

REFERENCES

- Adebo, J. A. 2023. A Review on the Potential Food Application of Lima Beans (*Phaseolus lunatus* L.), an Underutilized Crop. In *Applied Sciences (Switzerland)*, 3(2). <https://doi.org/10.3390/app13031996>.
- Ağırdil., Y. 2020. The growth plate: a physiologic overview. *Efort open reviews*, 5(8) : 498–507. <https://doi.org/10.1302/2058-5241.5.190088>.
- Agustin, D., Liben, P., & Ma'aruf A. 2006. Pengaruh Latihan Renang Dengan Intensitas Berbeda Terhadap Panjang Tulang, Tinggi, Dan Jumlah Sel Kondrosit Lempeng Epifise Tibia Pada Tikus Putih Jantan Usia Pertumbuhan. *Majalah Ilmu Faal Indonesia*, 5 (3):105-114.
- Alippi, R.M., Meta, M.D., Olivera, I., Bozzini, C., Schneider, P., Meta I.F., & Bozzini C.E. 2002. Effect of protein-energy malnutrition in early life on the dimensions and bone quality of the adult rat mandible. *Arch Oral Biol*, 47(1):47 53.
- Almunady, P. T., Yohandini, H. & Gultom J. A. 2011. Qualitative and quantitative analysis of omega-3 unsaturated fatty acid of patin (*Pangasius pangasius*) fish oil by Gas Chromatography Method. *Journal of Science Research*, 14(4) : 38-40.
- Amelia, V., Subekti, S., & Sulmartiwi., L. 2022. Substitution of patin *Pangasius pangasius* flour in making sticks as an alternative of food high protein and source of calcium for autism patient. *IOP Conf Ser : Earth Environ*.
- Anthwal, N., & Thompson, H. 2016. The development of the mammalian outer and middle ear. *Journal of anatomy*, 228(2) : 217–232. <https://doi.org/10.1111/joa.12344>.
- Ardianto, V., & Nugraha, F. 2023. Pengaruh Malnutrisi Terhadap Perilaku Dan Indeks Organ Pada Tikus Yang Diinduksi Pakan Formulasi Rendah Protein Effect Of Malnutrition On Behavior And Organ Index In Rats Induced Low Protein Formulation Feed. *Journal Pharmacy Of Tanjungpura*.
- Armstrong, A. R., Tóth, F., Carlson, C. S., Kim, H. K. W., & Johnson, C. P. 2023. Effects of acute femoral head ischemia on the growth plate and metaphysis in a piglet model of Legg-Calvé-Perthes disease. *Osteoarthritis and cartilage*, 31(6), 766–774. <https://doi.org/10.1016/j.joca.2023.01.011>
- Axelsson, I., Pita, J. C., Howell, D. S., Lorentzon, R., Berman, I., & Boquist, L. 1990. Kinetics of proteoglycans and cells in growth plate of normal, diabetic, and

malnourished rats. *Pediatric research*, 27(1), 41–44.
<https://doi.org/10.1203/00006450-199001000-00014>

- Ballesteros, M., Leung, K. C., Ross, R.J.M., Iismaa, T.P., & Ho, K.K.Y. 2000. Distribution and Abundance of Messenger Ribonucleic Acid for Growth Hormone Receptor Isoforms in Human Tissues1. *J. Clin. Endocrinol. Metab*, 85, 2865–2871.
- Ballock, R. T., & O'Keefe, R. J. 2003. The biology of the growth plate. *The Journal of bone and joint surgery. American volume*, 85(4), 715–726.
- Baudoin, J. P. 1993. Lima bean: *Phaseolus lunatus* L. *Genetic Improvement of Vegetable Crops*, 391–403. <https://doi.org/10.1016/B978-0-08-040826-2.50031-X>.
- Boyan, B.D., Wong, K.L., Fang, M., & Schwartz, Z. 2007. $1\alpha,25(\text{OH})_2\text{D}_3$ is an autocrine regulator of extracellular matrix turnover and growth factor release via ERp60 activated matrix vesicle metalloproteinases. *J. Steroid Biochem. Mol Biol*. 103, 467–472.
- Brogan, R. S.; Fife, S. K.; Conley, L. K.; Giustina, A. & Wehrenberg, W. B. Effects of food deprivation on the GH axis: immunocytochemical and molecular analysis. *Neuroendocrinology*, 65(2):129-35, 1997.
- Burdan, F., Szumiło, J., Korobowicz, A., Farooquee, R., Patel, S., Patel, A., Dave, A., Szumiło, M., Solecki, M., Klepacz, R., & Dudka, J. 2009. Morphology and physiology of the epiphyseal growth plate. *Folia Histochem Cytobiol*, 47(1):5-16. doi: 10.2478/v10042-009-0007-1.
- Calder P. C. 2017. Omega-3 fatty acids and inflammatory processes: from molecules to man. *Biochemical Society transactions*, 45(5), 1105–1115. <https://doi.org/10.1042/BST20160474>
- Calder, P. C. 2004. n-3 Fatty acids and cardiovascular disease: Evidence explained and mechanisms explored. *Clinical Science*, 107 : 1–11.
- Cónsole, G. M., Jurado, S. B., Oyhenart, E., Ferese, C., Pucciarelli, H. & Gómez Gomez, C. L. 2001. Morphometric and ultrastructural analysis of different pituitary cell populations in undernourished. *Braz. Med. Biol. Res.*, 34(1):65-74.
- Cordingley, D. M., & Cornish, S. M. 2022. Omega-3 Fatty Acids for the Management of Osteoarthritis: A Narrative Review. *Nutrients*, 14(16), 3362. <https://doi.org/10.3390/nu14163362>
- Correa, D., Hesse, E., Seriwatanachai, D., Kiviranta, R., Saito, H., Yamana, K., Neff, L., Atfi, A., Coillard, L., Sitara, D., Maeda, Y., Warming, S., Jenkins, N. A.,

- Copeland, N. G., Horne, W. C., Lanske, B., & Baron, R. 2010. Zfp521 is a target gene and key effector of parathyroid hormone-related peptide signaling in growth plate chondrocytes. *Developmental cell*, 19(4), 533–546. <https://doi.org/10.1016/j.devcel.2010.09.008>
- Cory, J. X. 2007. Roles of Epidermal Growth Factor Family in the Regulation of Postnatal Somatic Growth, *Endocrine Reviews*, 28 (3) : 284-296, <https://doi.org/10.1210/er.2006-0049>.
- De Luca., F. 2006. Impaired growth plate chondrogenesis in children with chronic illnesses. *Pediatric research*, 59(5), 625–629. <https://doi.org/10.1203/01.pdr.0000214966.60416.1b>
- De Oliveira, A. C. 2006. Chemical composition, dietary fibre and resistant starch contents of raw and cooked pea, common bean, chickpea and lentil legumes. *Food Chemistry*, 94: 327-330.
- De Onis, M & Blossner, M. 2003. The World Health Organization global database on child growth and malnutrition: methodology and applications. *International Journal of Epidemiology*, 32 : 518–526.
- Dianti, S.V. 2018. Pengaruh Gelatin Ikan Patin (*Pangasius djambal*) Terhadap Ekspresi Fibroblas Growth Factors-2 Pada Luka Pasca Pencabutan Gigi Tikus Putih (*Rattus norvegicus*). Skripsi : Fakultas Kedokteran Gigi, Universitas Brawijaya.
- Diniyah, N., Windrati, W. S & Maryanto. 2015. Pengembangan Teknologi Pangan Berbasis Koro-Koroan Sebagai Bahan Pangan Alternatif Pensusstitusi Kedelai. *Prosiding Seminar Nasional, Pengembangan Sumber Daya Lokal Untuk Mendorong Ketahanan Pangan dan Ekonomi*.
- Eroschenko, V.P. 2008. *DiFiore's Atlas of Histology with functional Correlation*. China : Lippincott Williams & Wilkins.
- Eurell, J. A., Brian L.F. 2006. *Dellmanns's Textboox of Veterinary Histology 6th edition*. Australia : Blackwell.
- Evans, B.A., Bull, M. J, Kench, R. C, Fox, R. E, Morgan, L. D., Stevenson, A. E, Gevers, E. F, Perry, M. J & Wells, T. 2011 The influence of leptin on trabecular architecture and marrow adiposity in GH-deficient rats. *Journal of Endocrinology*, 208 69–79. (doi:10.1677/JOE-10-0178).
- Even, Z. N., Jacob, J., Amariglio, N., Rechavi, G., Potievsky, O., Phillip, M., & Yablonski, G. 2008. Nutrition-induced catch-up growth increases hypoxia inducible factor 1 α RNA levels in the growth plate. *Bone*, 42, 505–515.

- Farindel, E. O., Olanipekun, O. T., & Olasupo R. B. 2018. Nutritional Composition And Antinutrients Content Of Raw And Processed Lima Bean (*Phaseolus lunatus*). *Annals Food Science and Technology*, 19 (2) : 250-251.
- Farnum, C. E., Lee, A. O., O'Hara, K. & Wilsman, N. J. 2003. Effect of short-term fasting on bone elongation rates: an analysis of catch-up growth in young male rats. *Pediatr Res.*, 53(1):33-41.
- Fazeli, P. K., & Klibanski, A. 2014. Determinants of GH resistance in malnutrition. *J Endocrinol.* doi: 10.1530/JOE-13-0477.
- Florencio, S. R., da Sasso, G.R.S., Sasso, C.E., Simões, M.J., Cerri, P.S. 2015. Biology of Bone Tissue: Structure, Function, and Factors That Influence Bone Cells. *Biomed Res Int.*
- Food and Agriculture Organization of the United Nations. 2016. *Pulses Nutrition: Seeds for Sustainable Future*. Rome: FAO.
- Franco, M. H., Chel, G.L., Gallegos, T.S., Castellanos, R.A., & Betancur, A. D. 2017. Physicochemical, rheological, bioactive and consumer acceptance analyses of concha-type Mexican sweet bread containing Lima bean or cowpea hydrolysates. *LWT*, 80, 250–256. <https://doi.org/10.1016/j.lwt.2017.02.034>.
- Fujimura, M & Seryu., J. I. 1977. Velocity Of Head Growth During The Perinatal Period. *Archives of disease in childhood*, 52(2) : 105–112. <https://doi.org/10.1136/adc.52.2.10>.
- Fung T. T., Rexrode K. M., Mantzoros C. S., Manson, J. E., Willett, W. C., & Hu, F.B. 2009. Mediterranean diet and incidence of and mortality from coronary heart disease and stroke in women. *Journal Circulation*. 119 : 1093–1100.
- Galler, J. R., & Robert Barrett, L. 2001. Children and famine: long-term impact on development. *Ambulatory Child Health*, 7(2), 85–95.
- García, C, Z.Y., Garciadiego, C. D., Parra, C. C., Aguilar, G. R., Velasquillo, C., Ibarra, C., & Carmona, J.S. 2013. Cartilage Tissue Engineering: The Role of Extracellular Matrix (ECM) and Novel Strategies.
- Gat-Yablonski, G., Yackobovitch-Gavan, M., & Phillip, M. 2011. Nutrition and Bone Growth in Pediatrics. *Pediatr. Clin. N. Am*, 58, 1117–1140
- Gavilan, F, I. M., Inga, M., Betalleluz, P. I., Espinoza, D. A. L. M., & Comettant, R R. 2024. Andean Lima Bean Ecology and Its Potential Contribution to Food Security. In *Legume Science*, 6 (2), <https://doi.org/10.1002/leg3.225>.

- Guedes, P. M. S. G., I, Zamarioli, A., Botega, I. I., Raquel, A. B. D. S., Issa, J. P. M., Butezloff, M. M., Sousa, Y. T. C. S., Ximenez, J. P. B., Volpon, J.B. 2019. Undernutrition impairs the quality of growth plate and trabecular and cortical bones in growing rats, *Acta Cir Bras*, 39(3), 1-13.
- Gutin, B., Stallmann-Jorgensen, I., Le, A., Johnson, M., & Dong, Y. 2011. Relations of Diet and Physical Activity to Bone Mass and Height in Black and White Adolescents. *Pediatr Rep*.
- Gogiadanta., E. V. (2018). Terapi ekstrak rumput laut coklat (*Sargassum duplicatum Bory*) pada penurunan kerusakan sendi terhadap ekspresi Interleukin-1 Beta (IL-1 β) dan histopatologi sendi tikus arthritis adjuvan yang terpapar stressor dingin (Skripsi, Universitas Brawijaya). Universitas Brawijaya Repository
- Hallett, S. A., Ono, W., & Ono, N. 2019. Growth Plate Chondrocytes: Skeletal Development, Growth and Beyond. *International journal of molecular sciences*, 20(23) : 6009. <https://doi.org/10.3390/ijms20236009>
- Hamid, M., Nasution, T. I., Syafrina, S., & Isnaeni, I. 2024. Synthesis and Characterization of Ruminant Feed Based on Palm Kernel Cake Using EM4 Fermentation Method. In *IOP Conference Series: Earth and Environmental Scienc*, 1352 (1).
- Harmain, R. M & Dali, F. A. 2017. *Buku Ajar Ilabulo Ikan Patin (Pangasius, sp.)*. Gorontalo : UNG Press.
- Hasan, S., Naseer, S., Zamzam, M., Mohilldean, H., Van Wagoner, C., Hasan, A., Saleh, E. S., Uhley, V., & Kamel-ElSayed, S. 2024. Nutrient and Hormonal Effects on Long Bone Growth in Healthy and Obese Children: A Literature Review. *Children*, 11(7), 817. <https://doi.org/10.3390/children11070817>.
- He, D., Hu, X., Yan, Y., & Liu, H. 2017. Underlying mechanism of Sirt1 on apoptosis and extracellular matrix degradation of osteoarthritis chondrocytes. *Molecular Medicine Reports*, 16 : 845-850. <https://doi.org/10.3892/mmr.2017.6659>.
- Heinrichs, C., Colli, M., Yanovski, J. A., Laue, L., Gerstl, N. A., Kramer, A. D., Uyeda, J. A. & Baron, J. 1997. Effects of fasting on the growth plate: Systemic and local mechanisms. *Endocrinology*, 138(12):5359-65.
- Helmita, R. 2015. Pola distribusi mitokondria sel sel trofoblas blastosis mencit (*mus mucus albinus*) dan pengaruhnya terhadap kegagalan hatching dan implantasi. (Mitochondrial distribution pattern of blastoblast trophoblast cells of mice (*mus musculus albinus*) and their effect on hatching and implantation failure). *Jurnal Sainstek*, VII(1), 16–25. <http://dx.doi.org/10.31958/js.v7i1.121>.

- Hermanussen M., Lama, R. D. M. A., Romero, A. P., Ruiz C. A, Burmeister, J & Tresguerres, J. A. 1996. Differential catch-up in body weight and bone growth after short-term starvation in rats. *Growth Regulation*, (6) 230–237.
- Hermiastuti, M. (2013). Analisis Kadar Protein Dan Identifikasi Asam Amino Pada Ikan Patin (*Pangasius djambal*). Skripsi.. Jurusan Kimia Fakultas Matematika Dan Ilmu Pengetahuan Alam Universitas Jember. Skripsi.
- Imandira, P.A.N., & Ayustaningwarno, F. 2013. Pengaruh Substitusi Tepung Daging Ikan Lele Dumbo (*Clarias Gariepinus*) Dan Tepung Ubi Jalar Kuning (*Ipomoea Batatas L.*) Terhadap Kandungan Zat Gizi Dan Penerimaan Biskuit Balita Tinggi Protein Dan B-Karoten. *Journal of Nutrition College*, 2(1), 89-97.
- Inzaghi, E., Pampanini, V., Deodati, A., & Cianfarani, S. 2022. The Effects of Nutrition on Linear Growth. *Nutrients*, 14(9), 1752. <https://doi.org/10.3390/nu14091752>
- Ishikawa, Y., Chin, J. E., Schalk, E. M., & Wuthier, R. E. 1986. Effect of amino acid levels on matrix vesicle formation by epiphyseal growth plate chondrocytes in primary culture. *Journal of cellular physiology*, 126(3), 399–406. <https://doi.org/10.1002/jcp.1041260310>
- Islam, M. M., Farag, E., Mahmoudi, A., Hassan, M. M., Atta, M., Mostafavi, E., Alnager, I. A., Farrag, H. A., Eljack, G. E. A., Bansal, D., Haroun, M., Abdeen, R., Al-Romaihi, H., Al-Zeyara, A. A., Almalki, S. A., & Mkhize, K, Z. 2021. Morphometric Study of *Mus musculus*, *Rattus norvegicus*, and *Rattus rattus* in Qatar. *Animals*, 11(8), 2162.
- Jayalaxmi, B., Vijayalakshmi, D., Usha, R., Revanna, M. L., Chandru, R., & Ramanjini Gowda, P. H. 2016. Effect of different processing methods on proximate, mineral and antinutrient content of lima bean (*Phaseolus lunatus*) seeds. *Legume Research*, 39(4), 543–549.
- Jeffrey P. M & Rebecca, Z. 1999. German Protein Malnutrition Affects the Growth Trajectories of the Craniofacial Skeleton in Rats. 2061-2069, <https://doi.org/10.1093/jn/129.11.2061>.
- Jiang, S., Zhang, C., Lu, Y., & Yuan, F. 2022. The molecular mechanism research of cartilage calcification induced by osteoarthritis. *Bioengineered*, 13(5). 13082–13088 <https://doi.org/10.1080/21655979.2022.2078025>.
- Jung, S. Y., Kim, S. H., & Yeo, S. G. 2019. Association of Nutritional Factors with Hearing Loss. *Nutrients*, 11(2) : 307. <https://doi.org/10.3390/nu11020307>.
- Karimian, E., Chagin, A. S., & Sävendahl, L. 2012. Genetic regulation of the growth plate. *Frontiers in endocrinology*, 2, 113. <https://doi.org/10.3389/fendo.2011.00113>

- Karna, E., Szoka, L., Huynh, T. Y. L., & Palka, J. A. 2020. Proline-dependent regulation of collagen metabolism. *Cellular and molecular life sciences : CMLS*, 77(10), 1911–1918. <https://doi.org/10.1007/s00018-019-03363-3>
- Kastella, F., Salim, F. N., Goenawan, H., Lesmana, R., Maliza, R., Syaidah, R., Rosdianto, A. M., & Tarawan, V. M., and Setiawan. 2024. Effect of Low Protein Diet on Bone Structure of Young Wistar Mice. *Pakistan Journal of Biological Sciences*, 27 (3): 113-118. DOI: 10.3923/pjbs.2024.113.118.
- Kemenkes. 2024. *Laporan Tematik Survei Kesehatan Indonesia Tahun 2023*. Kementerian Kesehatan RI.
- Kementrian Kesehatan Republik Indonesia. 2022. *Buku Saku Hasil Survei Status Gizi Indonesia (SSGI)*.
- Kennedy, G., Ballard, T & Dop, M. C. 2011. *Guidelines for measuring household and individual dietary diversity*. Food and Agriculture Organization of the United Nations.
- Kodriah, N.R dan Hastuti, W. 2021. Kualitas dan Masa Simpan Brownies Satin Berbasis Tepung Mocaf dan Tepung Ikan Patin. *Jurnal Gizi dan Kesehatan (JGK)*, 1(1) : 41-51.
- Kronenberg, H.M. 2003. Developmental regulation of the growth plate. *Nature*. doi: 10.1038/nature01657.
- Kueper, J., Beyth, S, Liebergall, M, Kaplan, L, & Josh E. 2015. Schroeder Evidence for the Adverse Effect of Starvation on Bone Quality: A Review of the Literature. *International Journal of Endocrinology*, 1-7.
- Laplante, M.; Sabatini, D.M. mTOR Signaling in Growth Control and Disease. 2012. *Cell*, 149, 274–293.
- Li, L., Ma, M., Zuo, G., Xiao, J., Chen, J., He, X., & Song, Z. 2024. Effect of manganese amino acid complexes on growth performance, meat quality, breast muscle and bone development in broilers. *British Poultry Science*, 65(5), 582–594. <https://doi.org/10.1080/00071668.2024.2346640>
- Lim, R., & Brichta, A. M. 2016. Anatomical and physiological development of the human inner ear. *Hearing Research*, 338 : 9-21.
- Limirio, P. H. J. O., Soares, P. B. F., Emi, E. T. P., Lopes, C. D. C. A., Rocha, F. S., Batista, J. D., Rabelo, G. D., & Dechichi, P. 2019. Ionizing radiation and bone quality: Time-dependent effects. *Radiation Oncology*, 14(1). <https://doi.org/10.1186/s13014-019-1219-y>.

- Littman, J., & Aaron, R. K. 2023. Stimulation of Chondrogenesis in a Developmental Model of Endochondral Bone Formation by Pulsed Electromagnetic Fields. *International Journal of Molecular Sciences*, 24(4), 3275. <https://doi.org/10.3390/ijms24043275>
- Lu, Y., Ding, M., Li, N., Wang, Q., Li, J., Li, X., Gu, J., Im, H. J., Lei, G., & Zheng, Q. 2014. Col10a1-Runx2 transgenic mice with delayed chondrocyte maturation are less susceptible to developing osteoarthritis. *American journal of translational research*, 6(6), 736–745.
- Mackie, E.J., Ahmed, Y.A., Tatarczuch, L., Chen, K. S., and Mirams. M. 2008. Endochondral ossification: How cartilage is converted into bone in the developing skeleton. *The International Journal of Biochemistry & Cell Biology*, 40 (1) : 46-62.
- Mackie, E.J., Tatarczuch, L., & Mirams, M. 2011. The skeleton: A multi-functional complex organ: The growth plate chondrocyte and endochondral ossification. *J. Endocrinol*, 211 : 109–121.
- Magariños, M., Contreras, J., Aburto, M.R. and Varela-Nieto, I. 2012. Early Development of the Vertebrate Inner Ear. *Anat Rec*, 295: 1775-1790. <https://doi.org/10.1002/ar.22575>
- Mahyuddin. K. 2010. *Paduan Lengkap Agribisnis Patin* . Penebar Swadaya, Anggota Ikapi. Jakarta. 6-3.
- Majesty. K. I. 2015. Ekstraksi mekanokemikal dan analisis kondroitin sulfat dari berbagai sumber tulang rawan ikan. Skripsi : Universitas Indonesia.
- Maliza, R., Tofrizal, A., Santoso, P., Jannatan, R., & Amatu Zikrah, A. 2023. Effects Of Lima Bean (*Phaseolus Lunatus*) Flour On Cognitive Function And Growth Recovery Malnutrition Rats. *Journal of Microbiology, Biotechnology and Food Sciences*, 13(4).
- Mani, L., E., Palou, E., & López, M. A. 2021. Legume proteins, peptides, water extracts, and crude protein extracts as antifungals for food applications. In *Trends in Food Science and Technology*, 112 : 16-24, <https://doi.org/10.1016/j.tifs.2021.03.035>.
- Maphosa, Y., & Jideani, V. A. 2017. The Role of Legumes in Human Nutrition. In *Functional Food - Improve Health through Adequate Food*. InTech. <https://doi.org/10.5772/intechopen.69127>
- Maria Alessandra Saltarelli, Alessia Quarta, Francesco Chiarelli. 2022. Growth plate extracellular matrix defects and short stature in children. *Annals of Pediatric Endocrinology & Metabolism*. 022;27:247-255.

- Mehls, O., Himmele, R., Hömme, M., Kiepe, D., Klaus, G. 2001. The interaction of glucocorticoids with the growth hormone insulin-like growth factor axis and its effects on growth plate chondrocytes and bone cells. *J. Pediatr. Endocrinol. Metab*, 14 (Suppl. 6), 1475–1482.
- Melrose, J, Smith, S. M, Smith, M. M, & Little, C.B. 2008. The use of His tochoice for histological examination of articular and growth plate cartilages, intervertebral disc and meniscus. *Biotech Histochem*. 2008;83:47-53.
- Melrose, J., Shu, C., Whitelock, J. M., & Lord, M. S. 2016. The Cartilage Extracellular Matrix As A Transient Developmental Scaffold For Growth Plate Maturation. *Matrix biology : journal of the International Society for Matrix Biology*, 52(54) : 63–383. <https://doi.org/10.1016/j.matbio.2016.01.008>
- Messcher, A.L. 2011. *Histologi Dasar JUNQUIERA : Teks dan Atlas edisi 12*. Jakarta:EGC (hal.114).
- Mnari, A., Bouhlel, I., Chraief, I., Hammami, M., Romdhane, M. S., Cafsi, E. M., & Chaouch, A. 2007. Fatty acids in muscles and liver of Tunisian wild and farmed gilthead sea bream, *Sparus aurata*. *Food Chemistry*, 100 : 1393–1397.
- Monalisa, K., Islam, M. Z., Khan, T., Abdullah, A. T. M., dan Hoque, M. M. 2012. Comparative Study on Nutrient Contents of Native and Hybrid Khoi (*Anabas testudineus*) and Pangas (*Pangasius pangasius*, *Pangasius hypotalamus*) Fish in Bangladesh. *International Food Research Journal*. 20(2).
- Moraes, V. V. 2006. Efeitos da desnutrição precocemente corrigida na morfologia da epífise de crescimento de coelhos (Nova Zelândia). Dissertação Mestrado em Ciências, Universidade de São Paulo, São Paulo.
- Mosier, H. D. J. R & Jansons, R. A. 1976. Growth hormon eduring catch-up growth and failure of catch-up growth in rats. *Journal Endocrinology*, 214–219. doi:10.1210/endo-98-1-214.
- Nafi'A, Diniyah, N & Hastuti F. T. 2015. Karakteristik fisikokimia dan fungsional teknis tepung koro kratok (*Phaseolus lunatus L.*) termodifikasi yang diproduksi secara fermentasi spontan. *Jurnal Agrountek*, 9:1 : 24-32.
- Nasriyah & Ediyono, S. 2023. Dampak Kurangnya Nutrisi Pada Ibu Hamil Terhadap Risiko Stunting Pada Bayi Yang Dilahirkan.. *Jurnal Ilmu Keperawatan dan Kebidanan*, 14(1) : 161-170.

- Nam, S. H., Kim, J. A., Lim, S., Lee, S. J., Kim, C. H., Bae, J. S., Boo, Y. C., Kim, Y. J., & Park, E. K. 2024. Glycinamide Facilitates Nanocomplex Formation and Functions Synergistically with Bone Morphogenetic Protein 2 to Promote Osteoblast Differentiation In Vitro and Bone Regeneration in a Mouse Calvarial Defect Model. *Tissue engineering and regenerative medicine*, 21(7) : 1093–1107. <https://doi.org/10.1007/s13770-024-00657-x>.
- Nutrition and bone growth and development. 2006. Ann Prentice. Inez Schoenmakers¹, M. Ann Laskey¹, Stephanie de Bono¹, Fiona Ginty¹ and Gail R. Goldberg. DOI:10.1079/PNS2006519. *Proceedings of the Nutrition Society*, 65, 348–360.
- Oluwaniyi, O. O, Dosumu O. O, Awolola G. V. 2010. Effect of local processing methods (boiling, frying and roasting) on the amino acid composition of four marine fishes commonly consumed in Nigeria. *Food Chemistry*, 1000–1006.
- Palupi, H. T., Estiasih, T., Yuniarta, & Sutrisno, A. 2022. Physicochemical and protein characterization of lima bean (*Phaseolus lunatus* L) seed. *Food Research*, 6(1), 168–177. [https://doi.org/10.26656/fr.2017.6\(1\).107](https://doi.org/10.26656/fr.2017.6(1).107)
- Pando, R., Masarwi, M., Shtaif, B., Idelevich, A., Ornan, E. M., Shahar, R., Phillip, M., & Yablonski, G. G. 2014. Bone quality is affected by food restriction and by nutrition-induced catch-up growth. *Journal of Endocrinology*, 223 : 227-239. <https://doi.org/10.1530/JOE-14-0486>
- Park, K. Role of micronutrients in skin health and function. *Biomol. Ther.* 2015, 23, 207.
- Permatasari, R., Putra, F. V., & Yoharli, B. 2025. Pengaruh Konsentrasi Asam Nitrat Sebagai Reagen Dekalsifikasi Terhadap Kualitas Pewarnaan Safranin O Pada Tulang. *Bioma : Jurnal Biologi Makassar*, 10(2) : 53-63.
- Pettifor, J. M. 2003. *Nutritional rickets*. In *Pediatric Bone Biology and Diseases*. San Diego, 541–566.
- Prasetya B. A, Diniyah N, & Fauziah R. R. 2020. Karakteristik Biskuit Dari Tepung Koro Kratok (*Phaseolus lunatus* L.) Termodifikasi Dan Mocaf (Modified Cassava Flour). *Jurnal Pangan dan Agroindustri*, 8 (1) : 36-46.
- Pratama, R. I., Rostini, I., & Rochima, E. 2018. Amino Acid Profile and Volatile Flavour Compounds of Raw and Steamed Patin Patin (*Pangasius hypophthalmus*) and Narrow-barred Spanish Mackerel (*Scomberomorus commerson*). *IOP Conference Series: Earth and Environmental Science*, 116(1). <https://doi.org/10.1088/1755-1315/116/1/012056>

- Prentice, A., Schoenmakers, I., Laskey M.A, Bono1 S.D, Ginty, F, & Goldberg, G. R. 2006. Nutrition and bone growth and development. *Proceedings of the Nutrition Society*.
- Prentice, A. 2004. Diet, nutrition and osteoporosis. *Public Health Nutrition*, 7 : 237–254.
- Prentice, A., Branca, F., Decsi T., Michaelsen K.F., Fletcher R., Guesry, P., Manz, F., Vidailhet, M., Pannemans, D & Samartin, S. 2004. Energy and nutrient dietary reference values for children in Europe: methodological approaches and current nutritional recommendations. *British Journal of Nutrition*, 92 (2) : 83-146.
- Provot, S, & Schipani, E. 2007. Fetal growth plate: a developmental model of cellular adaptation to hypoxia. *Ann NY Acad Sci*, 1117:26-39.
- Rainboth, W.J. 1996. *Fishes of the Cambodian Mekong. FAO Species Identification Field Guide for Fishery Purposes*. Food and Agriculture Organization (FAO). Rome.
- Rico-Llanos, G. A., Borrego-González, S., Moncayo-Donoso, M., Becerra, J., & Visser, R. 2021. Collagen Type I Biomaterials as Scaffolds for Bone Tissue Engineering. *Polymers*, 13(4), 599. <https://doi.org/10.3390/polym13040599>.
- Roberts, T.R. 1999. *Pangasius bedado, a new species of molluscivorous patin from Sumatra (Pisces, Siluriformes, Pangasiidae)*. *Natural History Bulletin of Siam Society*, 109–115.
- Rodríguez, V. G, Ezquerra, J., Mesana, M. I, Fernández, A. J. M, Rey, L. J. P, Casajus, J. A., & Moreno, L. A. 2008. Independent and combined effect of nutrition and exercise on bone mass development. *J Bone Miner Metab.*; 26(5):416–24. doi: 10.1007/s00774-007-0846-9.
- Rossi, L., Migliaccio, S., & Corsi, A. 2001. Reduced growth and skeletal changes in zinc-deficient growing rats are due to impaired growth plate activity and inanition. *The Journal of nutrition*, 131(4): 1142-1146 .
- Roshida., A. (2022). Analisis hukum ekonomi syariah dan hukum perikatan terhadap kontrak baku penyedia layanan ShopeeFood (Skripsi, Universitas Islam Negeri Walisongo). UIN Walisongo Repository.
- Salamah, Z., Budiantoro, A. & Suwartiningsih, N. 2018. Petunjuk Praktikum Mikroteknik Tumbuhan dan Hewan. Yogyakarta: *Universitas Ahmad Dahlan*, 35-40.

- Sari, Y.O., Aminuddin., Hamid, F. 2021. Malnutrition in children Associated with Low Growth Hormone (Gh) Levels. *Gaceta Sanitaria*, 35, S327-S329. <https://doi.org/10.1016/j.gaceta.2021.10.046>
- Semba, R.D. 2016. Child Stunting is Associated with Low Circulating Essential Amino Acids. *EBioMedicine*, 246–252. <https://doi.org/10.1016/J.EBIOM.2016.02.030>.
- Setiawan, A., Sagi, M., Asmara, W., & Istriyati. 2012. Analisis pertumbuhan kartilago epifisis os tibia fetus mencit (*Mus Musculus* L) swiss webster setelah induksi ochratoxin a selama periode organogenesis. (Analysis of the growth of the epiphyseal cartilage of the tibial bone of the swiss webster mice (*Mus Musculus* L) after induction of ochratoxin a during the period of organogenesis). *Jurnal Biologi Papua*, 4(1), 25–31. <https://doi.org/10.22146/ijcn.23111>.
- Shawl, M., Geetha, T., Burnett, D., & Babu, J. R. 2024. Omega-3 Supplementation and Its Effects on Osteoarthritis. *Nutrients*, 16(11) : 1650. <https://doi.org/10.3390/nu16111650>.
- Shen, L., Yu, Y., Zhou, Pruet-Miller, S.M., Zhang, G.F., & Karner, C.M. 2022. SLC38A2 Provides Proline To Fulfill Unique Synthetic Demands Arising During Osteoblast Differentiation And Bone Formation.
- Siebler, T., Robson, H., Shalet, S.M., & Williams, G.R. 2001. Glucocorticoids, Thyroid Hormone and Growth Hormone Interactions: Implications for the Growth Plate. *Horm. Res. Paediatr*, 56, 7–12.
- Sophia F. A. J., Bedi, A., & Rodeo, S. A. 2009. The basic science of articular cartilage: structure, composition, and function. *Sports health*, 1(6), 461–468. <https://doi.org/10.1177/1941738109350438>
- Soyka, L. A., Grinspoon, S. Levitsky, L. L., Herzog, D. B. & Klibanski, A. 1999. The effects of anorexia nervosa on bone metabolism in female adolescents. *Journal of Clinical Endocrinology and Metabolism*, 84 (12) : 4489–4496.
- Soyka, L. A., Misra, M. and Frenchman, A. Miller, K. K., Grinspoon, S., Schoenfeld, D. A., & Klibansk, A. 2002. Abnormal bone mineral accrual in adolescent girls with anorexia nervosa. *Journal of Clinical Endocrinology and Metabolism*, 87 (9) ; 4177–4185.
- Stegen, S., Rinaldi, G., Loopmans, S., Stockmans, I., Moermans, K., Thienpont, B., Fendt, S. M., Carmeliet, P., & Carmeliet, G. 2020. Glutamine Metabolism Controls Chondrocyte Identity and Function. *Developmental Cell*, 53(5) : 530–544.
- Subagio, A., Windrati W. S., Witono, Y., & Fahmi, F. 2008. *Prosedur Operasi Standar (POS) : Produksi Mocal Berbasis Klaster*. FTP UNEJ : Jember.

- Sudirman, S., Herpandi, L. S. D., & Andayani W. 2018. Effects of weight and body parts of Patin fish (*Pangasius hypophthalmus*) on the nutritional content. *Food Research*, 2 (4) : 307-313.
- Susanto, E, F. A. 2012. Senyawa fungsi dari ikan: aplikasinya dalam pangan. *Aplikasi Teknologi Pangan*, 1(4).
- Suvarna, S. K., Layton, C., & Bancroft, J.D. 2013. *Bancroft's theory and practice of histological techniques Seventh Edition*. Churchill Livingstone Elsevier : UK.
- Tanner, J. M, & Davies, P. S. 1985. Clinical longitudinal standards for height and height velocity for North American children. *J Pediatr*.107(3):317-29. doi: 10.1016/s0022-3476(85)80501-1. PMID: 3875704.
- Temagne, N.C, Tsoata, E., Ngome, A.F.E., Tonfack, L.B., Agendia, A.P., & Youmbi, E. 2021. *Lima bean. In The Beans and the Peas—From Orphan to Mainstream Crops*. Woodhead Publishing : Duxford, UK.
- Tim Percepatan Penurunan Stunting (TTPS). 2023. *Laporan Penyelenggaraan Percepatan Penurunan Stunting Provinsi Sumatera Barat*. 5-6.
- Ummi, M, S., Trisyani, N., & Peneliti, M. 2022. Pertumbuhan dan Mortalitas Ikan Patin (*Pangasius* Sp.) Yang Di Beri Perlakuan Probiotik Bio Lacto Growth And Mortality Of Patin Fish (*Pangasius* Sp.) Treated With Bio Lacto Probiotic Treatment, 4 (2) : 52-59.
- Van V. A.J.A.H. *et al.* .2013. Dietary arginine and linear growth: the Copenhagen School Child Intervention Study, *British Journal of Nutrition*, 109(6) : 1031–1039.
- Vassilakou, T. 2021. Childhood Malnutrition: Time for Action. *Journal Children*, 8 : 103. <https://doi.org/10.3390/children8020103>.
- Wang, X., Fosmire G. J, Gay, C. V, & Leach, R. M. 2002. Short-term zinc deficiency inhibits chondrocyte proliferation and induces cell apoptosis in the epiphyseal growth plate of young chickens. *J Nutr.* 132(4):665–73. doi: 10.1093/jn/132.4.665.
- World Health Organization. 2023. *Levels and Trends In Child Malnutrition*. hal 2.
- Wu, G. 2009. *Amino acids : Metabolism, functions, and nutrition*.1–17.
- Yablonski, G., & Phillip, M. 2015. Nutritionally-induced catch-up growth. *Nutrients*, 7(1), 517–551. <https://doi.org/10.3390/nu7010517>.

- Yakar, S., Rosen C. J., Beamer, W.G., Bicknell, A. C. L., Wu, Y., Liu J. L., Ooi, G.T., Setser, J., Frystyk, J., & Boisclair Y. R. 2002. Circulating levels of IGF-1 directly regulate bone growth and density. *Journal of Clinical Investi gation* 110 771–781. doi:10.1172/JCI0215463.
- Zadik, Z. *et al.* 2005. Effect of Nutrition on Grow thin Short Stature Before and During Growth Hormone Therapy. *Pediatrics*, 116(1), pp. 68–72. <https://doi.org/10.1542/PEDS.2004-1129>.
- Zannat, M. M., Hossain, F., Rahman, U. O., Rohani, M. F., & Shahjahan, M. 2023. An overview of climate-driven stress responses in striped patin (*Pangasius hypophthalmus*) – prospects in aquaculture. *Asian Journal of Medical and Biological Research*, 9(3), 70–88. <https://doi.org/10.3329/ajmbr.v9i3.66474>
- Zhong, Y., Zhang, B., Somoza, R., Caplan, A. I., Welter, J. F., & Baskaran, H. 2025. Amino Acid Uptake Limitations during Human Mesenchymal Stem Cell-Based Chondrogenesis. *Tissue engineering. Part A*, 31(1-2), 1–12. <https://doi.org/10.1089/ten.TEA.2024.0032>
- Zipfel, S., Seibel, M. J., Lowe, B., Beumont, P. J., Kasperk, C & Herzog, W. 2001. Osteoporosis in eating disorders: a follow-up study of patients with anorexia and bulimia nervosa. *Journal of Clinical Endocrinology and Metabolism*, 86 (11) : 5227–5233.

