

DAFTAR PUSTAKA

- Abas, F., Lajis, N.H., Shaari, K., Israf, D.A., Stanslas, J., Yusuf, U.K. & Raoft, S.M., 2005, 'Alabdane diterpene glucoside from the rhizome of *Curcuma mangga*', *Journal Of Natural Products*, 68, pp. 1090-1093.
- Abdelwahab, S.I., Abdul, A.B., Zain, Z.N.M., Hadi, A.H.A., 2012, 'Zerumbone inhibits interleukin-6 and induces apoptosis and cell cycle arrest in ovarian and cervical cancer cells,' *Int. Immunopharmacology*, 12, 594-602.
- Ahmed, E., Arshad, M., Zakriyya, M & Shoaib, M., 2017, 'Secondary metabolites and their multidimensional prospective in plant life', *Journal of Pharmacognosy and Phytochemistry* 6(2): 205-214
- Andrey, P.T., Johnson, C.B., Lee, H., Stoskopf, M.K., and Macdonald, J.M. 2010, Metabolomic Investigation of American Oyster Using ¹H NMR Spectroscopy, *Marine Drugs*, 2010 (8)
- Anjusha and Gangaprasad, 2014, 'Phytochemical and Antibacterial Analysis of Two Important *Curcuma* species, *Curcuma aromatica* Salisb. and *Curcuma Xanthorrhiza* Roxb. (Zingiberaceae)', *Journal of Pharmacognosy and Phytochemistry*, (3).50-53
- Ashry, E.S.H., Rashed, N., Salama, O.M., Saleh, A., 2002, 'Components, therapeutic value and uses of myrrh', *Pharmazie* 58(2).
- Astarina, N dan Warditiani, N., 2013, 'Skrining Fitokimia Ekstrak Methanol Rimpang Bangle (*Zingiber montanum*)', *Jurnal Farmasi Udayana*, hal. 22-29.
- Augustijn, D., Roy, U., van Schadewijk, R., de Groot, H.J.M., and Alia, A. 2016. Metabolic Profiling of Intact *Arabidopsis thaliana* Leaves during Circadian Cycle Using ¹H High Resolution Magic Angel Spinning NMR. *PLOS ONE*
- Blum, E., Liu, K., Mazourek, M., Yoo, E.Y, Jahn M., Paran, I., 2002, 'Molecular mapping of The C locus for presence of pungency in Capsicum', *Genome*, 45(4):702-705.
- Cheng, Y., Liu, L., Zhao, G., Shen, C., Yan, H., Guan, J., Yang, K., 2015, 'The effects of Modified atmosphere packaging on core browning and the expression patterns of PPO and PAL genes in "Yali" pears during cold storage LWT', *Food Sci. Technol*, 60(2:2):1243-1248.
- Chien, T.Y., Chen, L.G., Lee, C.J., Lee, F.Y., Wang, C.C., 2008, 'Anti-inflammatory constituents of Zingiber zerumbet', *Food Chem*, 110, 584-589.
- Chirangini, P., G.J, Sharma and S.K. Sinha, 2004, 'Sulfur free radical reactivity with curcumin as reference for evaluating antioxidant properties of medicinal Zingiberales,' *Journal of Environmental Pathology, Toxicology and Oncology*, 23: 227-236.
- Daouk, Rima Kaddurah, Kristal, Bruce & Weinshilboum, Richard, 2008, 'Metabolomics: A Goal Biochemical Approach Drug Response and Disease', *Annual Review Pharmacol Toxicol*, 48:653-678.
- Darmawijaya, Isa, 1990, *Klasifikasi Tanah Dasar Teori bagi Peneliti Tanah dan Pelaksana Pertanian di Indonesia*, Gadjah Mada University Press, Yogyakarta, p.65



- Denniff, P., Macleod, I., Whiting, D.A., 1980, 'Studies in the biosynthesis of [6] gingerol, pungent principle of ginger (*Zingiber officinale*)', *Journal of the Chemical Society Perkin Transactions*, 1:2637-2644.
- Dhanik, Jyotsna., Arya, Neelam & Nand, Viveka, 2017, 'A Review on Zingiber Officinale', *Journal of Pharmacognosy and Phytochemistry*, 7(3)., 174-184
- Dinter, H., Haensel & A, Pelter, 1980, 'Isolation of two phenylbutadiene dimmers and one monomeric 4-phenylbut-3-ene from *Zingiber montanum* Roxb *Zeitschrift für Naturforschung C*', *Bioscience*, 35: 156-158.
- Ditjen Bina Kefarmasian dan Alat Kesehatan, 2007, *Kebijakan Obat Tradisional Tahun 2007*, Kementerian Kesehatan, Jakarta
- Ditjen Bina Kefarmasian dan Alat Kesehatan, 2012, *Kebijakan Obat Tradisional Tahun 2012*, Kementerian Kesehatan, Jakarta
- Ditjen Bina Kefarmasian dan Alat Kesehatan, 2015, 'Peresmian Gerakan Bugar dengan Jamu', *Buletin Infarkes*, Edisi Januari 2015.
- Ditjen PEN, 2014, *Warta Ekspor, Menyibak Potensi Pasar Obat Herbal Tradisional*, Kemendag, Jakarta.
- Facchini, P.J., Bird, D.A., St-Pierre, B., 2004, 'Can Arabidopsis make complex alkaloids?', *Trends Plant Sci*, 9(3), 116-122.
- Fiehn, O, 2002, 'Metabolomics—the link between genotypes and phenotypes', *Plant. Mol. Biol*, 48, 155–71
- Ghosh, S., Majumder, P.B., Mandi, S.S., 2011, 'Species-specific aflp markers for identification of *Z. officinale*, *Z. montanum* and *Z. zerumbet* (Zingiberaceae)', *Genet. Mol. Res*, 10, 218–229.
- Govindarajan, V.S., 1982, 'Ginger: Chemistry, technology, and quality evaluation: Part 1', *CritRev Food Science & Nutrition*, 17, 1-96.
- Gumul, D., Korus, J., Achremowicz, B., 2007, 'The influence of extrusion on the content of polyphenols and antioxidant/antiradical activity of rye grains (*Secale cereal L.*)', *Acta Sci. Pol. Technol. Alimen*, 6, 103-111.
- Gurimand, G., Courdavault, V., St-Pierre, and Burlat, V., 2016, *Plant Developmental Biology-Biotechnological Perspectives Volume 2*, Springer
- Halabalaki, M., Vougianniopoulou, K., Mikros, E., Skaltsounis, A.L., 2014, 'Recent advances and new strategies in the NMR-based identification of natural products', *Curr Opin Biotechnol*, 25,1–7.
- Hassan, Azaizeh, 2012, 'Effects of Mineral Nutrients on Physiological and Biochemical Processes Related to Secondary Metabolites Production in Medicinal Herbal', *Medicinal and Aromatic Plant Science and Biotechnology*, 6(1): 105-110
- He, X.G., Lin, L.Z., Lian, L.Z. & Lindenmaier, M., 1998, 'Liquid chromatography electrospray mass spectrometric analysis of curcuminoids and sesquiterpenoids in turmeric (*Curcuma longa*)', *J. Chromatogr* 818, 127–132.
- Hong, J., Yang, L., Zhang, D. & Shi, J., 2016, 'Review Plant Metabolomics: An Indispensable System Biology Tool for Plant Science', *International Journal Molecular Sciences*, 17, 767-777.
- Hwang, 2014, 'Secondary Metabolite Profiling of *Curcuma* Species Grown at Different Locations Using GC/TOF and UPLC/Q-TOF MS', *Molecules*

Journal, 19,9535-9551

- Ibrahim, M.H., Kong, Y.C., & Zain, N.A.M., 2017, 'Effect of cadmium and copper exposure on growth, secondary metabolites and antioxidant activity in the medical plant sambung nyawa (*Gynura procumbens* (Lour.) Merr)', *Molecules*, 22(10)
- Indonesia Herbal Kemdag, 2015, *Indonesian Herbal The Traditional Therapy*, Departemen Perdagangan Republik Indonesia.
- Jayaprakasha, G.K., Rao, L.J.M. & Sakariah, K.K., 2005, 'Chemistry and biological activities of *C. longa*', *Trends in Food Science and Technology*, 16, 533–548.
- Kell, D.B., 2004, 'Metabolomics and systems biology: making sense of the soup', *Curr. Opin. Micro*, 7, 296–307
- Khalid, K., 2015, 'effect of Macro and Micro Nutrients on Essential oil Of Coriander Fruits', *Journal of Materials and environmental Science*, 6(8), 2060-2065
- Kim, E.J., Kwon, J., Park, S.H., Park, C., Seo, Y.B., Shin, H.K., Kim, H.K., Lee, K.S., Choi, S.Y. & Ryu, D.H., 2011, 'Metabolite profiling of *Angelica gigas* from different geographical origins using ¹H NMR and UPLC-MS analyses', *J. Agric. Food Chem.* 59, 8806–8815.
- Kim, H.K., Choi, Y.H. & Verpoorte, R., 2010, 'NMR-based metabolomics analysis of plants', *Nature Protocols*, Vol.5, 536-549.
- Kleessen, S. & Nikoloski, Z., 2012, Dynamic regulatory on/off minimization for biological systems under internal temporal perturbations', *BMC Syst. Biol*, 6,
- Komala, O., Widayat, D.W., Muztabadihardja, 2016. 'Bioactive Compounds and Antibacterial Activity of Ethanolic Extracts of *Curcuma manga*, Val Against *Staphylococcus aureus*, *IJESEAS*, Vol2, Issue 6.
- Kubo, M., Gima, M., Baba, K., Nakai, M., Harada, K., Suendaga, M., Matsunaga, Y., Kato, E., Hosoda, S. & Fakuyama, Y., 2015, 'Novel neutrophilic phenylbutenoids from Indonesian ginger Bangle, *Zingiber purpureum*', *Bioorganic & Medicinal Chemistry Letters*, 25, 1586-1591
- Kusuma, Sri., Moelyono, M.W., Hamka, Ramadhan., 2017, 'Antifungal Effect of *Curcuma zedoaria* Ethanol Extract and Fractions Against *Aspergillus niger*', *International Journal of ChemTech Research*, Vol.1 (6), 165-169
- Luciano, A., Irieno, T., Rosalina, O. & Andres, C., 2017, 'Integrating Plants Nutrients and Elicitors for Production of Secondary Metabolites, Sustainable Crop Production and Human Health: A Review', *International Journal of Agriculture and Biologi*, DOI 10.1795/IJAB/15.0297.
- Mabberley, D.J., 1997, *The plant-book: a portable dictionary of the vascular plants*. 2nd edn, Cambridge University Press, Cambridge.
- Mahrous, Engy & Farag, Mohamed, 2014, 'Two Dimension NMR Spectroscopic Approaches for Exploring Plant Metabolome: A review', *Journal of Advanced Research*, 6, 3-15.
- Markley, John., Bruschweiler, Rafael., Edison, Arthur., Powers, Robertand., Wishart, David, 2016, 'The Future of NMR-based Metabolomics', *Current Opinion in Biotechnology*, 43, 34-40.
- Marshall, Haferkamp, 1987, Environment Factors Affecting Plant Productivity. Fort Keogh Research Symposium, September 1987, Miles City, MT.



- McSweeney, C.S., Collins, E.M.C., Blackall, L.L., Seawright, A.A., 2008, 'A review of anti nutritive factors limiting potential use of *Acacia angustissima* as a ruminant feed', *Anim. Feed. Sci. Technol*, 147 (1-3), 158-171.
- Miquel, J., Bernd, A., Sempere, J.M., Díaz-Alperi, J., Ramírez, A., 2012, 'The curcuma antioxidants: Pharmacological effects and prospects for future clinical use. A review', *Arch. Gerontol Geriatr*, 34, 37-46.
- Nigam, I.C., Levi, L., 1963, 'Column and gas chromatographic analysis of oil of wildginger. Identification and estimation, of some new constituents', *Can. J. Chem*, 41, 1726-1730.
- Nithya and Jayshre, 2017, 'A Review On Herbs Of The Zingiberaceae Family With Beneficial Effect On Cardiovascular Diseases,' *World Journal Of Pharmacy And Pharmaceutical Sciences*, Vol 6 (6), 635-643.
- Nuringtyas, T.R., Choi, Y.H., Verpoorte, R., Oeter, G.L.K. & Leiss, K.K., 2012, 'Differential Tissue Distribution of Metabolites in *Jacobaea vulgaris*, *Jacobaea aquatica* and Their Crosses', *Phytochemistry*, 78, 89-97.
- Okazaki, Y., Saito, K., 2012, 'Recent advances of metabolomics in plant biotechnology', *Plant Biotechnol*, 6, 1-15.
- Olivoto, T., Nardino, M., Carvalho, I.R., Ferrari, M, Szareski, J., 2017, 'Plant Secondary Metabolites and Its Dynamical Systems of Induction in Response to Environmental Factor: A Review', *African Journal of Agricultural Research*, 12(2), 71-84
- Ouyang, L.L., Li, H., Yang, X.J. dan Zhou, Z.G., 2016, "Site-Directed Mutagenesis from Arg195 to His of a Microalgal Glycerol-3-Phosphate Acyltransferase Causes an Increase in Phospholipid Levels in Yeast", *Frontiers in Plant Science* 7(286).
- Pavia, D.L., Lampman, G.M., Kriz, G.S. & Vyvyan, J.R., 2015, *Introduction to Spectroscopy 5th Edition*. Cengage Learning, USA.
- Pinto, R.C., 2017, *Chemometrics Methods and Strategies in Metabolomics*. Dalam Sussulini A. (ed) *Metabolomics: From Fundamentals to Clinical Applications*. Springer, Switzerland, p.180.
- Putri, S.P., Yamamoto, S., Tsugawa, H., Fukusaki, E., 2013, 'Current metabolomics: Technological advances', *J Biosci Bioeng*, 116 (1), 9-16.
- Riskesdas, 2010, *Riset Kesehatan Dasar*, Litbang Depkes, Jakarta
- Riskesdas, 2013. *Riset Kesehatan Dasar*, Litbang Depkes, Jakarta.
- Roessner, Ute., 2012, *Metabolomics*, In Tech, Rijekka, Croatia, p. 7-9.
- Rukmana, H.R., 2004, *Temu-temuan, Apotek Hidup di Pekarangan*, Kanisius. Yogyakarta, hal 9, 19-20
- Rusmin, D., Suhartanto, M.R., Ilyas, S., Manohara, D dan Widjati, E., 'Pengaruh Umur Panen Rimpang Terhadap Perubahan Fisiologi dan Viabilitas Benih Jahe Besar Selama Penyimpanan', *Jurnal Littri*, 21(1): 17-24.
- Schutzki, R. & Creg, B., 2007, 'Abiotic Plant disorder Symptoms, Signs and Solutions A Diagnostic Guide to Problem Solving', *Extension Bulletin E 2996*, Michigan State University.
- Shih, H.C., Chern, C.Y., Kuo, P.C., 2014. Synthesis of Analogues of Gingerol and Shogaol the Active Pungent Principles from Rhizomes of Ginger *Zingiber*

- officinale* and Evaluation of Their Anti-Platelet Aggregation Effect, *International Journal of Molecular Sciences*, 15(3): 3926-3951
- Shiobara, Y., Asakawa, Y., Kodama, M., Yaduda, K. & Takemoto, T., 1986, 'Zedoarol, 13-hydroxygermacrone and Curzeone, Three Sesquiterpenoids from *Curcuma zedoaria*', *Phytochemistry*, 25, 1351-1353.
- Smith, R.M, 1987, "Zingiberaceae-Costaceae", *Flora of Australia*, Vol 45
- Sri Nurestri, A.M., Guan, S.L., Sok, L.H., Hashim, Y., Norhanom, A.W., Jean Frederic, F.W. & Syed, A.A.S., 2011, 'Phytochemical and Cytotoxic Investigations of Curcuma mangga Rhizomes', *18T Molecules*, 6, 4539
- Sumner, L., 2010, 'Recent advances in plant metabolomics and greener pastures', *F1000 Biology Reports*, Vol.2 , 7
- Sung, Y., Chan, Y.Y. & Ni-Lu, T., 2005, 'Capsaicin biosynthesis in water-stressed hot Pepper fruits', *Bot. Bull. Acad. Sin*, 46:35-42.
- Supriyatna, M.W., Moelyono, I.Y. & Febriyanti, R.M., 2014, *Prinsip Obat Herbal: Sebuah Pengantar untuk Fitoterapi*, Deepublish. Yogyakarta. pp. 91, 97, 99
- Syukur, C., 2003, *Temu Putih: Tumbuhan Obat Antikanker*, Penebar Swadaya, Jakarta, 3, 4, 53.
- Taiz, L. & Zeiger, E., 2010, *Plant Physiology*, Fifth ed. Sinauer Associates Inc, Massachusetts.
- Tang, W., Eisenbrand, G., 1992, 'Chinese Drug of Plant Origin : Chemistry, Pharmacology and Use in Traditional and Modern Medicine', *Springer Verlag*, Berlin Heidelberg, Germany, p. 403-411.
- Tawaha, M., Suk, Y. & Dong, L., 2005, 'Calcium Effect on Yield, Mineral Uptake and Terpene Components of Hydroponic Chrysanthemum coronarium L.', *International Journal of Botany*, 1 (2), 196-200
- TPC Project, 2012, *Modul Tumbuhan Obat Herba Berakar Rimpang*, RCSI IPB, Bogor, hal. 2-3, 6-7, 11-14, 20-22.
- Tugizimana, F., Piater, L., Dubery, I., 2012, 'Plant metabolomics: A new frontier in phytochemical analysis', *South African Journal of Science*, doi 10.1590
- Wishart, D.S., TSur, D., Knox, C., 2007, 'HMDB: The Human Metabolome Database', *Nucleic Acid Res*, 37 (Database Issue)
- www.bpbd.karanganayarkab.go.id/bentang-alam. Diakses pada 10 November 2017
- www.bu.edu/CICNMR_basicconcepts.Derome.1987/ Diakses 12 November 2017
- www.djpen.kemendag.go.id/app_frontend/contents/144-warta-ekspor. Diakses pada 11 November 2017
- www.hmdb.ca/metabolites/HMDB0036768 diakses pada 10 Mei 2018
- www.hmdb.ca/metabolites/HMDB0038195 diakses pada 10 Mei 2018
- www.hmdb.ca/metabolites/HMDB0030801 diakses pada 10 Mei 2018
- www.hmdb.ca/metabolites/HMDB0005783 diakses pada 10 Mei 2018
- www.hmdb.ca/metabolites/HMDB0036667 diakses pada 10 Mei 2018
- www.lipi.go.id/berita/Indonesia-Memiliki-7500-Tumbuhan-Obat/28-Mei-2015. Diakses pada 10 November 2017
- www.karanganayarkab.go.id/20160823/geografi-2015. Diakses pada 10 November 2017



www.kulonprogokab.go.id/v21/Kondisi-Umum 6 hal. Diakses pada 10 November 2017

www.process-nmr.com/John-Edward/Processs-NMR-Associates. Diakses pada 17 November 2017.

www.pubchem.ncbi.nlm.nih.gov/compound/5470187#section=2D-Structure. Diakses pada 10 November 2017

www.wonogirikab.go.id/web/kontent/62/profil_wilayah. Diakses pada 10 November 2017

Xu, R., Zhao, W., Xu, J., Shao, B. & Qin, G., 1996, 'Studies on bioactive saponins from Chinese medicinal plants', *Advances in Experimental Medicine and Biology*, 404 (3), pp 71–82

Yruela, Inmaculada, 2005, 'Copper in plants', *Braz. J. Plant Physiol*, 17(1):145-156

Zewdie, Y. & Bosland, P.W., 2000, 'Evaluation of genotyp environment and genotype-by environment interaction for capsaicinoids in *Capsicum annuum* L.', *Euphytica*, 111(3), 185-190.

Zheng, P., Wang, Y., Chen, L., Yang, D., Meng, H., Zhou, D., Zhong, J., Lei, Y., Melgiri, N. & Xie, P., 2013, 'Identification and Validation of Urinary Metabolite Biomarkers for Major Depressive Disorder', *Molecular & Cellular Proteomics*, 2(1)