

DAFTAR PUSTAKA

- African Pharmacopoeia. 1986. *General Methods for Analysis Ist ed.2:*(OAU/STRC). Lagos. 123.
- Al-Dujaili, S. A, Lau, E., Al-Dujaili, H., Tsang, K., Guenther, A., dan You, L., 2011. Apoptotic osteocytes regulate osteoclast precursor recruitment and differentiation in vitro. *J Cell Biochem.*, 112:2412-2423.
- Almeida, M., Han, L., Martin, M. M., Plotkin, L. I., Stewart, S. A., Roberson, P. K., Kousteni, S., O'Brien, C. A., Bellido, T., Parfitt, A. M., Weinstein, R. S., Jilka, R. L., dan Manolagas, S. C., 2007. Skeletal involution by age-associated oxidative stress and its acceleration by loss of sex steroids. *J Biol Chem.*, 282:27285-27297.
- Annitti, T. I., Rosini, S., Lodi, D., Frediani, B., Rottigni, V., dan Palmieri, B., 2012. Bisphosphonates: focus on inflammation and bone loss. *American Journal of Therapeutics*, 19(3):228–246.
- Aoki, T., Akashi, T., dan Ayabe, S., 2000. Flavonoids of leguminous plants: structure, biological activity, and biosynthesis. *J Plant Res.*, 113:475–488.
- Arifin, B. dan Ibrahim, S., 2018. Struktur, Bioaktivitas dan Antioksidan Flavonoid. *Jurnal Zarah*, 6(1):21-29.
- Arksey, H. dan O'Malley, L., 2005. Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(19):32.
- Bai, X. C., Lu, D., Bai, J., Zheng, H., Ke, Z. Y., Li, X. M., dan Luo, S. Q., 2004. Oxidative stress inhibits osteoblastic differentiation of bone cells by ERK and NF-kappaB. *Biochem Biophys Res Commun.*, 314:197-207.

- Balbir, S., Mohan, P. S., dan Anupam, S., 2013. Estimation of Quercetin, an anxiolytic constituent in EGA. *J Pharmaco Phytochem.*, 1(6):117-121.
- Baron, R. dan Hesse, E., 2012. Update on bone anabolics in osteoporosis treatment: rationale, current status, and perspectives. *J Clin Endocrinol Metab.*, 97:311-325.
- Bellido, T., 2014. Osteocyte-driven bone remodeling. *Calcif Tissue Int.*, 94:25-34.
- Bharti, A., 2010. Pharmacognostic investigation of *Elaeocarpus ganitrus* Roxb. leaf and seed. *Pharmatutor.*, 1-5.
- Bhattacharya, S. K., Debnath, P. K., Pandey, V. B., dan Sanyal, A. K., 1975. Pharmacological investigations on *Elaeocarpus ganitrus*. *Planta Medica*, 28(2):174-177.
- Bhuyan, P., Khan, M. L., dan Tripathi, R. S., 2002. Regeneration status and population structure of Rudraksh (*Elaeocarpus ganitrus* Roxb.) in relation to cultural disturbances in tropical wet evergreen forest of Arunachal Pradesh. *Current Science*, 83(11):1391-1394.
- Bi, Y., Seabold, J. M., Kaar, S. G., Ragab, A. A., Goldberg, V. M., dan Anderson, J. M., 2001. Adherent endotoxin on orthopedic wear particles stimulates cytokine production and osteoclast differentiation. *J Bone Miner Res Off J Am Soc Bone Miner Res.*, 16:2082–91.
- Biswas, R. K., Ishika, T., Rahman, M., Swarna, A., Khan, T., Monalisa, N. M., dan Rahmatullah, M., 2012. Anti-diabetic plants and formulations used by folk medicinal practitioners of two villages in Narail and Chuadanga Districts, Bangladesh. *American-Eurasian Journal of Sustainable Agriculture*, 5(2):158-167.
- Body, J. J., Bergmann, P., Boonen, S., Devogelaer, J. P., Gielen, S., Goemaere, E., Kaufman, J. M., Rozenberg, S., dan Reginster, J. Y.,
- SKRIPSI POTENSI SENYAWA GOLONGAN... EVA MELISA D.

2012. Extraskeletal benefits and risks of calcium, Vitamin D and anti-osteoporosis medications, *Osteoporosis International*, 23(1):1–23.
- Bonewald, L. F., 2011. The amazing osteocyte. *J Bone Miner Res.*, 26:229-238.
- Burak, M. dan Imen, Y., 1999. Flavonoids and their antioxidant properties. *Turkiye Klin Tip Bil Derg.*, 19:296–304.
- Chand, L., Dasgupta, S., Chattopadhyay, S. K., dan Ray, A. B., 1977. Chemical Investigation of Elaeocarpus Species. *Planta Medica*, 32.
- Chen, J. R., Badger, T. M., Nagaragian, S., Ronis, dan M. J. J., 2008. Inhibition of reactive oxygen species generation and downstream activation of the ERK/STAT3/RANKL-signaling cascade to osteoblasts accounts for the protective effect of estradiol on ethanol-induced bone loss. *J Pharmacol Exp Ter.*, 324:50-59.
- Chen, J. R., Lazarenko, O. P., Haley, R. L., Blackburn, M. L., Badger, T. M., dan Ronis, M. J. J., 2009. Ethanol impairs estrogen receptor signaling and activates senescence pathways in osteoblasts Protection by estradiol. *J Bone Min Res.*, 24:221–230.
- Chen, J. R., Lazarenko, O. P., Wu, X., Kang, J., Blackburn, M. L., Shankar, K., Badger, T. M., dan Ronis, M. J., 2010. Dietary-induced serum phenolic acids promote bone growth via p38 MAPK/ β -catenin canonical wnt signaling. *J Bone Min Res.*, 25:2399–2412.
- Chopra, R. N., Chopra, I. C., Hunda, K. I., dan Kumar, L. D., 1982. *Chopra's indigenous drug of India*. India: Academic Publishers.
- Codorniu, H. E., Rolo, N, A., dan Montero, C. L. A., 2007. Theoretical affinity order among flavonoids and amino acid residues: an approach to understand flavonoid–protein interactions. *J Mol Struc: Theochem.*, 819:121–129.

- Compston, J., 2012. The use of combination therapy in the treatment of postmenopausal osteoporosis. *Endocrine*, 41(1):11–18.
- Coode, M. J. E., 2001. *Elaeocarpus in New Guinea- new taxa in the Debruyunii subgroup of the Monocera group, Contributions to the Flora of Mt Jaya, V*. Kew Bulletin, Kew: United Kingdom.
- Cornwell, T., Cohick, W., dan Raskin, I., 2004. Dietary Phytoestrogens And Health. *Phytochemistry*, 65:995–1016.
- Dai, S. M., Nishioka, K., dan Yudoh, K., 2004. Interleukin (IL) 18 stimulates osteoclast formation through synovial T cells in rheumatoid arthritis: comparison with IL1 beta and tumour necrosis factor alpha. *Ann Rheum Dis.*, 63(11):1379–1386.
- Dasgubta, A., Agrawal, S. S., dan Basu, D. K., 1984. Anticonvulsant activity of the mixed fatty acids of the *Elaeocarpus ganitrus* Roxb. *Indian J. Physiol. Pharm.*, 28:245-286.
- Davey, D. A., 2012. Update: estrogen and estrogen plus progestin therapy in the care of women at and after the menopause, *Womens Health*, 8(2):169–189.
- DeGroot, H., 1994. Reactive oxygen species in tissue injury. *Hepatogastroenterology*, 41:328–332.
- Dewick, P. M., 2001. *The shikimate pathway: aromatic amino acids and phenylpropanoids. In Medicinal Natural Products: a Biosynthetic Approach, 2nd ed.*, Chichester: John Wiley. 137–186.
- Dimitrios, B., 2006. Sources of natural phenolic antioxidants. *Trends in Food Science and Technology*, 17:505-512.
- Dipiro, J. T., Wells, B. G., Swihwinghammer, T. L., dan Dipiro, C. V., 2015. *Pharmacotherapy Handbook. 9th Edition*. Mississippi: The McGraw-Hill Companies Inc. 16-25.
- Dixon, R. dan Ferreira, D., 2002. Molecules of interest: genistein. *Phytochemistry*, 60:205–211.

- Domazetovic, V., Gemma, M., Teresa, I., Maria, L. B., dan Maria, T. V., 2017. Oxidative stress in bone remodeling: role of antioxidants. *Clinical Cases in Mineral and Bone Metabolism*, 14(2):209-216
- Fan, S., Xiang, G., Peng, C., dan Xu, L., 2018. Myricetin ameliorates glucocorticoid-induced osteoporosis through the ERK signaling pathway. Accepted Manuscript. *Life Sciences*.
- Feng, X. dan McDonald, J. M., 2011. Disorders of bone remodelling. *Annu Rev Pathol.*, 6:121-145.
- Filaire, E. dan Toumi, H., 2012. Reactive oxygen species and exercise on bone metabolism: friend or enemy?. *Joint Bone Spine*, 79:341-346.
- Fontani, F., Marcucci, G., Iantomasi, T., Brandi, M. L., dan Vincenzini, M. T., 2015. Glutathione, N-acetylcysteine and lipoic acid down-regulate starvation-induced apoptosis, RANKL/OPG ratio and sclerostin in osteocytes: involvement of JNK and ERK1/2 signalling. *Calcif Tissue Int.*, 96:335-346.
- Forte, L., Paola, T., Elisa, B., Massimo, G., Katia, R., Milena, F., dan Adriana, B., 2015. Antioxidant and bone repair properties of quercetin-functionalized hydroxyapatite: an in vitro osteoblast-osteoclast-endothelial cell co-culture study. *Acta Biomaterialia*, doi: 10.1016/j.actbio.2015.12.013
- Gallagher, J. C., 2008. Advances in bone biology and new treatments for bone loss. *Maturitas*, 60(1):65–69.
- Gao, Y., Grassi, F., Ryan, M. R., Terauchi, M., Page, K., Yang, X., Weitzmann, M. N., dan Pacifici, R., 2007. IFN gamma stimulates osteoclast formation and bone loss in vivo via antigen-driven T cell activation. *J Clin Invest.*, 117(1):122–132.
- Garazd, M., Garazd, Y., dan Khilya, V., 2003. Neoflavones. Natural distribution and spectral and biological properties. *Chem Nat Comp.*, 39:54-121.

- Geetha. 2013. *Elaeocarpus serratus* L. : A Pharmacognostical And Pharmacological Elucidation. ***PG & Research Departement of Botany***. 77-95.
- Gera, S., Venkatesh, P., Chandraiah, G., Veerabhadra, Swamy, C., Jitendra, W., Sujatha, D., dan Sunitha, S., 2020. Rutin nanosuspension for potential management of osteoporosis: effect of particle size reduction on oral bioavailability, in vitro and in vivo activity. ***Pharmaceutical Development and Technology***, doi: 10.1080/10837450.2020.1765378
- Gibney, M. J., 2009. ***Gizi Kesehatan Masyarakat***. Jakarta: EGC.
- Gilbert, L., He, X., Farmer, P., Boden, S., Kozlowski, M., Rubin, J., dan Nanes, M. S., 2000. Inhibition of osteoblast differentiation by tumor necrosis factor-alpha. ***Endocrinology***, 141(11):3956–3964.
- Giusti, M. dan Wrolstad, R., 2003. Acylated anthocyanins from edible sources and their applications in food systems. ***Biochem Eng J.***, 14:217–225.
- Gohil, D., Raole, V. M., dan Daniel, M., 2007. ***Micromorphological characters as biomarkers for some of the medicinal plants of Gujarat***. Herbal Technology: Recent trends and progress (M. Daniel *et al* Eds.) Herbal Technol.: Recent Trends. Prog., 77-84.
- Gomez, Joan., 2006. ***Awas Pengeroposan Tulang, Bagaimana Menghindari dan Menghadapinya***. Jakarta: Arcan.
- Grace, P. A., 1994. Ischaemia–reperfusion injury. ***Br J Surg.***, 81:637–647.
- Griesbach, R., 2005. Biochemistry and genetics of flower color. ***Plant Breed Rev.***, 25:89–114.
- Hall, S. L. dan Greendale, G. A., 1998. The relation of dietary vitamin C intake to bone mineral density: results from the PEPI study. ***Calcif Tissue Int.***, 63:183-189.

- Halliwell, B., 1995. How to characterize an antioxidant: an update. *Biochem Soc Symp.*, 61:73-101.
- Hamada, Y., Fujii, H., dan Fukagawa, M., 2009. Histomorphometric analysis of diabetic osteopenia in streptozotocin-induced diabetic mice: role of oxidative stress in diabetic bone disorder. *Bone*, 45:35–38.
- Hanasaki, Y., Ogawa, S., dan Fukui, S., 1994. The correlation between active oxygens scavenging and antioxidative effects of flavonoids. *Free Radic Biol Med.*, 16:845–850.
- Havsteen, B., 2002. The biochemistry and medical significance of the flavonoids. *Pharmacol Ther.*, 96:67–202.
- Hayashi, T., Sawa, K., dan Kawasaki, M., 1988. Inhibition of cow's milk xanthine oxidase by flavonoids. *J Nat Prod.*, 51: 345–348.
- Henriksen, K., Neutzsky-Wulff, A. V., Bonewald, L. F., dan Karsdal, M. A., 2009. Local communication on and within bone controls bone remodeling. *Bone*, 44:1026-1033.
- Hsu, Y. L., Jiunn, K. C., Chu, H. T., Tzu, T., Chang, C., dan Po, L. K., 2007. Myricetin induces human osteoblast differentiation through bone morphogenetic protein-2/p38 mitogen-activated protein kinase pathway. *Biochemical Pharmacology*, 73:504-514.
- Huang, J., Chuanlong, W., Bo, T., Xiao, Z., Nian, M., dan Yufen, Q., 2016. Myricetin Prevents Alveolar Bone Loss in an Experimental Ovariectomized Mouse Model of Periodontitis. *International Journal Of Molecular Sciences*, 17(422):1-13.
- Huh, Y. J., Kim, J. M., Kim, H., Song, H., So, H., Lee, S. Y., Kwon, S. B., Kim, H. J., Kim, H. H., Lee, S. H., Choi, Y., Chung, S. C., Jeong, D. W., dan Min, B. M., 2006. Regulation of osteoclast differentiation by the redox-dependent modulation of nuclear import of transcription factors. *Cell Death Differ.*, 7:1138-1146.

- Hyun, H., Heajin, P., Jaehoon, J., Jihye, K., Haesung, K., Hyun, I. O., Hye, S. H., dan Ha, H. K., 2014. Effects of Watercress Containing Rutin and Rutin Alone on the Proliferation and Osteogenic Differentiation of Human Osteoblast-like MG-63 Cells. *Korean J Physiol Pharmacol.*, 18:347–352.
- Iwashina, T., 2013. Flavonoid properties of five families newly incorporated into the order Caryophyllales (Review). *Bull Natl Mus Nat Sci.*, 39:25-51.
- Jayashree, I., 2011. Scientific Appraisal of *Elaeocarpus serratus* L. and *Elaeocarpus tuberculatus* Roxb. : Antioxidant, Antimicrobial and Pharmacological Studies. Ph.D. *Thesis submitted to the Bharathiar University.*
- Jayasinghe, L., Nilupa, R. A., Arundathie, B. G. S., Ruasinghe, G. K., Ayona, N. H., Jayatilake, N., dan Fujimoto, Y., 2012. Antioxidant flavonol glycosides from *Elaeocarpus serratus* and *Filicium decipiens*. *Natural Product Research*, 26:717-727.
- Jayeola, A. A., 2009. Micro morphological study of plant fragments in some powdered medicinal plants. *J. Med. Plants Res.*, 3(5):438-442.
- Jia, M., Nie, Y., Cao, P. D., Xue, Y., Wang, J. S., Zhao, L., Rahman, K., Zhang, Q. Y., dan Qin, L. P., 2012. Potential Antiosteoporotic Agents from Plants: A Comprehensive Review. *Hindawi Publishing Corporation*, 2012:1-28.
- Jilka, R. L. dan Noble, B., 2013. Weinstein RS. Osteocyte apoptosis. *Bone*, 54:264-271.
- Jilka, R. L., Hangoc, G., Girasole, G., Passeri, G., Williams, D. C., Abrams, J. S., Boyce, B., Broxmeyer, H., dan Manolagas, S. C., 1992. Increased osteoclast development after estrogen loss: Mediation by interleukin-6. *Science*, 257:88–91.

- Johns, S. R., Lamberton, J. A., Sioumis, A. A., Soares, H., dan Willing, R. I., 1970. The structures and absolute configuration of seven alkaloids from *Elaeocarpus sphaericus*. *J Chem Soc D Chem Com.*, 804-805.
- Jorgensen, R., 1995. Co-suppression, flower color patterns, and metastable gene expression states. *Science*, 268:686–691.
- Juvekar, A. R., Gunjal, M. A., Shah, A. S., dan Wakade, A. S., 2010. Protective effect of aqueous extract of *Moringa oleifera* Lam. stem bark on serum lipids, marker enzymes and heart antioxidants parameters in ISO-induced cardiotoxicity in wistar rats. *Indian Journal of Natural Products and Resources*, 485-492.
- Kawaguchi, H., Pilbeam, C. C., Vargas, S. J., Morse, E. E., Lorenzo, J. A., dan Raisz, L. G., 1995. Ovariectomy enhances and estrogen replacement inhibits the activity of bone marrow factors that stimulate prostaglandin production in cultured mouse calvariae. *J. Clin. Investig.*, 96:539–548.
- Kennedy, O. D., Laudier, D. M., Majeska, R. J., Sun, H. B., dan Schaffler, M. B., 2014. Osteocyte apoptosis is required for production of osteoclastogenic signals following bone fatigue in vivo. *Bone*, 64:132-137.
- Kerry, N. dan Abbey, M., 1997. Red wine and fractionated phenolic compounds prepared from red wine inhibit low density lipoprotein oxidation in vitro. *Atherosclerosis*, 135:93-102.
- Kido, S., Inoue, D., Hiura, K., Javier, W., dan Ito, Y., 2003. Expression of RANK is dependent upon differentiation into the macrophage/osteoclast lineage: induction by 1 α ,25-dihydroxyvitamin D₃ and TPA in a human myelomonocytic cell line, HL60. *Bone*, 32:621–629.
- Kikuyama, A., Fukuda, K., Mori, S., Okada, M., Yamaguchi, H., dan Hamanishi, C., 2002. Hydrogen peroxide induces apoptosis of

osteocytes: involvement of calcium ion and caspase activity. *Calcif Tissue Int.*, 71:243-248.

Kimble, R. B., Bain, S., dan Pacifici, R., 1997. The functional block of TNF but not of IL-6 prevents bone loss in ovariectomized mice. *J. Bone Miner. Res.*, 12:935–941.

Ko, S. Y., 2012. Myricetin suppresses LPS-induced MMP expression in human gingival fibroblasts and inhibits osteoclastogenesis by down regulating NFATc 1 in RANKL-induced RAW 264.7 cells. *Arch. Oral Biol.*, 57:1623–1632.

Kokate, C. K., 2010. *Practical pharmacognosy 4th ed.* New Delhi: Vallabh Prakashan. 17-26.

Komm, B. S. dan Chines, A. A., 2012. An update on selective estrogen receptor modulators for the prevention and treatment of osteoporosis. *Maturitas*, 71(3):221–226.

Kong, J. M., Chia, L. S., Goh, N. K., Chia, T. F., dan Brouillard, R., 2003. Analysis and Biological Activities of Anthocyanins. *Phytochemistry*, 64: 923-933.

Korkina, L. dan Afanasev, I., 1997. Antioxidant and chelating properties of flavonoids. *Adv Pharmacol.*, 38:151–163.

Kotake, S., Nanke, Y., Mogi, M., Kawamoto, M., Furuya, T., Yago, T., Kobashigawa, T., Toqari, A., dan Kamatani, N., 2005. IFN-gamma-producing human T cells directly induce osteoclastogenesis from human monocytes via the expression of RANKL. *Eur J Immunol.*, 35(11):3353–3363.

Kothale, K. V. dan Rothe, S. P., 2012. Chemoprofile of *Elaeocarpus tuberculatus* Roxb. *World Journal of Science and Technology*, 2(6):32-34.

Koul, M. K., 2001. *Bond with the beads. Spectrum.* India: The Tribune.

- Kumar, S. T., Shanmugam, S., dan Palvannan, T., 2008. Evaluation of antioxidant properties of *Elaeocarpus ganitrus* Roxb. leaves. *Iranian Journal of Pharmaceutical Research*, 7(3):211-215.
- Kumar, V. K., Kumar, P. S., Rajan, M., Kumar, A. V., Boppana, R., Reddy, P. S., dan Alzeber, H. F. H. 2011. Qualitative phytochemical analysis of *Bauhinia tomentosa* Linn. flower by HPTLC. *Journal of Pharmacy Research*, 4(9): 2868-2880.
- Kuo, P. L., 2005. Myricetin inhibits the induction of anti-Fas IgM-, tumor necrosis factor- α - and interleukin-1 β -mediated apoptosis by Fas pathway inhibition in human osteoblastic cell line MG-63. *Life Science*, 77:2964–2976.
- Kuo, P. L., Hsu, Y. L., Chang, C. H., dan Chang, J. K., 2005. Osthole-mediated cell differentiation through bone morphogenetic protein-2/p38 and extracellular signal-regulated kinase 1/2 pathway in human osteoblast cells. *J Pharmacol Exp Ther.*, 314:1290–9.
- Kyung, T. W., Lee, J. E., Shin, H. H., dan Choi, H. S., 2008. Rutin inhibits osteoclast formation by decreasing reactive pxygen species and TNF-alpha by inhibiting activation of NF-kappaB. *Experimental & Molecular Medicine*, 40(1):52-58.
- Lean, J. M., Jagger, C. J., Kirstein, B., Fuller, K., dan Chambers, T. J., 2005. Hydrogen peroxide is essential for estrogen-deficiency bone loss and osteoclast formation. *Endocrinology*, 146:728-735.
- Lee, D. H., Lim, B. S., Lee, Y. K., dan Yang, H. C., 2006. Effects of hydrogen peroxide (H₂O₂) on alkaline phosphatase activity and matrix mineralization of odontoblast and osteoblast cell lines. *Cell Biol Toxicol.*, 22:39-46.
- Lee, H. H., Jang, J. W., Jung, K. L., dan Choon, K. P., 2020. Rutin Improves Bone Histomorphometric Values By Reduction of

Osteoclastic Activity in Osteoporosis Mouse Model Induced By Bilateral Ovariectomy. *Journal of Korean Neurosurgical Activity*, doi: 10.3340/jkns.2019.0097

- Lee, K. H., dan Choi, E. M., 2008. Myricetin, a naturally occurring flavonoid, prevents 2-deoxy-D-ribose induced dysfunction and oxidative damage in osteoblastic MC3T3-E1 cells. *European Journal of Pharmacology*, 591 : 1-6.
- Lee, Y., Yuk, D., dan Lee, J., 2009. Epigallocatechin-3-gallate prevents lipopolysaccharide-induced elevation of β -amyloid generation and memory deficiency. *Brain Res.*, 1250:164–174.
- Lenzen, S., 2008. The mechanisms of alloxan- and streptozotocin-induced diabetes. *Diabetologia*, 51:216–226.
- Liang, W., Zhonghua, L., Shuhua, G., Mo, L., Junjie, D., Min, Y., Ming, Yan., Zhengxu, Y., dan Zhuojing, L., 2011. Oral administration of quercetin inhibits bone loss in rat model of diabetic osteopenia, *European Journal of Pharmacology*, 670:317-324.
- Linuma, M., Tanaka, T., Hamada, K., Mizuno, M., Asai, F., Reher, G., dan Kraus, L., 1987. Revised structure of neoflavone in *Coutarea hexandra*. *Phytochemistry*, 26:3096–3097.
- Luo, X. D., Basile, M. J., dan Kennelly, E. J., 2002. Polyphenolic antioxidants from the fruits of *Chrysophyllum cainito* L. (star apple). *J Agric Food Chem.*, 50: 1379-1382.
- Maggio, D., Barabani, M., Pierandrei, M., Polidori, M. C., Catani, M., Mecocci, P., Senin, U., Pacifici, R., dan Cherubini, A., 2003. Marked decrease in plasma antioxidants in aged osteoporotic women: results of a cross-sectional study. *J Clin Endocrinol Metab.*, 88:1523-1527.
- Manach, C., Scalbert, A., dan Morand, C., 2004. Polyphenols: food sources and bioavailability. *Am J Clin Nutr.*, 79:727–747.

- Marathe, N., Rangaswami, H., Zhuang, S., Boss, G. R., dan Pilz, R. B., 2012. Pro-survival effects of 17 β -estradiol on osteocytes are mediated by nitric oxide/cGMP via differential actions of cGMP-dependent protein kinases I and II. *J Biol Chem.*, 287:978-988.
- Matthies, A., Clavel, T., dan Gütschow, M., 2008. Conversion of daidzein and genistein by an anaerobic bacterium newly isolated from the mouse intestine. *Appl Environ Microbiol.*, 74:4847–4852.
- Metodiewa, D., Kochman, A., dan Karolczak, S., 1997. Evidence for antiradical and antioxidant properties of four biologically active N, N, diethylaminoethyl ethers of flavanone oximes: a comparison with natural polyphenolic flavonoid (rutin) action. *Biochem Mol Biol Int.*, 41:1067–1075.
- Michael, J. P., 1997. The biological activity of indolizidine Alkaloids. *Natural Product Reports*, 14:21-41.
- Miyaura, C., Kusano, K., Masuzawa, T., Chaki, O., Onoe, Y., Aoyagi, M., Sasaki, T., Tamura, T., Koishihara, Y., dan Ohsugi, Y., 1995. Endogenous bone-resorbing factors in estrogen deficiency: cooperative effects of IL-1 and IL-6. *J. Bone Miner Res.*, 10:1365–1373.
- Moher, D., Stewart, L., dan Shekelle, P., 2015. All in the family: Systematic reviews, rapid reviews, scoping reviews, realist reviews, and more. *Systematic Reviews*, 4(1):183–194.
- Mok, S. Y. dan Lee, S., 2013. Identification of flavonoids and flavonoid rhamnosides from *Rhododendron mucronulatum* for albiflorum and their inhibitory activities against aldose reductase. *Food Chem.*, 136: 969-974.
- Most, N. P., Sarwar, S., Chowdhury, S. A., Zakaria, H. M., dan Huda, N. H., 2012. In vitro cytotoxicity and antioxidant studies of *Elaeocarpus serratus*. *Stamford J. Pharm. Sci.*, 2(2):86-90.

- Moutsatsou, P., Kassi, E., dan Papavassiliou, A. G., 2012. Glucocorticoid receptor signaling in bone cells. *Trends in Molecular Medicine*, 18(6):348–359.
- Mulcahy, L. E., Taylor, D., Lee, T. C., dan Duffy, G. P., 2011. RANKL and OPG activity is regulated by injury size in networks of osteocyte-like cells. *Bone*, 48:182-188.
- Muller, D., Pulm, J., dan Gandjour, A., 2012. Cost-effectiveness Of Different Strategies For Selecting And Treating Individuals at Increased Risk Of Osteoporosis or Osteopenia, A Systematic Review. *Value in Health*, 15(2):284–298.
- Mundy, G. R., 2007. Osteoporosis and inflammation. *Nutr Rev.*, 65:147–151.
- Naim, A. B., Abdullah, A., Alghamdi, Mardi, M., Algandaby, Fahad, A., Al-Abbasi, Ahmed, M., Al-Abd, Basma, G. E., Hossam, M., Abdallah, dan Ali, M. E., 2018. Rutin Isolated from *Chrozophora tinctoria* Enhances Bone Cell Proliferation and Ossification Markers. *Oxidative Medicine and Cellular Longevity*, 1-10.
- Nijveldt, R., Nood, E., Hoorn, D., Boelens, P. G., Norren, K. V., dan Leeuwen, P. A., 2001. Flavonoids: a review of probable mechanisms of action and potential applications. *Am J Clin Nutr.*, 74:418–425.
- Nishimura, S., Taki, M., Takaishi, S., Iijima, Y., dan Akiyama, T., 2000. Structures of 4-arylcoumarin (neoflavone) dimers isolated from *Pistacia chinensis* BUNGE and their estrogen-like activity. *Chem Pharm Bull (Tokyo)*, 48:505–508.
- Noble, B., 2005. Microdamage and apoptosis. *Eur J Morphol.*, 42:91-8.
- Nohe, A., Keating, E., Knaus, P., dan Petersen, N. O., 2004. Signal transduction of bone morphogenetic protein receptors. *Cell Signal.*, 16:291–9.

- Nuhonni, S. A., 2000. *Osteoporosis dan Pencegahannya*. Jakarta: Fakultas Kedokteran Universitas Indonesia.
- Ostman, B., Michaëlsson, K., Helmersson, J., Byberg, L., Gedeberg, R., Melhus, H., dan Basu, S., 2009. Oxidative stress and bone mineral density in elderly men: antioxidant activity of alpha-tocopherol. *Free Radic Biol Med.*, 47:668-673.
- Ovando, C., Hernandez, D., dan Hernandez, E., 2009. Chemical studies of anthocyanins: a review. *Food Chem.*, 113:859–871.
- Panche, A. N., Diwan, A. D., dan Chandra, S. R., 2016. Flavonoids: an overview: Review Article. *Journal of Nutritional Science*, 5(47):1-15.
- Panday, V. B. dan Bhattacharya, S. K., 1985. Scientific appraisal of rudraksha (*Elaeocarpus ganitrus*) : Chemical and pharmacological studies. *J Res Edu Ind Med.*, 4:47-50.
- Park, H. J., Lee, I. S. J., Cho, J., Gharbi, A., Han, H. D., Kang, T. H., dan Kim, Y., 2018. Tamarixetin Exhibits Anti-inflammatory Activity and Prevents Bacterial Sepsis by Increasing IL-10 Production. *Journal Natural Product*, 81:1435–1443.
- Peiris, K. H. S., 2007. *Underutilized Fruit Trees In Sri Lanka*. New Delhi: World Agroforestry Centre, South Asia Regional Office, 1:474-480.
- Peterson, J., Pearce, P. F., Ferguson, L. A., dan Cynthia, A. L., 2017. Understanding scoping reviews: Definition, purpose, and process. *Journal of the American Association of Nurse Practitioners*, 29:12–16.
- Pham, M. T., Rajic, A., Greig, J. D., Sargeant, J. M., Papadopoulos, A., dan McEwen, S. A., 2014. A scoping review of scoping reviews: Advancing the approach and enhancing the consistency. *Research Synthesis Methods*, 5(4):371–385.

- Plotkin, L. I., Aguirre, J. I., Kousteni, S., Manolagas, S. C., dan Bellido, T., 2005. Bisphosphonates and estrogens inhibit osteocyte apoptosis via distinct molecular mechanisms downstream of extracellular signal-regulated kinase activation. *J Biol Chem.*, 280:7317-7325.
- Pradeep, K. S., Ali, M., dan Yadav, D. K., 2011. Physiochemical and phytochemical evaluation of different black tea brands. *Journal of Applied Pharmaceutical Science*, 1(3):121-124.
- Priya, S. R., Krunal, S., Rao S., K., dan Jivani, N. P., 2012. Pharmacognostical standardization of *Elaeocarpus ganitrus* leaf. Family: Elaeocarpaceae. *International Journal of Pharmacognosy and Phytochemical Research*, 4(3):97-98.
- Prouillet, C., Jean, C. M., Cecile, M., Alice, W., Michel, B., dan Said, K., 2004. Stimulatory effect of naturally occurring flavonols quercetin and kaempferol on alkaline phosphatase activity in MG-63 human osteoblasts through ERK and estrogen receptor pathway. *Biochemical Pharmacology*, 67:1307–1313.
- Qi, D. Y., Perkins, S. L., Kling, S. J., dan Russell, R. G. G., 1999. Divergent regulation of 1,25-dihydroxyvitamin D3 on human bone marrow osteoclastogenesis and myelopoiesis. *J Cell Biochem.*, 72:387–395.
- Rachner, T. D., Khosla, S., dan Hofbauer, L. C., 2011. Osteoporosis : now and the future. *The Lancet*, 377(9773):1276–1287.
- Ragusa, S., Pasquale, R., Flores, M., Germano, M. P., Sanogo, R., dan Rapisarda, A., 2001. II *Farmaco.*, 56(5-7):361-363.
- Rahman, A., Wahyuono, S., dan Bates, R., 1998. Anti-infective compounds isolated from leaves of *Elaeocarpus grandiflorus* J.E. Smith. *Indonesian Journal of Pharmacy*, 9(3):139-145.

- Rajapaksha, U. 1998. *Traditional food plants in Sri Lanka*. Colombo : Hector Kobbekaduwa Agrarian Research and Training Institute, 203-205.
- Rassi, C. M., Lieberherr, M., Chaumaz, G., Pointillart, A., dan Cournot, G., 2002. Down-regulation of osteoclast differentiation by daidzein via caspase 3. *J Bone Miner Res.*, 17:630–638.
- Rassi, C. M., Michele, L., Gilles, C., Alain, P., dan Giulia, C., 2005. Modulation of osteoclastogenesis in porcine bone marrow cultures by quercetin and rutin. *Cell Tissue Res.*, 319:383–393.
- Rastogi, R. P. dan Mehrotra, B. N., 1980-1984. *Compendium of Indian Medicinal Plants Vol.1*. CDRI, Lucknow, Publication and Information Directorate, New Delhi. 261-262.
- Ray, A. B., Chand, L., dan Pandey, V. B., 1979. Rudrakine, a new alkaloid from *Elaeocarpus ganitrus*. *Phytochemistry*, 18:700-701.
- Reginster, J. Y. and Neuprez, A., 2010. Strontium ranelate: a look back at its use for osteoporosis. *Expert Opinion on Pharmacotherapy*, 11(17):2915–2927.
- Rocheffort, G. Y., Pallu, S., dan Benhamou, C. L., 2010. Osteocyte: the unrecognized side of bone tissue. *Osteoporos Int.*, 21:1457-1469.
- Romagnoli, C., Marcucci, G., Favilli, F., Zonefrati, R., Mavilia, C., Galli, G., Tanini, A., Iantomasi, T., Brandi, M. L., dan Vincenzini, M. T., 2013. Role of GSH/GSSG redox couple in osteogenic activity and osteoclastogenic markers of human osteoblast-like SaOS-2 cells. *FEBS J.*, 280:867-879.
- Rukmoyo, T., 2012. *Buku ajar osteoporosis*. Yogyakarta: FK UGM, (Diakses pada tanggal 27 Mei 2020).
- Saito, M. dan Marumo, K., 2012. The effects of parathyroid hormone (teriparatide) on bone quality in osteoporosis. *Clinical Calcium*, 22(3):343–355.

- Samanta, A., Das, G., dan Das, S., 2011. Roles of flavonoids in plants. *Int J Pharm Sci Tech.*, 6:12–35.
- Sambrook, P. dan Cooper, C., 2006. Osteoporosis. *Lancet*, 367(9527):2010–2018.
- Sanders, K. M., Kotowicz, M. A., dan Nicholson, G. C., 2007. Potential role of the antioxidant N-acetylcysteine in slowing bone resorption in early postmenopausal women: a pilot study. *Transl Res.*, 150:215.
- Sathish, K., T., Shanmugam, S., Palvannan, T., dan Bharathi, K. V. M., 2008. Evaluation of antioxidant properties of *Elaeocarpus ganitrus* Roxb. leaves. *Iranian Journal of Pharmaceutical Research*, 7(3):211-215.
- Scalbert, A., Manach, C., Morand, C., Rémésy, C., dan Jiménez, L., 2005. Dietary polyphenols and the prevention of diseases. *Critical Reviews in Food Science and Nutrition*, 45:287-306.
- Scheven, B. A. A., Milne, J. S., dan Robins, S. P. A., 1998. Sequential culture approach to study osteoclast differentiation from nonadherent porcine bone marrow cells. *In Vitro Cell Dev Biol Animal*, 34:568–577.
- Semwal, D. K., Ruchi, B. S., Sandra, C., dan Alvaro, V., 2015. Myricetin: A Dietary Molecule with Diverse Biological Activities. *Nutrients*, 8(9):13.
- Sharkar, D., Shazid, M., dan Shahid, J., 2010. Assesment of antibacterial and cytotoxic activity of some locally used medicinal plants in Sunderban mangrove forest region. *African J Pharma Pharmacol.*, 4:66-69.
- Singh, B., Chopra, A., Ishar, M. P. S., Sharma, A., dan Raj, T., 2010. Pharmacognostic and antifungal investigations of *Elaeocarpus ganitrus* (Rudrakasha). *Indian J. Pharm. Sci.*, 72:261-265.

- Sriti, K., Manjari, S. A., dan Kantil, C. C., 2011. Correlation between phytochemical screening, antibacterial and anthelmintic activities of *Elaeocarpus serratus*. L. ***International Research of Journal Pharmacy***, 2(9):133-136.
- Suzuki, K., Miyakoshi, N., Tsuchida, T., Kasukawa, Y., Sato, K., dan Itoi, E., 2003. Effects of combined treatment of insulin and human parathyroid hormone (1–34) on cancellous bone mass and structure in streptozotocin-induced diabetic rats. ***Bone***, 33:108–114.
- Swami, G., Nagpal, N., Rahar, S., Singh, P., Singla, S., Porwal, A., dan Kapoor, R., 2010. *Elaeocarpus sphaericus*: ***Medical and Scientific facts, Der Pharmacia Lettre***, 2(1):297-306.
- Sylvester, F. A., Wyzga, N., Hyams, J. S., Davis, P. M., Lerer, T., Vance, K., Hawker, G., dan Griffiths, A. M., 2007. Natural history of bone metabolism and bone mineral density in children with inflammatory bowel disease. ***Inflamm Bowel Dis.***, 13(1):42–50.
- Szkudelska, K. dan Nogowski, L., 2007. Genistein – a dietary compound inducing hormonal and metabolic changes. ***J Steroid Biochem Mol Biol.***, 105:37–45.
- Takahashi, A. dan Ohnishi, T., 2004. The significance of the study about the biological effects of solar ultraviolet radiation using the exposed facility on the international space station. ***Biol Sci Space***, 18:255–260.
- Tandra, H., 2009. ***Segala sesuatu yang Harus Anda Ketahui Tentang Osteoporosis: Mengenal, Mengatasi, dan Mencegah Tulang Keropos***. Jakarta: PT. Gramedia Pustaka Utama; 5-37.
- Tang, X., Zhu, X., Liu, S., Wang, S., dan Ni, X., 2011. Isoflavones suppress cyclic adenosine 3',5'-monophosphate regulatory element-

- mediated transcription in osteoblastic cell lines. *J Nutr Biochem.*, 22(9): 865–73.
- Teitelbaum, S. L., 2012. Bone: the conundrum of glucocorticoid-induced of osteoporosis. *Nature Reviews Endocrinology*, 8(8):451–452.
- Thomas, S., Pati, D. A., Patil, A. G., dan Chandra, N., 2008. Pharmacognostic evaluation and physicochemical analysis of *Averrhoa carambola* L. fruit. *J. Herb. Toxicol.*, 2(2):51-54.
- Tremollieres, F. dan Ribot, C., 2010. Bone mineral density and prediction of non-osteoporotic disease. *Maturitas*, 65(4):348–351.
- Tsuboi, M., Kawakami, A., Nakashima, T., Matsuoka, N., Urayama, S., Kawabe, Y., Fujiyama, K., Kiriya, T., Aoyagi, T., Maeda, K., dan Euchi, K., 1999. Tumor necrosis factor- α and interleukin-1 β increase the Fas-mediated apoptosis of human osteoblasts. *J Lab Clin Med.*, 134(3):222–231.
- Tsuji, M., Hironori, Y., Tadatoshi, S., Yoko, M., Yoshichika, K., Yutaka, T., Shigeaki, K., Junji, T., Takahiro, I., dan Eiji, T., 2009. Dietary quercetin inhibits bone loss without effect on the uterus in ovariectomized mice. *Bone Miner Metab.*, 27:673–681.
- Turk, N., Cukovic-Cavka, S., Korsic, M., Turk, Z., dan Vucelic, B., 2009. Proinflammatory cytokines and receptor activator of nuclear factor κ B-ligand/osteoprotegerin associated with bone deterioration in patients with Crohn's disease. *Eur J Gastroenterol Hepatol.*, 21(2):159–166.
- Udagawa, N., Takahashi, N., Akatsu, T., Sasaki, T., Yamaguchi, A., Kodama, H., Martin, T. J., dan Suda, T., 1989. The bone marrow-derived stromal cell lines MC3T3-G2/PA6 and ST2 support osteoclast-like cell differentiation in cocultures with mouse spleen cells. *Endocrinology*, 125:1805–1813.

- Vijayan, A. dan Rajasekaran, S., 2010. Pharmacognostic investigation on *Elaeocarpus blascoi* Weible leaves. *International journal or Pharma and Bio Sciences*, 1(3): 1-9.
- Vimalraj, S., Subramaniam, R., Desingh, R. Pr., Sivasubramanian, V. K., Thirumalai, D., Venkatraman, G., dan Suvro, C., 2017. Mixed-ligand copper (II) complex of quercetin regulate osteogenesis and angiogenesis. Accepted Manuscript. *Materials Science & Engineering C*, doi:10.1016/j.msec.2017.09.005
- Wang, Q. L., Huo, X. C., Wang, J. H., Wang, D. P., Zhu, Q. L., Liu, B., dan Xu, L. L., 2017. Rutin prevents the ovariectomy-induced osteoporosis in rats. *European Review for Medical and Pharmacological Sciences*, 21:1911-1917.
- Wattel, A., Kamel, S., Prouillet, C., Petit, J. P., Lorget, F., dan Offord, E., dan Brazier, M., 2004. Flavonoid quercetin decreases osteoclastic differentiation induced by RANKL via a mechanism involving NF kappa B and AP-1. *J Cell Biochem.*, 92:285–295.
- Wauquier, F., Leotoing, L., Coxam, V., Guicheux, J., dan Wittrant, Y., 2009. Oxidative stress in bone remodelling and disease. *Trends Mol Med.*, 15:468477.
- Weaver, C. M., Martin, B. R., Jackson, G. S., McCabe, G. P., Nolan, J. R., McCabe, L. D., Barnes, S., Reinwald, S., Boris, M. E., dan Peacock, M., 2009. Antiresorptive effects of phytoestrogen supplements compared to estradiol or risedronate in postmenopausal women using 41 Ca methodology. *J Clin Endocrin Metabol.*, 94(10):3798–3805.
- Wu, C., Wengang, W., Bo, T., Xuqiang, L., Xinhua, Q., Zanjing, Z., Haowei, L., Fengxiang, L., Qiming, F., Tingting, T., An, Q., dan Zhenan, Z., 2015. Myricetin prevents titanium particle-induced osteolysis in vivo and inhibits RANKL-induced osteoclastogenesis in vitro. *Biochemical Pharmacology*, 93:59-71.

- Yatim, F., 2003. *Osteoporosis Penyakit Kerapuhan Tulang pada Manula*. Jakarta: Pustaka Obor.
- Yelne, M. B., 1995. Notes on the Botanical Identity of Beads Found Under the Name: Rudraksha, Biorhythm, AYU. *Academy Series*, 44:39–44.
- Ying, X., Xiaowei, C., Te, W., Wenhao, Z., Long, C., dan Youjia, X., 2019. Possible osteoprotective effects of myricetin in STZ induced diabetic osteoporosis in rats. *Journal Pre-proof. European Journal of Pharmacology*.
- Yokomizo, A. dan Moriwaki, M., 2005. Myricitrin degraded by simulated digestion inhibits oxidation of human low-density lipoprotein. *Biosci Biotechnol Biochem.*, 69: 693-699.
- Yousefzadeh, G., Larijani, B., Mohammadirad, A., Heshmat, R., Dehghan, G., Rahimi, R., dan Abdollahi, M., 2006. Determination of oxidative stress status and concentration of TGF-beta 1 in the blood and saliva of osteoporotic subjects. *Ann N Y Acad Sci.*, 1091:142-150.