., Popa, M.A., Mihai, M.C., dkk., 2019. *In Vivo* Pharmacological and Anti-inflammatory Evaluation of Xerophyte *Plantago sempervirens* Crantz. *Oxidative Medicine and Cellular Longevity*, **2019**: 1–13.
- Fernández-Aparicio, Á., Correa-Rodríguez, M., Castellano, J.M., Schmidt-RioValle, J., Perona, J.S., dan González-Jiménez, E., 2022. Potential Molecular Targets of Oleanolic Acid in Insulin Resistance and Underlying Oxidative Stress: A Systematic Review. *Antioxidants*, **11**: 1517.
- Fernández-Ochoa, Á., Leyva-Jiménez, F.J., De La Luz Cádiz-Gurrea, M., Pimentel-Moral, S., dan Segura-Carretero, A., 2021. The Role of High-Resolution Analytical Techniques in the Development of Functional Foods. *International Journal of Molecular Sciences*, **22**: 3220.
- Food And Drug Administration, 2020. *Methods, Method Verification and Validation*. Office Of Regulatory Affairs.
- Froldi, G., Djeujo, F.M., Bulf, N., Caparelli, E., dan Ragazzi, E., 2022. Comparative Evaluation of the Antiglycation and Anti- $\alpha$ -Glucosidase Activities of Baicalein, Baicalin (Baicalein 7-O-Glucuronide) and the Antidiabetic Drug Metformin. *Pharmaceutics*, **14**: 2141.

- Gao, Z.-X., Zhang, Z.-S., Qin, J., Zhang, M.-Z., Cao, J.-L., Li, Y.-Y., dkk., 2023. Aucubin enhances the antitumor activity of cisplatin through the inhibition of PD-L1 expression in hepatocellular carcinoma. *Phytomedicine*, **112**: 154715.
- Genc, Y., Dereli, F.T.G., Saracoglu, I., dan Akkol, E.K., 2020. The inhibitory effects of isolated constituents from *Plantago major* subsp. *major* L. on collagenase, elastase and hyaluronidase enzymes: Potential wound healer. *Saudi Pharmaceutical Journal*, **28**: 101–106.
- Gonçalves, S., Moreira, E., Andrade, P.B., Valentão, P., dan Romano, A., 2019. Effect of in vitro gastrointestinal digestion on the total phenolic contents and antioxidant activity of wild Mediterranean edible plant extracts. *European Food Research and Technology*, **245**: 753–762.
- González-Silva, N., Nolasco-González, Y., Aguilar-Hernández, G., Sáyago-Ayerdi, S.G., Villagrán, Z., Acosta, J.L., dkk., 2022. Ultrasound-Assisted Extraction of Phenolic Compounds from *Psidium cattleianum* Leaves: Optimization Using the Response Surface Methodology. *Molecules*, **27**: 3557.
- Goyal, A., Kushwah, P.S., dan Agrawal, N., 2022. Therapeutic Potential of Plantamajoside. *Revista Brasileira de Farmacognosia*, **32**: 355–364.
- Gross, J.H., 2017. *Mass Spectrometry*. Springer International Publishing, Cham.
- Henn, J.G., Steffens, L., De Moura Sperotto, N.D., De Souza Ponce, B., Veríssimo, R.M., Boaretto, F.B.M., dkk., 2019. Toxicological evaluation of a standardized hydroethanolic extract from leaves of *Plantago australis* and its major compound, verbascoside. *Journal of Ethnopharmacology*, **229**: 145–156.
- Hertiani, T., Ikawati, Z., Murwanti, Retno, dan Damayanti, Ema, 2023. Proposal Produk RIIM. Laporan Tidak Dipublikasi, Badan Riset Inovasi Nasional.
- Huang, D., Wang, J., Li, F., Xie, M., Qu, Q., Wang, Y., dkk., 2023. Optimization of the ultrasound-assisted extraction for phenolic compounds content and antioxidant activity of *Cortex fraxini* using response surface methodology. *European Journal of Wood and Wood Products*, **81**: 685–697.
- Hyun, M.K., Kim, D.H., Park, C.H., Noh, S.G., Choi, S., Lee, J.Y., dkk., 2022. Protective mechanisms of loquat leaf extract and ursolic acid against diabetic pro-inflammation. *Journal of Molecular Medicine*, **100**: 1455–1464.
- ich-guideline-q2r2-validation-analytical-procedures-step-2b\_en.pdf, n.d.
- International Council For Harmonisation, 2022. *GUIDELINE OF TECHNICAL REQUIREMENTS FOR PHARMACEUTICALS FOR HUMAN USE ON*

*VALIDATION OF ANALYTICAL PROCEDURES Q2(R2)*. Committee for Medicinal Products for Human Use.

- Iqbal, Y., Ponnampalam, E.N., Cottrell, J.J., Suleria, H.A.R., dan Dunshea, F.R., 2022. Extraction and characterization of polyphenols from non-conventional edible plants and their antioxidant activities. *Food Research International*, **157**: 111205.
- Irakli, M., Skendi, A., Bouloumpasi, E., Christaki, S., Biliaderis, C.G., dan Chatzopoulou, P., 2023. Sustainable Recovery of Phenolic Compounds from Distilled Rosemary By-Product Using Green Extraction Methods: Optimization, Comparison, and Antioxidant Activity. *Molecules*, **28**: 6669.
- Iskender, H., Dokumacioglu, E., Terim Kapakin, K.A., Bolat, I., Mokhtare, B., Hayirli, A., dkk., 2023. Effect of Oleanolic acid administration on hepatic AMPK, SIRT-1, IL-6 and NF- $\kappa$ B levels in experimental diabetes. *Journal of Diabetes & Metabolic Disorders*, **22**: 581–590.
- Islam, T., Yu, X., dan Xu, B., 2016. Phenolic profiles, antioxidant capacities and metal chelating ability of edible mushrooms commonly consumed in China. *LWT - Food Science and Technology*, **72**: 423–431.
- Jha, A.K. dan Sit, N., 2022. Extraction of bioactive compounds from plant materials using combination of various novel methods: A review. *Trends in Food Science & Technology*, **119**: 579–591.
- Jiang, Y., Li, Z., Ma, Q., Dong, W., Yao, Q., dan Yu, D., 2023. Aucubin protects mouse cochlear hair cells from cisplatin-induced ototoxicity via activation of the PI3K/AKT/STAT3 pathway. *Biochemical Pharmacology*, **209**: 115440.
- Jo Atilde O, D.R.L.N., Amanda, D.D.A.U.J.U.O.A., Priscila, A.D.M., Clovis, M.E.D.B.F., Juciara, C.G.T.O.R., Alexandre, G.D.S., dkk., 2016. Phytochemical screening, total phenolic content and antioxidant activity of some plants from Brazilian flora. *Journal of Medicinal Plants Research*, **10**: 409–416.
- Kalogiouri, N.P., Aalizadeh, R., Dasenaki, M.E., dan Thomaidis, N.S., 2020a. Application of High Resolution Mass Spectrometric methods coupled with chemometric techniques in olive oil authenticity studies - A review. *Analytica Chimica Acta*, **1134**: 150–173.
- Kalogiouri, N.P., Aalizadeh, R., Dasenaki, M.E., dan Thomaidis, N.S., 2020b. Application of High Resolution Mass Spectrometric methods coupled with chemometric techniques in olive oil authenticity studies - A review. *Analytica Chimica Acta*, **1134**: 150–173.

Karima et al. - ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF PLANTA.pdf, n.d.

Karima, S., Farida, S., dan Mihoub, Z.M., 2015. ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF PLANTAGO MAJOR 7: .

Kartini K, K., Islamie, R., dan Handojo, C.S., 2018. Wound Healing Activity of Aucubin on Hyperglycemic Rat. *Journal of Young Pharmacists*, **10**: S136–S139.

Kartini, K., Wati, N., Gustav, R., Wahyuni, R., Anggada, Y.F., Hidayani, R., dkk., 2021. Wound healing effects of *Plantago major* extract and its chemical compounds in hyperglycemic rats. *Food Bioscience*, **41**: 100937.

Kartini, Piyaviriyakul, S., Siripong, P., dan Vallisuta, O., 2014. HPTLC simultaneous quantification of triterpene acids for quality control of *Plantago major* L. and evaluation of their cytotoxic and antioxidant activities. *Industrial Crops and Products*, **60**: 239–246.

Kartini, Piyaviriyakul, S., Thongpraditchote, S., Siripong, P., dan Vallisuta, O., 2017. Effects of *Plantago major* extracts and its chemical compounds on proliferation of cancer cells and cytokines production of lipopolysaccharide-activated THP-1 macrophages. *Pharmacognosy Magazine*, **13**: 393.

Kasiotis, K.M., Baira, E., Iosifidou, S., Bergele, K., Manea-Karga, E., Theologidis, I., dkk., 2022. Characterization of Ikaria Heather Honey by Untargeted Ultrahigh-Performance Liquid Chromatography-High Resolution Mass Spectrometry Metabolomics and Melissopalynological Analysis. *Frontiers in Chemistry*, **10**: 924881.

Kassambara, A., 2017. *Practical Guide to Principal Component Methods in R*, 1st ed.

Kedare, S.B. dan Singh, R.P., 2011. Genesis and development of DPPH method of antioxidant assay. *Journal of Food Science and Technology*, **48**: 412–422.

Kędzierska-Matysek, M., Stryjecka, M., Teter, A., Skąlecki, P., Domaradzki, P., dan Florek, M., 2021a. Relationships between the Content of Phenolic Compounds and the Antioxidant Activity of Polish Honey Varieties as a Tool for Botanical Discrimination. *Molecules*, **26**: 1810.

Kędzierska-Matysek, M., Stryjecka, M., Teter, A., Skąlecki, P., Domaradzki, P., dan Florek, M., 2021b. Relationships between the Content of Phenolic Compounds and the Antioxidant Activity of Polish Honey Varieties as a Tool for Botanical Discrimination. *Molecules*, **26**: 1810.

Khalil, M.N.A., Afifi, S.M., Eltanany, B.M., Pont, L., Benavente, F., El-Sonbaty, S.M., dkk., 2024. Assessment of the effect of drying on Brassica greens via a



multiplex approach based on LC-QTOF-MS/MS, molecular networking, and chemometrics along with their antioxidant and anticancer activities. *Food Research International*, **180**: 114053.

- Khatua, S., Ghosh, S., dan Acharya, K., 2017. Simplified Methods for Microtiter Based Analysis of In Vitro Antioxidant Activity. *Asian Journal of Pharmaceutics*, .
- Kukavica, B., Škondrić, S., Trifković, T., Mišić, D., Gašić, U., Topalić-Trivunović, L., dkk., 2024. Comparative polyphenolic profiling of five ethnomedicinal plants and their applicative potential in the treatment of type 2 diabetes. *Journal of Ethnopharmacology*, **320**: 117377.
- Le-Thi Anh-Dao, Le Nhon-Duc, Nguyen Cong-Hau, dan Nguyen Thanh-Nho, 2021. Variability of Total Polyphenol Contents in Ground Coffee Products and Their Antioxidant Capacities through Different Reaction Mechanisms. *Biointerface Research in Applied Chemistry*, **12**: 4857–4870.
- Li, J., Chen, Z., Shi, H., Yu, J., Huang, G., dan Huang, H., 2023. Ultrasound-assisted extraction and properties of polysaccharide from Ginkgo biloba leaves. *Ultrasonics Sonochemistry*, **93**: 106295.
- Li, Y., Han, R., dan Cao, W., 2020. Plantamajoside modulates the proliferation, stemness, and apoptosis of lung carcinoma via restraining p38MAPK and AKT phosphorylation. *Translational Cancer Research*, **9**: 3828–3841.
- Lin, S., Lu, J., Chen, Q., Jiang, H., Lou, C., Lin, C., dkk., 2023. Plantamajoside suppresses the activation of NF- $\kappa$ B and MAPK and ameliorates the development of osteoarthritis. *International Immunopharmacology*, **115**: 109582.
- Liu, F., Huang, X., He, J., Song, C., Peng, L., Chen, T., dkk., 2019. Plantamajoside attenuates inflammatory response in LPS-stimulated human gingival fibroblasts by inhibiting PI3K/AKT signaling pathway. *Microbial Pathogenesis*, **127**: 208–211.
- Lu, W.-C., Chiu, C.-S., Chan, Y.-J., Mulio, A.T., dan Li, P.-H., 2023. Characterization and biological properties of marine by-product collagen through ultrasound-assisted extraction. *Aquaculture Reports*, **29**: 101514.
- Maisto, M., Piccolo, V., Novellino, E., Schiano, E., Iannuzzo, F., Ciampaglia, R., dkk., 2023. Optimization of Ursolic Acid Extraction in Oil from Annurca Apple to Obtain Oleolytes with Potential Cosmeceutical Application. *Antioxidants*, **12**: 224.

- Mani, J.V., Gupta, A.K., dan Mukerjee, A., 2017. Quantitative Study of Total Phenolic Content and in-vitro Antioxidant Activity of Aerial Part Extracts of *Plantago major* L. *J. Pharm. Sci.*, **9**: .
- Martynko, E. dan Kirsanov, D., 2020. Application of Chemometrics in Biosensing: A Brief Review. *Biosensors*, **10**: 100.
- Maryam, S., Baits, M., dan Nadia, A., 2016. PENGUKURAN AKTIVITAS ANTIOKSIDAN EKSTRAK ETANOL DAUN KELOR (*Moringa oleifera* Lam.) MENGGUNAKAN METODE FRAP (Ferric Reducing Antioxidant Power). *Jurnal Fitofarmaka Indonesia*, **2**: 115–118.
- Metias, Y.M., Hosny, M.M., Ayad, M.M., dan Kaji, N., 2022. High - throughput spectrofluorimetric approach for one-step, sensitive, and green assays of alfuzosin hydrochloride using a 96-well microplate reader: Application to tablet formulations and human urine. *Talanta Open*, **6**: 100139.
- Miller, J.N. dan Miller, J.C., 2010. *Statistics and Chemometrics for Analytical Chemistry*, 6th ed. ed. Prentice Hall/Pearson, Harlow.
- MKS Umetrics, 1992. *SIMCA User Guide*, 14. Sweden.
- Molyneux, P., 2004. The use of the stable free radical diphenylpicryl- hydrazyl (DPPH) for estimating antioxidant activity **26**: .
- Mondal, R., Negi, D.A., dan Mishra, D.M., 2021. PLANTAGO MAJOR L A CYNOSURE OF MODERN MEDICINE: A REVIEW. *World Journal of Pharmaceutical Research*, .
- Munteanu, I.G. dan Apetrei, C., 2021. Analytical Methods Used in Determining Antioxidant Activity: A Review. *International Journal of Molecular Sciences*, **22**: 3380.
- Najafian, Y., Hamed, S.S., Kaboli Farshchi, M., dan Feyzabadi, Z., 2018. *Plantago major* in Traditional Persian Medicine and modern phytotherapy: a narrative review. *Electronic Physician*, **10**: 6390–6399.
- Nannoni, G., Volterrani, G., Mattarocci, A., Bertona, M., dan Emanuele, E., 2020. A proprietary herbal extract titred in verbascoside and aucubin suppresses lipopolysaccharide-stimulated expressions of cyclooxygenase-2 in human neutrophils. *Central European Journal of Immunology*, **45**: 125–129.
- Nikaeen, G., Yousefinejad, S., Rahmdel, S., Samari, F., dan Mahdavinia, S., 2020. Central Composite Design for Optimizing the Biosynthesis of Silver Nanoparticles using *Plantago major* Extract and Investigating Antibacterial, Antifungal and Antioxidant Activity. *Scientific Reports*, **10**: 9642.



- Niknam, R., Ghanbarzadeh, B., Ayaseh, A., dan Rezagholi, F., 2020. Barhang (*Plantago major* L.) seed gum: Ultrasound-assisted extraction optimization, characterization, and biological activities. *Journal of Food Processing and Preservation*, **44**: .
- Noviany, N., Amrulloh, M.H., Mohamad Rafi, M.R., Bambang Irawan, B.I., Wisnu Ananta Kusuma, W.A.K., Sutopo Hadi, S.H., dkk., 2023. FTIR-Based Metabolomics for Characterization of Antioxidant Activity of Different Parts of *Sesbania grandiflora* Plant. *Sains Malaysiana*, **52**: 165–174.
- Núñez, N., Vidal-Casanella, O., Sentellas, S., Saurina, J., dan Núñez, O., 2020. Characterization, Classification and Authentication of Turmeric and Curry Samples by Targeted LC-HRMS Polyphenolic and Curcuminoid Profiling and Chemometrics. *Molecules*, **25**: 2942.
- Odun-Ayo, F., Chetty, K., dan Reddy, L., 2022. Determination of the ursolic and oleanolic acids content with the antioxidant capacity in apple peel extract of various cultivars. *Brazilian Journal of Biology*, **82**: e258442.
- ORA Lab Manual Vol. II Section 5.4.5 Methods-Method Verification and Validation.pdf, n.d.
- Panara, A., Gikas, E., Tzavellas, I., dan Thomaidis, N.S., 2023. Comprehensive HRMS Chemical Characterization of Pomegranate-Based Antioxidant Drinks via a Newly Developed Suspect and Target Screening Workflow. *Molecules*, **28**: 4986.
- Pastor, F.T., Šegan, D.M., Gorjanović, S.Ž., Kalušević, A.M., dan Sužnjević, D.Ž., 2020. Development of voltammetric methods for antioxidant activity determination based on Fe(III) reduction. *Microchemical Journal*, **155**: 104721.
- Patel, K. dan Patel, D.K., 2017. Medicinal importance, pharmacological activities, and analytical aspects of hispidulin: A concise report. *Journal of Traditional and Complementary Medicine*, **7**: 360–366.
- Pierre Luhata, L. dan Usuki, T., 2022. Free radical scavenging activities of verbascoside and isoverbascoside from the leaves of *Odontonema strictum* (Acanthaceae). *Bioorganic & Medicinal Chemistry Letters*, **59**: 128528.
- Procházková, D., Boušová, I., dan Wilhelmová, N., 2011. Antioxidant and prooxidant properties of flavonoids. *Fitoterapia*, **82**: 513–523.
- Ren, X., Bao, Y., Zhu, Y., Liu, S., Peng, Z., Zhang, Y., dkk., 2019. Isorhamnetin, Hispidulin, and Cirsimaritin Identified in *Tamarix ramosissima* Barks from Southern Xinjiang and Their Antioxidant and Antimicrobial Activities. *Molecules*, **24**: 390.

- Ren, X., Guo, X., Liu, C., Jing, S., Wang, T., Wang, L., dkk., 2022. Natural flavone hispidulin protects mice from *Staphylococcus aureus* pneumonia by inhibition of  $\alpha$ -hemolysin production via targeting AgrAC. *Microbiological Research*, **261**: 127071.
- Rumpf, J., Burger, R., dan Schulze, M., 2023a. Statistical evaluation of DPPH, ABTS, FRAP, and Folin-Ciocalteu assays to assess the antioxidant capacity of lignins. *International Journal of Biological Macromolecules*, **233**: 123470.
- Rumpf, J., Burger, R., dan Schulze, M., 2023b. Statistical evaluation of DPPH, ABTS, FRAP, and Folin-Ciocalteu assays to assess the antioxidant capacity of lignins. *International Journal of Biological Macromolecules*, **233**: 123470.
- Saidi, F., Khetari, S., Yahia, I.S., Zahran, H.Y., Hidouri, T., dan Ameer, N., 2022. The use of principal component analysis (PCA) and partial least square (PLS) for designing new hard inverse perovskites materials. *Computational Condensed Matter*, **31**: e00667.
- Saifullah, M., McCullum, R., McCluskey, A., dan Vuong, Q., 2020. Comparison of conventional extraction technique with ultrasound assisted extraction on recovery of phenolic compounds from lemon scented tea tree (*Leptospermum petersonii*) leaves. *Heliyon*, **6**: e03666.
- Sari, K.R.P., Ikawati, Z., Danarti, R., dan Hertiani, T., 2023. Micro-titer plate assay for measurement of total phenolic and total flavonoid contents in medicinal plant extracts. *Arabian Journal of Chemistry*, **16**: 105003.
- Sari, K.R.P., Ikawati, Z., Danarti, R., Nafiisah, N.H., dan Hertiani, T., 2024. ASSESSING THE EFFECTIVITY OF ULTRASOUND-ASSISTED EXTRACTION OF *Plantago major* LEAVES BASED ON THE AUCUBIN LEVEL DETERMINATION USING VALIDATED RP/HPLC-PDA METHOD. *Jurnal of Advanced Pharmaceutical Technology & Research*, **15**: .
- Sharma, O.P. dan Bhat, T.K., 2009. DPPH antioxidant assay revisited. *Food Chemistry*, **113**: 1202–1205.
- Shirley, K.P., Windsor, L.J., Eckert, G.J., dan Gregory, R.L., 2017. In Vitro Effects of *Plantago Major* Extract, Aucubin, and Baicalein on *Candida Albicans* Biofilm Formation, Metabolic Activity, and Cell Surface Hydrophobicity. *Journal of Prosthodontics*, **26**: 508–515.
- Srivastava, S., Mathew, J., dan Pandey, A.C., 2023. Baicalein—A review on its molecular mechanism against breast cancer and delivery strategies. *Medicinal Chemistry Research*, **32**: 643–658.

- Stanisavljević, I.T., Stojičević, S.S., Veličković, D.T., Lazić, M.L., dan Veljković, V.B., 2008. Screening the Antioxidant and Antimicrobial Properties of the Extracts from Plantain ( *Plantago Major* L.) Leaves. *Separation Science and Technology*, **43**: 3652–3662.
- Thilakarathna, R.C.N., Siow, L.F., Tang, T.-K., dan Lee, Y.Y., 2023. A review on application of ultrasound and ultrasound assisted technology for seed oil extraction. *Journal of Food Science and Technology*, **60**: 1222–1236.
- Tungmunthum, D., Garros, L., Drouet, S., Renouard, S., Lainé, E., dan Hano, C., 2019. Green Ultrasound Assisted Extraction of trans Rosmarinic Acid from *Plectranthus scutellarioides* (L.) R.Br. Leaves. *Plants*, **8**: 50.
- Umar, A.H., Ratnadewi, D., Rafi, M., dan Sulistyaningsih, Y.C., 2021. Untargeted Metabolomics Analysis Using FTIR and UHPLC-Q-Orbitrap HRMS of Two *Curculigo* Species and Evaluation of Their Antioxidant and  $\alpha$ -Glucosidase Inhibitory Activities. *Metabolites*, **11**: 42.
- Vandana, J., K, G.A., dan Mukerjee, A., 2017. PHYTOCHEMICAL SCREENING AND EVALUATION OF ANTI-INFLAMMATORY ACTIVITY OF AERIAL PART EXTRACTS OF *PLANTAGO MAJOR* L. *Asian Journal of Pharmaceutical and Clinical Research*, **10**: 307.
- Vifta, R.L., Mafitasari, D., dan Rahman, E., 2020. SKRINING ANTIOKSIDAN DAN AKTIFITAS ANTIDIABETES EKSTRAK TERPURIKASI ETIL ASETAT KOPI HIJAU ARABIKA (*Coffea arabica* L.) SECARA SPEKTROFOTOMETRI UV-Vis. *Jurnal Zarah*, **8**: 62–68.
- Wang, Y., Qian, J., Cao, J., Wang, D., Liu, C., Yang, R., dkk., 2017. Antioxidant Capacity, Anticancer Ability and Flavonoids Composition of 35 Citrus (*Citrus reticulata* Blanco) Varieties. *Molecules*, **22**: 1114.
- Willigis Danu Patria dan C.J.Soegihardjo, 2013. Uji Aktivitas Antioksidan Menggunakan Radikal 1,1-Difenil-2-Pikrilhidrazil (DPPH) dan Penetapan Kandungan Fenolik Total Fraksi Etil Asetat Ekstrak Etanolik Daun Benalu (*Dendrophthoe pentandra* L. Miq.) Yang Tumbuh di Pohon Kepek (*Stelechocarpus burahol* (Bl.) Hook. f.). *JURNAL FARMASI SAINS DAN KOMUNITAS*, **10**: 51–60.
- Wu, F., Li, S., Zhang, N., Huang, W., Li, X., Wang, M., dkk., 2018. Hispidulin alleviates high-glucose-induced podocyte injury by regulating protective autophagy. *Biomedicine & Pharmacotherapy*, **104**: 307–314.
- Wu, L., Georgiev, M.I., Cao, H., Nahar, L., El-Seedi, H.R., Sarker, S.D., dkk., 2020. Therapeutic potential of phenylethanoid glycosides: A systematic review. *Medicinal Research Reviews*, **40**: 2605–2649.

- Xiao, D., Yang, R., Gong, L., Zhang, Y., Xie, Y., dan Ni, S., 2021. Plantamajoside inhibits high glucose-induced oxidative stress, inflammation, and extracellular matrix accumulation in rat glomerular mesangial cells through the inactivation of Akt/NF- $\kappa$ B pathway. *Journal of Receptors and Signal Transduction*, **41**: 45–52.
- Xu, H., Yu, H., Fu, J., Zhang, Z.-W., Hu, J.-C., Lu, J.-Y., dkk., 2023. Metabolites analysis of plantamajoside based on gut microbiota-drug interaction. *Phytomedicine*, **116**: 154841.
- Xu, Y., Chen, G., dan Guo, M., 2021. Correlations between phytochemical fingerprints of *Moringa oleifera* leaf extracts and their antioxidant activities revealed by chemometric analysis. *Phytochemical Analysis*, **32**: 698–709.
- Xu, Y.-B., Chen, G.-L., dan Guo, M.-Q., 2019. Antioxidant and Anti-Inflammatory Activities of the Crude Extracts of *Moringa oleifera* from Kenya and Their Correlations with Flavonoids. *Antioxidants*, **8**: 296.
- Xue, X., Jiao, Q., Jin, R., Wang, X., Li, P., Shi, S., dkk., 2021. The combination of UHPLC-HRMS and molecular networking improving discovery efficiency of chemical components in Chinese Classical Formula. *Chinese Medicine*, **16**: 50.
- Yang, J., Wu, Y., Wang, H., Yang, W., Xu, Z., Liu, D., dkk., 2022. An Improved Automated High-Throughput Efficient Microplate Reader for Rapid Colorimetric Biosensing. *Biosensors*, **12**: 284.
- Yang, J.-Y., Ma, Y.-X., Liu, Y., Peng, X.-J., dan Chen, X.-Z., 2023. A Comprehensive Review of Natural Flavonoids with Anti-SARS-CoV-2 Activity. *Molecules*, **28**: 2735.
- Yang, Y., Xie, J., Wang, Q., Deng, Y., Zhu, L., Zhu, J., dkk., 2024. Understanding the dynamic changes of volatile and non-volatile metabolites in black tea during processing by integrated volatolomics and UHPLC-HRMS analysis. *Food Chemistry*, **432**: 137124.
- Yin, W., Xu, J., Li, C., Dai, X., Wu, T., dan Wen, J., 2020. Plantamajoside inhibits the proliferation and epithelial-to-mesenchymal transition in hepatocellular carcinoma cells via modulating hypoxia-inducible factor-1 $\alpha$ -dependent gene expression. *Cell Biology International*, **44**: 1616–1627.
- Zeng, X., Guo, F., dan Ouyang, D., 2020. A review of the pharmacology and toxicology of aucubin. *Fitoterapia*, **140**: 104443.
- Zeng, Z., Sun, Z., Wu, C.-Y., Long, F., Shen, H., Zhou, J., dkk., 2024. Quality evaluation of *Pterocephali Herba* through simultaneously quantifying 18

bioactive components by UPLC-TQ-MS/MS analysis. *Journal of Pharmaceutical and Biomedical Analysis*, **238**: 115828.

Zhang, C., Zheng, X., Ni, H., Li, P., dan Li, H.-J., 2018. Discovery of quality control markers from traditional Chinese medicines by fingerprint-efficacy modeling: Current status and future perspectives. *Journal of Pharmaceutical and Biomedical Analysis*, **159**: 296–304.

Zhang, X.-H., Qing, X.-D., Mu, S.-T., Wang, D., Zheng, J.-J., Zhou, S.-J., dkk., 2021. Authentication of honey of different nectar sources and antioxidant property evaluation by phenolic composition analysis with chemometrics. *Food Control*, **124**: 107900.

Zhu, M.-Z., Wu, W., Jiao, L.-L., Yang, P.-F., dan Guo, M.-Q., 2015. Analysis of Flavonoids in Lotus (*Nelumbo nucifera*) Leaves and Their Antioxidant Activity Using Macroporous Resin Chromatography Coupled with LC-MS/MS and Antioxidant Biochemical Assays. *Molecules*, **20**: 10553–10565.