

## DAFTAR PUSTAKA

- Anonim. American Diabetes Association, Position statement: Standards of Medical Care in Diabetes, 2010, *Diab Care*, 33 (Suppl.1).
- Anonim. World Health Organization, Definition, Diagnosis and Classification of Diabetes Mellitus and its Complications, 1999, Geneva.
- Anslyn, E. V. and Dougherty, D. A., 2004, *Modern Physical Organic Chemistry*, tersedia di [www.uscibooks.com](http://www.uscibooks.com).
- Aguirre, L., Arias, N., Macarulla, M., T., Gracia, A., and Portillo, M., P., 2011, Beneficial Effects of Quercetin on Obesity and Diabetes, *The Open Neutraceutical Journal*, 4: 189-198.
- Arty, I.S. dan Rohmawati, D., 2014, Optimalisasi Waktu Reaksi Kondensasi antara Vanilin dan p-nitroasetofenon dalam Katalis Asam, *J. Sains Dasar*, 2014, 3(1), 34–38.
- Arun N, and Nalini N., 2002, Efficacy of Turmeric on Blood Sugar and Polyol Pathway in Diabetic Albino Rats, *Plant Foods Hum Nutr*, 57, 41–52.
- Aziz, M.T., El-Asmar, M.F., Rezq, A.M., Mahfouz, S.M. and Wassef, M.A., 2013, The Effect of a Novel Curcumin Derivative on Pancreatic Islet Regeneration in Experimental type-1 Diabetes in Rats (long term study), *Diabetol Metab Syndr*, 5, 75.
- Aziz, M.T., El-Asmar, M.F., Rezq, A.M., Wassef, M.A. and Fouad, H., 2014, Effects of a Novel Curcumin Derivative on Insulin Synthesis and Secretion in Treptozotocintreated Rat Pancreatic islets in vitro, *Chinese Medicine*, 9, 3.
- Berdanier, C. D. dan Zempleni J., 2009, Advanced Nutrition: Macronutrients, Micronutrients and Metabolism. Boca Raton : CRC Press, 309-339, 476-482.
- Bhullar, K. S., Jha, A., Youssef D. and Rupasinghe, H. P. V., 2013, Curcumin and Its Carbocyclic Analogs: Structure-Activity in Relation to Antioxidant and Selected Biological Properties, *Molecules* 18, 5389-5404.

- Bratu, M.G., 2005, Synthesis of Curcumin Derivatives, *Acta Universitatis Cibiniensis Series E: Food Technology*, Vol. IX, no.1.
- Chen, M-J., Cheng, Y-M., Lai, P-H, Wu, J-F., and Hsu, Y-C., 2012, In vitro Biocompatibility of Thermally Gelling Liquid Mucoadhesive Loaded Curcuminoids in Colorectal Cancer Chemoprevention, *Int J Colorectal Dis*, 27, 869–878.
- Collett, G., P. and Campbel, F., C., 2004. Curcumine Induces c-jun N-terminal kinase-dependent Apoptosis in HCT116 Human Colon Cancer Cells, *Carcinogenesis*, 25 (11), 2183-2189.
- Croston, G. and the staff of Kaplan Inc, 2000, *Organic Edge*, Simon & Schuster, New York.
- Da'i, M., 2003, Uji Aktivitas Antiproliferatif Pentagamavunon-0 Terhadap sel Raji, Sel HeLa dan sel Myeloma, Tesis, Program Pascasarjana, Universitas Gadjah Mada, Yogyakarta.
- Daley, R. F. and Daley, S. J., 2005, *Organic Chemistry*, Tersedia di: [www.ochem4free.com](http://www.ochem4free.com)
- Damsbo, P., Clauson, P., Marbury, T.C., and Windfeld A., 1999, A Double-blind Randomized Comparison of Meal-related Glycemic Control by Repaglinide and Glyburide in Well-controlled Type 2 Diabetic Patients, *Diabetes Care*, 22, 789-794.
- Daube, F. W. 19870, Ueber Curcumin, den Farbstoff der Curcumawurzel, *Berichte der deutschen chemischen Gesellschaft*, Volume 3, Issue 1, 609–613.
- Dennison, C., 2002, A Guide to Protein Isolation, New York: Kluwer Academic Publisger, 14, 26.
- Deutscher, M., P., 1990, *Methods in Enzmology vol 182: Guide to Protein Purification*. California: Academic Press.
- Du Z., Liu R., Shao W., Mao X. and Ma L.,  $\alpha$ -Glucosidase Inhibition of Natural Curcuminoids and Curcumin Analogs, 2006, *Eur E Med Chem*, 41, 213-218.

- Eryanti, Y., Nurulita, Y. dan Hendra, R., 2011, Synthesizing Derivatives from Analogue Curcumin and Their Toxic, Antioxidant and Anti-inflammatory Activities, *Makara, Sains*, vol. 15, no. 2, 117-123.
- Fessenden, R.J., dan Fessenden, S.J., 1999, *Kimia Organik*, Jilid 2, Alih bahasa oleh Pudjaatmaka A.H., Penerbit Erlangga, Jakarta.
- Funk, J. L., Oyarzo, J.N., Frye, J.B., Chen, G., Lantz, R.C., Jolad, S.D., Sóllyom, A.M., and Barbara, 2006, Timmermann Turmeric Extracts Containing Curcuminoids Prevent Experimental Rheumatoid Arthritis, *J Nat Prod.* 69(3): 351–355.
- Garcea, G., Jones, D.J., Singh, R., Dennison, A.R., Farmer, P.B., Sharma, R.A., Steward, W.P., Gescher, A.J. and Berry, D.P., 2004, Detection of Curcumin and its Metabolites in Hepatic Tissue and Portal Blood of Patients Following Oral Administration, *British Journal of Cancer*, 90, 1011-1015.
- Goel, A., Kunnumakkara A.B. and Aggarwal, B.B., 2008, Curcumin as ‘Curecumin’: From Kitchen to Clinic, *Biochemical Pharmacology*, Vol. 75, No. 4, 2008, pp. 787-809.
- Goot, V., H., 1997, Synthesis of some symmetrical curcumin derivates and their inflammatory activity, *Eur J Med Chem*, 32, 321-328.
- Hyun, T., Eom, S. and Kim, J., 2014, Molecular docking studies for discovery of plant-derived  $\alpha$ -glucosidase inhibitors, *Plant Omics Journal*, 7(3), 166-170.
- Ikawati, Z., 2014, *Farmakologi Molekuler: Target Aksi Obat dan Mekanisme Molekulernya*, UGM Press, Yogyakarta.
- Ishita, C., Kaushik B., Uday B. and Ranajit K.B., Turmeric and Curcumin: Biological Actions and Medicinal Applications, 2004, *Current Science*, 87(1), 44-53.
- Jack, D., 2003, Overview of the Antidiabetic Agent, *Endocrine Pharmacotherapy Module*, Spring, 26.
- Jayaprakasha, G.K., Rao, L.J.M., and Sakariah, K.K., 2002, Improved HPLC method for the determination of curcumin,

demethoxycurcumin, and bisdemethoxycurcumin, *J. Agric. Food Chem.*, 50, 3668–3672.

Jayaprakasha, G.K., Rao, L.J. dan Sakariah, K.K., 2006, "Antioxidant activities of curcumin, demethoxycurcumin and bisdemethoxycurcumin", *Food Chemistry*, 98 (4), 720–4.

Jhong, C.H., Riyaphan J., Lin S.H., Chia Y.C., Weng C.F., 2015, Screening alpha-glucosidase and alpha-amylase inhibitors from natural compounds by molecular docking in silico, *Biofactors*, 41(4):242-51.

Konatham, S., Kumar, P. and Konatham, J.S., 2010, Synthesis and Screening of Antidiabetic Activity of Some Novel Curcumin Analogues, *International Journal of Pharma and Bio Sciences*, V1(2).

Lam, S. Chen, J., Kang, C., Chen C., and Lee, S., 2008,  $\alpha$ - Glucosidase Inhibitors from the Seeds of *Syagrus romanzoffiana*, *Photochemistry*, 69, 1173-1178.

Lawhavinit, O-A., Kongkathip, N. and Kongkathip B., 2010, Antimicrobial Activity of Curcuminoids from *Curcuma longa* L. on Pathogenic Bacteria of Shrimp and Chicken, *Kasetsart Journal— Natural Science*, vol.44, no.3, pp.364–371.

Li, Y., Q., Zhou, F., Gao, F., Bian, J., and Shan, F., 2009, Comparative Evaluation of Quercetin, Isoquercetin, and Rutin as Inhibitors of  $\alpha$ -Glucosidase, *J. Agri. Food Chem.*, 57, 11463-11468.

Liang, G., Yang, S., Jiang, L., Zhao, Y., Shao, L., Xiao, J., Ye, F., Li, Y. and Li X, 2008, Synthesis and Anti-bacterial Properties of Mono-carbonyl Analogues of Curcumin, *Chem Pharm Bull (Tokyo)*., 56(2), 162-7.

Liang, G., Li, X., Chen, L., Yang, S., Wu, X., Studer, E., Gurley, E., Hylemon, P.B., Ye, F., Li, Y. and Zhou, H., 2008, Synthesis and Anti-inflammatory Activities of Mono-carbonyl Analogues of Curcumin, *Bioorg Med Chem Lett.*, 18(4), 1525-9.

- Liang, G., Shao, L., Wang, Y., Zhao, C., Chu, Y., Xiao, J., Zhao, Y., Li, X. and Yang, S., 2009, Exploration and Synthesis of Curcumin Analogues with Improved Structural Stability both in vitro and in vivo as Cytotoxic Agents, *Bioorganic & Medicinal Chemistry*, 17, 2623-2631.
- Mangels AR, Holden JM, Beecher GR, 1993, Caretenoide contents of fruits and vegetables: an evaluation of analytical data, *Am Diet Assoc*, 93: 284-96.
- Mazumdar, A., Raghavan, K., Weinstein, J., Kohn, K. W. and Pommer, Y., 1995, Inhibition of Human Immunodeficiency Virus type-1 Integrase by Curcumin, *Biochem. Pharmacol.*, 49, 1165–1170.
- Mishra, S., Karmodiya, K. and Surolia, N., 2008, Synthesis and Exploration of Novel Curcumin Analogues as Anti-malarial Agents, *Bioorganic & Medicinal Chemistry*, 16, 2894–2902.
- Murugan, P., and Pari, L., 2006, Effect of Tetrahydrocurcumin on Lipid Peroxidation and Lipids in Streptozotocinnicotinamide-induced Diabetic Rats, *Basic Clin Pharmacol Toxicol*, 99, 122–127.
- Nakai, H., Ito, T., Hayashi, M., Kamiya., Yamamoto, T., Matsubara, K., Kim, Y., Jintanart, W., Okuyama, M., Mori, H., Chiba, S., Sanoa, Y. and Kimura, A., 2007, Multiple forms of  $\alpha$ -glucosidase in rice seeds (*Oryza sativa* L., var Nipponbar), *Biochimie*, 89(1), 49-62.
- Nampoothiri, S.V., Prathapan, A., Cherian L. O., Raghu, K.G., Venugovalan, V.V. and Sundaresan, A, 2011, In vitro Antioxidant and Inhibitory Potential of Terminalia bellerica and Emblica officinalis Fruits Against Oxidation and Ke Enzymes Linked to Type 2 Diabetes, *Food Chem. Toxicol.*, 49, 125-131.
- Nelson, D. L. and Cox, M. M, 2008, *Lehninger Principles of Biochemistry*, 5nd Ed, W.H Freeman and Company, New York.
- Nugroho, A. N., 2014, *Farmakologi: Obat-obat Penting dalam Pembelajaran Ilmu Farmasi dan Dunia Kesehatan*, Pustaka Pelajar Yogyakarta.

- Ohtsu, H., Xiao, Z., Ishida, J., Nagai, M., Wang, H.K., Itokawa, H., Su, C.Y., Shih, C., Chiang, T., Chang, E., Lee, Y., Tsai, M.Y., Chang, C. and Lee, K.H., 2002,. Curcumin Analogues as Novel Androgen Receptor Antagonists with Potential as Anti-prostate Cancer Agents, *J Med Chem.*, 45(23):5037-42.
- Palmer, T., 1991, *Understanding Enzymes 3<sup>rd</sup> Edition*, West Sussex: Ellis Horwood Limited.
- Park, S.Y., and Kim, D., 2002, Discovery of Natural Products from *Curcuma longa* that Protects Cells from Beta-Amyloid Insult: Drug Discovery Effort against Alzheimer's Disease, *J of Natural Products*, 65 (9), 1227-1231.
- Priyadarsini, K. P., 2014, The Chemistry of Curcumin: From Extraction to Therapeutic Agent, *Molecules*, 19, 20091-20112.
- Risma, D., 2012, *Isolasi dan Karakterisasi Enzim  $\alpha$ -Glukosidase dari Beras Lapuk (*Oryza sativa L.*)*, Program Studi Kimia, Fakultas MIPA, Universitas Indonesia, Depok.
- Robinson, T.P., Ehler, T., Hubbard, R.B., Iv, Bai, X., Arbiser, J.L., Goldsmith, D.J., and Bowen, J.P., 2003, Design, Synthesis and Biological Evaluation of Angiogenesis Inhibitors: Aromatic Enone and Dienone Analogues of Curcumin, *Bioorg. Med. Chem. Let.* 13 (1), 115-117.
- Rosemond, M.J., Williams, L., Yamaguchi, T., Fujishita T. and Walsh, J.S., 2004, Enzymology of a Carbonyl Reduction Clearance Pathway for the HIV Integrase Inhibitor, S-1360: Role of Human Liver Cytosolic Aldo-keto Reductases, *Chem Biol Interact.*, 147(2), 129-39.
- Roughley, P.J., and Whiting, D.A., 1973, Experiments in the Biosynthesis of Curcumin, *J.C.S. Perkin I*, 2379-2388.
- Sardjiman, 2000, *Synthesis of Some New Series of Curcumin Analogues, AntiOxidative, Anti-Inflammatory, Antibacterial Activities and Qualitative Structure-Activity Relationship*, Disertasi, Fakultas Farmasi, Universitas Gadjah Mada, Yogyakarta.

- Surojanametakul, V., Satmalee, P., Saengprakai, J., Siliwan D. and Wattanasiritham, L., 2010, Preparation of Curcuminoid Powder from Turmeric Root (*Curcuma longa* Linn) for Food Ingredient Use, *Kasetsart J. (Nat. Sci.)*, 44, 123 – 130.
- Seo, K.I., Choi, M.S., and Jung, U. J., 2008, Effect of Curcumin Supplementation on Blood Glucose, Plasma Insulin, and Glucose Homeostasis Related Enzyme Activities in Diabetic db/db Mice, *Molecular Nutrition and Food Research*, vol.52, no.9, pp.995–1004.
- Sheehan, M. T., 2003, Therapeutics Options in Type 2 DM : A Practical Approach, *Clinical Medicine & Research I*, (3):189-200.
- Smeltzer, S.C and Bare, B.G, 2002, *Buku Ajar Medikal Bedah*, Volume 2, Edisi 8, EGC, Jakarta.
- Spiller, H. A., and Sawyer, T. S., 2006, Toxicology of Oral Antidiabetic Medications, *American Journal of Health System Pharmacy*, 63, 929–938.
- Srinivasan M, 1972, Effect of Curcumin on Blood Sugar as Seen in a Diabetic Subject, *Indian J Med Sci*, 26, 269-270.
- Straganz, G.D., Glieder, A., Brecker, L., Ribbons, D.W. and Steiner W., 2003, Acetylacetone-cleaving Enzyme Dke1: a Novel C-C-bond-cleaving Enzyme from *Acinetobacter johnsonii*, *Biochem J.* , 369(Pt 3), 573-81.
- Supardjan, A.M., Jennie, U.A., Samhoedi, M., Timmerman, H., and Goot, V. H., 1997, Synthesis and Hydroxyl Radical Scavenging Activity of Some 4-Alkylcurcumin Derivatives, in *Recent Development in Curcumin Pharmacology*, Aditya Media, Yogyakarta.
- Tiyaboonchai, W., Tungpradit, W. dan Plianbangchang, P., 2007, "Formulation and characterization of curcuminoids loaded solid lipid nanoparticles", *Int J Pharm*, **337** (1–2), 299–306.
- Todd, Jr., P.H, 1991, *Curcumin Complexed on Water-dispersible Substrates*, United States Patent, 4,999,205.

- Tomren, M.A., Másson, M., Loftsson, T. and Tønnesen, H.H., 2007, Symmetric and Asymmetric Curcuminoids: Stability, Activity and Complexation with Cyclodextrin, *International Journal of Pharmaceutics*, Volume 338, Issues 1–2, 27–34.
- Tonnesenn, H., H. and Karlsen, J., 1985, Studies on Curcumin and Curcuminoids, VI: Kinetics of Curcumin Degradation in Aqueous Solution, *Original Paper, Z. Lebensm. Unters. Fosch.* 402-404.
- Tundis, R., Loizzo, M., R. and Menichini F., 2010, Natural products as alpha-amylase and alpha-glucosidase inhibitors and their hypoglycaemic potential in the treatment of diabetes: an update, *Mini Rev Med Chem.*, 10(4), 315-31.
- Wang, Y.J., Pan, M.H., Cheng, A.L., Lin, L.I., Ho Y.S., Hsieh, C.Y. and Lin J.K., 1997, Stability of curcumin in Buffer Solutions and Characterization of Its Degradation Products, *J Pharm Biomed Anal.*, 15(12), 1867-76.
- Wright, E., Scism-Bacon, J.L. and Glass, L.C., 2006, Oxidative Stress in Type 2 Diabetes; the Role of Fasting and Postprandial Glycaemia, *J. Clin. Pract.*, 60(3), 308-314.
- Yamasaki, Y., Haruyoshi, K., 1992, Wall-Bound  $\alpha$ -Glucosidase of Suspension-Cultured Sugar-Beet Cells, *Phytochemistry*, 31, 2605-2607.
- Yuan, X., Li, H. and Bai, H., 2014, Synthesis of Novel Curcumin Analogues for Inhibition of 11  $\beta$ -hydroxysteroid Dehydrogenase Type 1 with Anti-diabetic Properties, *European Journal of Medicinal Chemistry*, 77, 223-230.
- Zetterström S., 2012, Isolation and synthesis of curcumin, *Bachelor Thesis*, Department of Physics, Chemistry and Biology, Linköping University, Linköping.
- Zimmerman, B.R., 1997, Sulfonylureas, *Endocrinol Metab Clin North Am*, 26, 511-522.