

DAFTAR PUSTAKA

- Afrouzan, H., Tahghighi, A., Zakeri, S., & Es-haghi, A. (2018). *Chemical composition and antimicrobial activities of Iranian propolis. Iranian Biomedical Journal*, 22(1), 50–65. PMID: 28558440 (Free access via PMC)
- Ahsan Itung, (2022) Kromatografi Lapis Tipis Prinsip dan Cara Kerja <https://www.researchgate.net/publication/365371173>
- Allo, I. S., Suryanto, E., & Koleangan, H. S. J. (2022). Aktivitas antioksidan fenolik bebas dan terikat dari tepung cangkang pala (*Myristica fragrans* Houtt). *Chemistry Progress*, 15(2), 83–88. <https://doi.org/10.35799/cp.15.2.2022.44496>
- Andersen, G., Christrup, L., & Sjøgren, P. (2003). *Relationships among morphine metabolism, pain and side effects during long-term treatment. J Pain Symptom Manage*, 25(1), 74–91. [https://doi.org/10.1016/S0885-3924\(02\)00531-6](https://doi.org/10.1016/S0885-3924(02)00531-6)
- Anjum, S. I., Ullah, A., Khan, K. A., Attaullah, M., Khan, H., Ali, H., Bashir, M. A., Tahir, M., Ansari, M. J., Ghramh, H. A., Adgaba, N., & Dash, C. K. (2019). Composition and functional properties of propolis (bee glue): A review. *Saudi Journal of Biological Sciences*, 26(7), 1695–1703. <https://doi.org/10.1016/j.sjbs.2019.03.010>
- Ayad, A. S., et al. (2025). Propolis stands out as a multifaceted natural product: Meta-analysis on its sources, bioactivities, applications, and future perspectives. *Life*, 15(5), 764. <https://www.mdpi.com/2075-1729/15/5/764>
- Ayipo, Y. O., Mordi, M. N., Mustapha, M., & Damodaran, T. (2021). Neuropharmacological potentials of β -carboline alkaloids for neuropsychiatric disorders. *European Journal of Pharmacology*, 893, 173837. <https://doi.org/10.1016/j.ejphar.2020.173837>
- Badiazaman, A. A. M., Zin, N. B. M., Annisava, A. R., Nafi, N. E. M., & Mohd, K. S. (2018). Phytochemical screening and antioxidant properties of stingless bee *Geniotrigona thoracica* propolis. *Malaysian Journal of Fundamental and Applied Sciences*, 15, 330–335.
- Bankova, V., Popova, M., & Trusheva, B. (2018). *Botanical origin and chemical composition of Brazilian propolis. Journal of Agricultural and Food Chemistry*, 66(33), 8699–8709. <https://doi.org/10.1021/acs.jafc.8b03413>
- Bouchelaghem, S., Ferhat, M., & Ghalem, B. R. (2022). Evaluation of Total Phenolic and Flavonoid Contents, Antibacterial and Antibiofilm Activities of Hungarian Propolis Ethanolic Extract against *Staphylococcus aureus*. *Molecules*, 27(2), 574. <https://doi.org/10.3390/molecules27020574>
- Bioassay-Guided Assessment of Antioxidative, Anti-Inflammatory and Antimicrobial Activities via High-Performance Thin-Layer Chromatography. (2023). *Pharmaceuticals*, 16(9), 1188. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10647317>
- Bull, J. N., da Silva, G., Scholz, M. S., Carrascosa, E., & Bieske, E. J. (2019). *Photoinitiated Intramolecular Proton Transfer in Deprotonated para-Coumaric Acid. The Journal of Physical Chemistry A*, 123(20), 4419–4430. <https://doi.org/10.1021/acs.jpca.9b02023>
- Bungihan, M. E., & Matias, C. A. (2013). Determination of the antioxidant, phytochemical and antibacterial profiles of flowers from selected ornamental plants in Nueva Vizcaya, Philippines. *Journal of Agricultural Science and Technology B*, 3(6), 833–841. <https://www.researchgate.net/publication/321315291>
- Carlin, M. G., Dean, J. R., & Ames, J. M. (2020). *Opium alkaloids in harvested and thermally processed poppy seeds. Frontiers in Chemistry*, 8, 737. <https://doi.org/10.3389/fchem.2020.00737>
- Cui, X., Li, Q., Sun, Y., Wang, R., & Pan, C. (2018). *Morphine and sufentanil treatment alters microRNA profiling in neurons. International Journal of Clinical and Experimental Medicine*, 11(6), 5992–5996.

- de Moraes, E. F., de Oliveira, L. Q. R., Moraes, H. G. F., de Medeiros, M. R. S., de Almeida Freitas, R., & Rodini, C. O. (2024). The anticancer potential of kaempferol: A systematic review based on in vitro studies. *Cancers*, 16(3), 585. <https://doi.org/10.3390/cancers16030585>
- Déji, J., Ráduly, C., Vodnar, C. D., Éhn, É., Székelyne Takács, B., Papp, A., Imre, S., & Olah, D. (2022). Antibacterial Activity of Romanian Propolis against *Staphylococcus aureus* Isolated from Dogs with Superficial Pyoderma: In Vitro Test. *Veterinary Sciences*, 9(6), 299. <https://doi.org/10.3390/vetsci9060299>
- Demiryürek, A. N., Göktürk, Ö., Saracaloglu, A., Demiryürek, Ş., & Demiryürek, A. T. (2023). Protective effects of verbenalin and (+)-eudesmin against 6-hydroxydopamine-induced oxidative/nitrosative stress in SH-SY5Y cells. *Molecular Biology Reports*, 50(1), 331–338. <https://doi.org/10.1007/s11033-022-08039-z>
- Di Liberto, M. G., Svetaz, L., Furlan, R., & Zacchino, S. (2010). Antifungal activity of saponin-rich extracts of *Phytolacca dioica* and of the saponin obtained through hydrolysis. *Natural Product Communications*, 5(7), 1013–1018. <https://doi.org/10.1177/1934578X1000500705>
- Du, Y., Tian, L., Wang, Y., Li, Z., & Xu, Z. (2023). Chemodiversity, pharmacological activity, and biosynthesis of specialized metabolites from medicinal model fungi *Ganoderma lucidum*. *Frontiers in Pharmacology*, 14, Article 1176543. <https://doi.org/10.3389/fphar.2023.1176543>
- Febby Olivari Derajathun. (2025). *Pertumbuhan koloni Staphylococcus aureus pada media agar* [Dokumentasi pribadi].
- Fikri, A. M., Sulaeman, A., Marliyati, S. A., & Fahrudin, M. (2019). Antioxidant activity and total phenolic content of stingless bee propolis from Indonesia. *Journal of Applied Sciences*, 19(2), 45–52. <https://sciendo.com/article/10.2478/jas-2019-0012>
- Gargouri, W., Elleuche, M., Fernández-Muiño, M. A., Sancho, M. T., & Osés, S. M. (2024). Microencapsulated propolis powder: A promising ingredient of chewing gum. *Powder Technology*, 440, 119777
- Gulsunoglu, Z., Tamer, C. E., & Sagdic, O. (2019). Potential of phenolic compounds from pomegranate (*Punica granatum* L.) by-product with significant antioxidant and therapeutic effects: A narrative review. *Journal of Functional Foods*, 57, 312–321. <https://doi.org/10.1016/j.jff.2019.04.053>
- Hafsah, H. et al. (2022) 'Peningkatan Pengetahuan Tentang Penyakit Degeneratif Pada Masyarakat Petani di Desa Laliko Sulawesi', *Kreativasi: Journal of Community Empowerment*, 1(2), pp. 63–71. doi: 10.33369/kreativasi.v1i2.23735.
- Hapsari, M. E. (2015). *Uji Aktivitas Antibakteri Ekstrak Herba Meniran (Phyllanthus niruri) terhadap Pertumbuhan Bakteri Bacillus cereus dan Escherichia coli* [Skripsi, Universitas Sanata Dharma, Yogyakarta]. Universitas Sanata Dharma.
- Harbone, J. B. (1987). *Metode fitokimia penuntun cara modern menganalisa tumbuhan*. Cetakan II, Diterjemahkan oleh K. Padawinata dan I. Soediro. Bandung: ITB
- Harmita, A. A. K., Harahap, Y., & Supandi. (2019). *Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)*. PT. ISFI Penerbitan.
- Harun, A., Abdul Aziz, N., Mohd Azenan, N. S., Muhammad Kamarazzaman, N. F. F., & Mat So'ad, S. Z. (2020). Antimicrobial efficacy, antioxidant profile and nine alternative active constituents from petroleum ether and ethyl acetate extract of *Entada spiralis*. *Malaysian Journal of Analytical Sciences*, 24(5), 814–823. https://mjas.analis.com.my/mjas/v24_n5/pdf/Aiza_24_5_8.pdf
- Hossain, R., Quispe, C., Khan, R. A., Saikat, A. S. M., Ray, P., Ongalbek, D., Yeskalyeva, B., Jain, D., Smeriglio, A., Trombetta, D., Kiani, R., Kobarfard, F., Mojgani, N., Saffarian, P., Ayatollahi, S. A., Sarkar, C., Islam, M. T., Keriman, D., Uçar, A., Martorell, M., Sureda, A., Pintus, G., Butnariu, M., Sharifi-Rad, J., & Cho, W. C. (2022). Propolis: An update on its chemistry and pharmacological applications. *Phytotherapy Research*, 36(5), 1867–1897. <https://doi.org/10.1002/ptr.7475>.
- Huang, H., Chen, J., Ren, J., Zhang, C., & Ji, F. (2019). Palladium(II)-Catalyzed Efficient Synthesis of Wedelolactone and Evaluation as Potential Tyrosinase Inhibitor. *Molecules*, 24(22), 4130. <https://doi.org/10.3390/molecules24224130>

- Huang, S., Zhang, C.-P., Wang, K., Li, G. Q., & Hu, F.-L. (2014). Recent advances in the chemical composition of propolis. *Molecules*, *19*(12), 19610–19632. <https://doi.org/10.3390/molecules191219610>.
- Identification of the phytochemical compounds. (2017). 1library.net. <https://1library.net/article/identification-of-the-phytochemical-compounds.ydkkndlq>
- Integrated Taxonomic Information System [ITIS]. (2012). *Integrated Taxonomic Information System*. Diakses dari <https://itis.gov>
- Isromarina, R., Imanda, Y. L., & Susanti, M. (2022). Aktivitas antibakteri ekstrak n-heksan, kloroform dan etanol daun nangka (*Artocarpus heterophyllus* Lam.) terhadap *Propionibacterium acnes* ATCC 11827. *Jurnal Penelitian Sains*, *24*(2), 78–82. <https://doi.org/10.56064/jps.v24i2.633>
- Jan, R., Khan, M., Asaf, S., Lubna, Asif, S., & Kim, K. M. (2022). Bioactivity and therapeutic potential of kaempferol and quercetin: New insights for plant and human health. *Plants*, *11*(19), 2623. <https://doi.org/10.3390/plants11192623>
- Jawetz E, Melnick JL, Adelberg EA. Mikrobiologi kedokteran. Edisi XX. Jakarta: EGC; 1996. HIMOeljanto RD. Khasiat dan manfaat daun sirih. Jakarta: Agromedia Pustaka; 2004. Hlm. 4, 57-8 m. 188-9, 211-7.
- Jawetz, E., Melnick, J. L., & Adelberg, E. A. (2008). *Medical Microbiology* (24th ed.). New York: McGraw-Hill
- Ju, M., Lee, J., Cho, O. H., & Nam, K. T. (2015). Tyrosine chemistry in materials and biology: A model system for redox-active amino acids in protein assembly. *Accounts of Chemical Research*, *48*(7), 1641–1649. <https://doi.org/10.1021/acs.accounts.5b00079>
- Karimela, E. J., Ijong, F. G., & Dien, H. A. (2017). Karakteristik *Staphylococcus aureus* yang diisolasi dari ikan asap Pinekuhe hasil olahan tradisional Kabupaten Sangihe. *Jurnal Pengolahan Hasil Perikanan Indonesia*, *20*(1), 188–198
- Khalid, T., Chang, C.-W., Ross, S. A., Naseer, F., Qadeer, A., Chen, C.-C., & Rafey, H. A. (2023). Traditional uses, botanical description, phytochemistry, and pharmacological activities of *Phytolacca acinosa*: A review. *Frontiers in Pharmacology*, *14*, 1213546. <https://doi.org/10.3389/fphar.2023.1213546>
- Kim, I.-S., Yoon, S.-J., Park, Y.-J., & Lee, H.-B. (2010). Ephedrannin A and B from roots of *Ephedra sinica* inhibit lipopolysaccharide-induced inflammatory mediators by suppressing NF- κ B activation in RAW 264.7 macrophages. *Phytomedicine*, *17*(8–9), 616–622. <https://doi.org/10.1016/j.phymed.2010.08.001>
- Kim, J. K., & Park, S. U. (2020). Recent studies on kaempferol and its biological and pharmacological activities. *EXCLI Journal*, *19*, 1323–1331. <https://doi.org/10.17179/excli2020-2162>
- Kuete, V., Omosa, L. K., Tala, V. R. S., Midiwo, J. O., Mbaveng, A. T., Swaleh, S., Karaosmanoğlu, O., & Sivas, H. (2016). Cytotoxicity of Plumbagin, Rapanone and 12 other naturally occurring quinones from Kenyan flora towards human carcinoma cells. *BMC Pharmacology and Toxicology*, *17*(1), 1–10. <https://doi.org/10.1186/s40360-016-0104-7>
- Kurek-Górecka, A., Górecki, M., Rzepecka-Stojko, A., Balwierz, R., & Stojko, J. (2020). Bee products in dermatology and skin care. *Molecules*, *25*(3), 556. <https://doi.org/10.3390/molecules25030556>
- Kustiawan, P. M., Syaifie, P. H., Siregar, K. A. A. K., Ibadillah, D., & Mardiyati, E. (2024). New insights of propolis nanoformulation and its therapeutic potential in human diseases. *ADMET & DMPK*, *12*(1), 1–26. <https://doi.org/10.5599/admet.2128>
- Kustiawan, P. M., Yanti, E. N., Nisa, K., Zulfa, A. F., & Batistuta, M. A. (2023). Bioactivity of *Heterotrigona itama* Propolis as Anti-Inflammatory: A Review. *BRIAC*, *13*(4), 326–350. <https://doi.org/10.33263/BRIAC134.326>
- Lee, J. J., Oh, C.-H., Yang, J. H., Baek, N.-I., Kim, S.-H., Cho, C. H., & Kim, D. K. (2010). Cytotoxic alkaloids from the wood of *Picrasma quassioides*. *Archives of Pharmacal Research*, *33*(2), 183–186. <https://doi.org/10.1007/s12272-010-0116-5>

- Lee, J., Ju, M., Cho, O. H., Kim, Y., & Nam, K. T. (2019). Tyrosine-rich peptides as a platform for assembly and material synthesis. *Advanced Science*, 6(9), 1801255. <https://doi.org/10.1002/adv.201801255>
- Li, H., Zhang, Y., Liu, Y., Zhu, F., & Yu, Y. (2022). Network pharmacology and molecular docking reveal mechanism of Tanshinone IIA against pulmonary hypertension. *Pharmaceuticals*, 15(3), 388. <https://doi.org/10.3390/ph15030388>
- Liu, Y., Chen, D., Si, J., Tu, G., & An, D. (2003). Cimicidahaside 1 and 2, two new cyclolanostanol xylosides from the aerial parts of *Cimicifuga dahurica*. *Natural Product Research*, 17(4), 243–246. <https://doi.org/10.1080/1057563021000051077>
- Luo, L., Guan, Z., Jin, X., Guan, Z., & Jiang, Y. (2023). Identification of Kukoamine A as an anti-osteoporosis drug target using network pharmacology and experiment verification. *BMC Molecular Medicine*, 29(1), 1–14. <https://doi.org/10.1186/s10020-023-00625-6>
- Manach, C., Scalbert, A., Morand, C., Rémésy, C., & Jiménez, L. (2004). Polyphenols: food sources and bioavailability. *The American Journal of Clinical Nutrition*, 79(5), 727–747. <https://doi.org/10.1093/ajcn/79.5.727>
- Mardiah, Sri Rejeki Retna Pertiwi, dan Darwis Marwa. 2019. Analisis Mutu Minyak Goreng Dengan Pengulangan Penggorengan. *Jurnal Pangan Halal* .1(1).
- Mercan, N., Kıvrak, İ., Duru, M. E., Katırcıoğlu, H., Güçlü, S., Malcı, S., Acar, G., & Salih, B. (2006). Chemical composition effects on antimicrobial and antioxidant activities of propolis collected from different regions of Turkey. *Annals of Microbiology*, 56(4), 373–378. <https://doi.org/10.1007/BF03175035>
- Miyata, R., Sahlan, M., Ishikawa, Y., Hashimoto, H., Honda, S., & Kumazawa, S. (2019). Propolis components from stingless bees collected on South Sulawesi, Indonesia, and their xanthine oxidase inhibitory activity. *Journal of Natural Products*, 82(2), 205–210. <https://doi.org/10.1021/acs.jnatprod.8b00541>
- Mubarak, Z., Chismirina, S., & Daulay, H. H. (2016). Aktivitas antibakteri ekstrak propolis alami dari sarang lebah terhadap pertumbuhan *Enterococcus faecalis*. *Jurnal Syiah Kuala Dent Soc*, 1(2), 175-186. Diakses dari <http://jurnal.unsyiah.ac.id/JDS/>
- Mulyati, A. H., Marom, M. F., & Warnasih, S. (2024). Antioxidant testing and identification of bioactive compounds in ethanol extract of propolis from various locations in Indonesia using LCMS-QTOF. *Jurnal Kimia dan Analisis*, 6(2), 33–41. <https://jurnal.unpad.ac.id/jcena/article/view/53081>
- Murray, P. R., Rosenthal, K. S., & Pfaller, M. A. (2009). *Medical Microbiology* (6th ed.). Philadelphia: Mosby Elsevier
- Ningrum, T. Y., Pratiwi, R., & Septiana, E. (2018). Identifikasi senyawa flavonoid dalam ekstrak etanol daun pepaya (*Carica papaya* L.) dengan metode LC-MS/MS. *Jurnal Ilmu Kefarmasian Indonesia*, 16(2), 135–142.
- Ohmoto, T., & Koike, K. (1982). Studies on the constituents of *Picrasma quassioides* Bennet. I. On the alkaloidal constituents. *Chemical and Pharmaceutical Bulletin*, 30(4), 1204–1209. <https://doi.org/10.1248/cpb.30.1204>
- Oliveira, R. D., Araújo, C., & Almeida-Aguiar, C. (2024). In vitro antimicrobial potential of Portuguese propolis extracts from Gerês against pathogenic microorganisms. *Antibiotics*, 13(7), 655. <https://doi.org/10.3390/antibiotics13070655>
- Pardo Andreu, G. L., Dos Reis, F. Z., González-Durruthy, M., Hernández, R. D., D'Vries, R. F., Vanden Berghe, W., & Alberici, L. C. (2020). Rapanone, a naturally occurring benzoquinone, inhibits mitochondrial respiration and induces HepG2 cell death. *Toxicology in Vitro*, 62, 104737. <https://doi.org/10.1016/j.tiv.2019.104737>
- Park, C. L., Kim, J. H., Jeon, J. S., Lee, J., Zhang, K., Guo, S., Lee, D., Gao, E. M., Son, R. H., Kim, Y. M., Park, G. H., & Kim, C. Y. (2022). Protective effect of *Alpinia oxyphylla* fruit against tert-butyl

hydroperoxide-induced toxicity in HepG2 cells via Nrf2 activation and free radical scavenging and its active molecules. *Antioxidants*, 11(5), 1032. <https://doi.org/10.3390/antiox11051032>

- Passeidireto. (2015). Natural Products Thin-Layer Chromatography (Planar). <https://www.passeidireto.com/arquivo/5309663/natural-products-thin-layer-planar-chromatography>
- Pasupuleti, V. R., Sammugam, L., Ramesh, N., & Gan, S. H. (2017). Honey, propolis, and royal jelly: A comprehensive review of their biological actions and health benefits. *Pharmacognosy Review*, 11(22), 107–116. https://doi.org/10.4103/phrev.phrev_9_17
- Pedrinha, V. F., Santos, L. M., Gonçalves, C. P., Garcia, M. T., Lameira, O. A., Queiroga, C. L., Marcucci, M. C., Shahbazi, M.-A., Sharma, P. K., Junqueira, J. C., Sipert, C. R., & Andrade, F. B. (2024). Effects of natural antimicrobial compounds propolis and copaiba on periodontal ligament fibroblasts, molecular docking, and in vivo study in *Galleria mellonella*. *Biomedicine & Pharmacotherapy*, 171, 116139.
- Pei, K., Ou, J., & Huang, J. (2016). *p-Coumaric acid and its conjugates: dietary sources, pharmacokinetic properties and biological activities*. *Journal of the Science of Food and Agriculture*, 96(9), 2952–2962. <https://doi.org/10.1002/jsfa.7578>
- Popova, M. P., Chen, C. N., Bankova, V. S., & Huang, C. Y. (2022). Propolis: A Natural Product with Antibacterial Properties against Gram-Positive and Gram-Negative Bacteria. *Pharmaceuticals*, 15(2), 123. <https://doi.org/10.3390/ph15020123>
- Przybyłek, I., & Karpiński, T. M. (2019). Antibacterial properties of propolis. *Molecules*, 24(11), 2047. <https://www.mdpi.com/1420-3049/24/11/2047>
- Qiao, Lirui, et al. 2013. Waters Application Note; Using Natural Product Application Solution with UNIFI for the Identification of Chemicals Ingredients of Green Tea Extract.
- Rageh, R. S., Algfri, S. K., Naser, G. A., & Shuaib, A. B. (2024). Evaluation of pharmacognostic, phytochemical, and antioxidant properties of *Argemone mexicana* Linn leaves. *Journal of Medicinal Plants Studies*, 12(6), 01–07. <https://doi.org/10.22271/plants.2024.v12.i6a.1765>
- Ramachandran, V., Anand, M. A. V., David, E., Venkatachalam, K., Vijayakumar, S., Sankaran, V., Balupillai, A., Sangeetha, C. C., Gothandam, K. M., Kotakadi, V. S., Ghidan, A., Al Antary, T., & Xu, B. (2020). Antidiabetic Activity of Gold Nanoparticles Synthesized Using Wedelolactone in RIN-5F Cell Line. *Antioxidants*, 9(1), 8. <https://doi.org/10.3390/antiox9010008>
- Ramata-Stunda, A., Petriņa, Z., Valkovska, V., Boroduškis, M., Gibnere, L., Gurkovska, E., & Nikolajeva, V. (2022). Synergistic effect of polyphenol-rich complex of plant and green propolis extracts with antibiotics against respiratory infections causing bacteria. *Antibiotics*, 11(2), 160. <https://doi.org/10.3390/antibiotics11020160>
- Rif'atunnisa, B., & Raimunda, R. (2024). Pengaruh suplementasi propolis teknologi nano bagi penderita tuberkulosis di RSUD Ende. *Kelimutu Nursing Journal*, 3(1). <https://doi.org/10.31965/knj.v3i1.1588>
- Rini Isromarina, et al. (2022). Analisis fitokimia ekstrak tanaman X dengan metode KLT. *Jurnal Farmasi Indonesia*, 8(3), 45–52
- Rudiyansyah, Y. P., & Harlia. (2017). Penentuan struktur senyawa coumarinolignan pada fraksi diklorometana kulit batang durian klawing (*Durio graveolens* Becc.). *Jurnal Kimia Khatulistiwa*, 6(2), 78–82. <https://jurnal.untan.ac.id/index.php/jkkmipa/article/view/21573>
- Rzepecka-Stojko, A., Kabała-Dzik, A., Moździerz, A., Kubina, R., Wojtyczka, R. D., Stojko, R., Dziedzic, A., Jastrzębska-Stojko, Ż., Jurzak, M., Buszman, E., & Stojko, J. (2015). Caffeic Acid Phenethyl Ester and Ethanol Extract of Propolis Induce the Complementary Cytotoxic Effect on Triple-Negative Breast Cancer Cell Lines. *Molecules*, 20(5), 9242–9262. <https://doi.org/10.3390/molecules20059242>
- Saewan, N., & Jimtaisong, A. (2015). Natural products as photoprotective agents in sunscreen. *International Journal of Cosmetic Science*, 37(1), 2–13. <https://doi.org/10.1111/ics.12153>

- Schultz, J. R., Petucci, C. J., Lawrence, K., & Vanderveen, J. R. (2013). Liquid chromatography–quadrupole time-of-flight characterization of metabolites in human plasma. *Journal of Chromatography B*, 931, 111–118. <https://doi.org/10.1016/j.jchromb.2013.06.007>
- Silici, S., & Kutluca, S. (2005). Chemical composition and antibacterial activity of propolis collected by three different races of honeybees in the same region. *Journal of Ethnopharmacology*, 99(1), 69–73. <https://doi.org/10.1016/j.jep.2005.01.046>
- Simanjuntak, M. V., Jauhar, M. M., Syaifie, P. H., Arda, A. G., Mardiyati, E., Shalannanda, W., Hermanto, B. R., & Anshori, I. (2024). Revealing Propolis Potential Activity on Inhibiting Estrogen Receptor and Heat Shock Protein 90 Overexpressed in Breast Cancer by Bioinformatics Approaches. *Bioinformatics and Biology Insights*, 18, 1–19.
- Snyder, L. R., Kirkland, J. J., & Dolan, J. W. (2012). *Introduction to modern liquid chromatography* (3rd ed.). John Wiley & Sons
- Stanek, N., & Jasicka-Misiak, I. (2018). HPTLC phenolic profiles as useful tools for the authentication of honey. *Food Analytical Methods*, 11(11), 2979–2989. <https://doi.org/10.1007/s12161-018-1281-3>
- Stoycheva, C., Batovska, D., Malfa, G. A., Acquaviva, R., Statti, G., & Kozuharova, E. (2025). *Prospective approaches to the sustainable use of peonies in Bulgaria*. *Plants*, 14(6), 969. <https://doi.org/10.3390/plants14060969>
- Sukmawaty, E., Karim, A., Dwyana, Z., Natsir, H., Karim, H., Ahmad, A., & Larekeng, S. H. (2024). Bioactivity and metabolites compounds of medicinal plants endophytic fungi in Indonesia. *Journal of Tropical Biodiversity and Biotechnology*, 9(2). <https://doi.org/10.22146/jtbb.79070>
- Suryanto, E. 2018. *Kimia Antioksidan*. CV. Patra Media Gravindo, Bandung.
- Tetali, S. D. (2019). Terpenes and isoprenoids: A wealth of compounds for global use. *Planta*, 249(1), 1–8. <https://doi.org/10.1007/s00425-018-3056-x>
- Tong SYC, Davis JS, Eichenberger E, Holland TL, Fowler VG Jr. *Staphylococcus aureus infections: epidemiology, pathophysiology, clinical manifestations, and management*. *Clin Microbiol Rev*. 2015;28(3):603–661. doi:10.1128/CMR.00134-14
- Usman, A. N., Syam, Y., Natzir, R., Rahardjo, S. P., Hatta, M., Raya, I., Widaningsih, Y., Abdullah, A. Z., & Ainurafiqi. (2016). Nutrient content and pH of honey propolis Trigona from Masamba, South Sulawesi Indonesia. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 26(3), 246–251.
- Utomo, T. P., Prasetyo, H., & Rahayu, S. (2018). *Uji aktivitas antibakteri ekstrak etanol daun sirih merah (Piper crocatum Ruiz & Pav.) terhadap bakteri Staphylococcus aureus dan Escherichia coli*. *Jurnal Farmasi Sains dan Komunitas*, 15(2), 93–100. <https://doi.org/10.24071/jpsc.2018.150203>
- Venugopala, K. N., Rashmi, V., & Odhav, B. (2013). Review on natural coumarin lead compounds for their pharmacological activity. *BioMed Research International*, 2013, Article ID 963248. <https://doi.org/10.1155/2013/963248>
- Wagh, V. D. (2013). *Propolis: A wonder bees product and its pharmacological potentials*. *Advances in Pharmacological Sciences*, 2013, 308249. <https://doi.org/10.1155/2013/308249>
- Wang, C., Wan, J., Mei, Z., & Yang, X. (2014). Acridone alkaloids with cytotoxic and antimalarial activities from *Zanthoxylum simullans* Hance. *Pharmacognosy Magazine*, 10(37), 73–78. <https://doi.org/10.4103/0973-1296.126669>
- Wang, S., Wang, L., Shangguan, J., Jiang, A., & Ren, A. (2024). *Research progress on the biological activity of ganoderic acids in Ganoderma lucidum over the last five years*. *Chinese Medicine*, 19(1), Article 92. <https://doi.org/10.1186/s13020-024-00922-0>
- Wang, X., Wang, J., Guan, H., Xu, R., Luo, X., Su, M., Chang, X., Tan, W., Chen, J., & Shi, Y. (2017). Comparison of the chemical profiles and antioxidant activities of different parts of cultivated *Cistanche deserticola* using ultra performance liquid chromatography-quadrupole time-of-flight mass spectrometry and a DPPH-based assay. *Molecules*, 22(11), 2011. <https://doi.org/10.3390/molecules22112011>

- Widelski, J., Luca, S. V., Skiba, A., Chinou, I., Marcourt, L., Wolfender, J.-L., & Skalicka-Wozniak, K. (2018). *Isolation and antimicrobial activity of coumarin derivatives from fruits of Peucedanum luxurians Tamamsch. Molecules*, 23(5), 1222. <https://doi.org/10.3390/molecules23051222>
- Wouatsa, V. N. A., Misra, L., Kumar, S., Prakash, O., Khan, F., & Tchoumboungang, F. (2013). Aromatase and glycosyl transferase inhibiting acridone alkaloids from fruits of Cameroonian *Zanthoxylum* species. *Chemistry Central Journal*, 7(125). <https://doi.org/10.1186/1752-153X-7-125>
- Xie, C., Gu, J., & Zhu, S. (2024). Progress in research on terpenoid biosynthesis and terpene synthases of Lauraceae species. *Forests*, 15(10), 1731. <https://doi.org/10.3390/f15101731>
- Xu, H., Lv, M., Zhang, J., Dai, M., Guo, Y., & Xu, W. (2019). Lathyrane-type diterpenoids from the genus *Euphorbia*: Structure, synthesis, and biological activity. *Phytochemistry Reviews*, 18(5), 1159–1194. <https://doi.org/10.1007/s11101-019-09623-2>
- Xu, J.-W., Xu, Y.-N., & Zhong, J.-J. (2012). *Enhancement of ganoderic acid accumulation by overexpression of an N-terminally truncated 3-hydroxy-3-methylglutaryl coenzyme A reductase gene in the basidiomycete Ganoderma lucidum. Applied and Environmental Microbiology*, 78(21), 7968–7976. <https://doi.org/10.1128/AEM.01643-12>
- Yang, J. S., Wang, C. M., Su, C. H., Ho, H. C., Chang, C. H., Chou, C. H., & Hsu, Y. M. (2018). Eudesmin attenuates *Helicobacter pylori*-induced epithelial autophagy and apoptosis and leads to eradication of *H. pylori* infection. *Experimental and Therapeutic Medicine*, 15(3), 2388–2396. <https://doi.org/10.3892/etm.2018.5701>
- Yang, M., Li, J., Zhao, C., Xiao, H., Fang, X., & Zheng, J. (2023). LC-Q-TOF-MS/MS detection of food flavonoids: Principles, methodologies, and applications. *Critical Reviews in Food Science and Nutrition*, 63(19), 3750–3770. <https://doi.org/10.1080/10408398.2021.1993128>
- Yoshikawa, M., Murakami, T., Komatsu, H., & Matsuda, H. (1998). Medicinal foodstuffs. XII. Saponin constituents with adjuvant activity from hyacinth bean, the seeds of *Dolichos lablab* L. (1): Structures of Lablabosides A, B, and C. *Chemical & Pharmaceutical Bulletin*, 46(5), 812–816. <https://doi.org/10.1248/cpb.46.812>
- Yuan, H., Ma, Q., Ye, L., & Piao, G. (2012). The traditional medicine and modern medicine from natural products. *Molecules*, 21(5), 559. <https://doi.org/10.3390/molecules21050559>
- Yuliana, M., Syarifuddin, S., & La Tunreng, A. (2016). Nutrient content and pH of honey propolis Trigona from Masamba, South Sulawesi Indonesia. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 25(2), 1–9. <https://www.gssrr.org/index.php/JournalOfBasicAndApplied/article/view/5661>
- Zahra, N. N., Muliastari, H., Andayani, Y., & Sudarma, I. M. (2021). Karakteristik fisikokimia ekstrak madu dan propolis Trigona sp. asal Lombok Utara. *Jurnal AGROTEK UMMAT*, 8(1). <https://journal.ummat.ac.id/index.php/agrotek>
- Zakariya, H., Hadi, P., & Yunus, N. R. (2020). Legal aspect bioprospecting conservation of medicinal plants in Indonesia. *Indian Journal of Forensic Medicine and Toxicology*, 14(3), 1893–1897. <https://doi.org/10.37506/ijfimt.v14i3.10702>
- Zaragoza-Huesca, D., Martínez-Cortés, C., Banegas-Luna, A. J., Pérez-Garrido, A., Vegara-Meseguer, J. M., Peñas-Martínez, J., Rodenas, M. C., Espín, S., Pérez-Sánchez, H., & Martínez-Martínez, I. (2022). *Identification of Kukoamine A, Zeaxanthin, and Clexane as new furin inhibitors. International Journal of Molecular Sciences*, 23(5), 2796. <https://doi.org/10.3390/ijms23052796>
- Zhang, C. P., Wu, Z. N., Li, G. Q., Liu, G. X., Wang, K., & Hu, F. L. (2022). Antibacterial Activity of Chinese Red Propolis against *Staphylococcus aureus* and MRSA: A Metabolomics Approach. *Molecules*, 27(5), 1693. <https://doi.org/10.3390/molecules27051693>
- Zhang, Q., Wang, Y., & Cheng, L. (2020). Biological activities and synthesis of lathyrane diterpenoids: A comprehensive review. *Fitoterapia*, 146, 104723. <https://doi.org/10.1016/j.fitote.2020.104723>
- Zhao, D.-D., Jiang, L.-L., Li, H.-Y., Yan, P.-F., & Zhang, Y.-L. (2016). Chemical components and pharmacological activities of terpene natural products from the genus *Paeonia*. *Molecules*, 21(10), 1362. <https://doi.org/10.3390/molecules21101362>

Zhao, Y., et al. (2016). Lathyrane diterpenoids as modulators of multidrug resistance in cancer chemotherapy. *Bioorganic & Medicinal Chemistry*, 24(21), 5375–5383. <https://doi.org/10.1016/j.bmc.2016.08.010>