

DAFTAR PUSTAKA

- Abdurrachman, O., Mutiara, M. and Buchori, L. 2013. Binding of carbon dioxide with microalgae (*Chlorella vulgaris*, *Chlamydomonas* sp., *Spirulina* sp.) in efforts to increase biogas purity. *Journal of Chemical and Industrial Technology*, 4(2): 212-216.
- Ahmad, A. L., Mat, N. H., Derek, C. J. C. and Lim, J. K. 2011. Microalgae as a sustainable energy source for biodiesel production: A review. *Renewable and Sustainable Energy Reviews*, 15(1):584-593.
- Ahmed, A. M., Radi, A. F., Heikal, M. D. and Abdel-Basset R. 1989. Effect of Na-Ca combinations on photosynthesis and some related processes of *Chlorella vulgaris*. *Journal of Plant Physiology*, 135:175-178.
- Almahrouqi, H. A., Sukaraan, P., Naqqiuddin, M. A., Alsabahi, J., Omar, H. and Ismail A. 2015. The effect of salinity on growth, biochemical composition, and fatty acid profile of *Spirulina* (*Arthrospira platensis* Gomont) grown in sheltered outdoor conditions in Oman. *Journal of Algal Biomass Utilization*, 6(2): 61-67.
- Anand, V., Kashyap, M., Samadhiya, K., Ghosh, A. and Kiran, B. 2019. Salinity driven stress to enhance lipid production in *Scenedesmus vacuolatus*: A biodiesel trigger. *Biomass and Bioenergy*, 127: 1-8.
- Andersen, R. A. 2005. *Algal Culturing Techniques*. Elsevier Academic Press: New York. pp. 578.
- Andreeva, A., Budenkova, E., Babich, O., Sukhikh, S., Dolganyuk, V., Michaud, P. and Ivanova, S. 2021. Influence of carbohydrate additives on the growth rate of microalgae biomass with an increased carbohydrate content. *Marine Drugs*, 19(7): 1-13.
- Aoe, S., Yamanaka, C., Koketsu, K., Nishioka, M., Onaka, N., Nishida, N. and Takahashi, M. 2019. Effects of paramylon extracted from *Euglena gracilis* EOD-1 on parameters related to metabolic syndrome in diet-induced obese mice. *Nutrients*, 11(7):1-13.
- App, A. A. 1966. Fructose-1,6-diphosphatase. *Methods in Enzymology*, 636-639.
- Aqilla, W. Z., Andeska, D. P., Erfianti, T., Sadewo, B. R. and Suyono, E. A. 2023. Tocopherol content of *Euglena* sp. isolated from Yogyakarta under glucose and ethanol mixture treatment. *Journal of Agricultural Sciences*, 33(3):450-460.
- Aziz, F. H. 2020. Algae of Greater Zab and Balakian-Ruwandiz River. Department of Environmental Science College of Science University of Salahuddin-Erbil, Kudistan Region-Iraq.
- Bahadar, A. and Khan, M. B. 2013. Progress in energy from microalgae: A review. *Renewable and Sustainable Energy Reviews*, 27:128-148.
- Barsanti, L., Vismara, R., Passarelli, V. and Gualtieri, P. 2001. Paramylon (β -1,3-glucan) content in wild type and WZSL mutant of *Euglena gracilis*. Effects of growth conditions. *J. Appl. Phycol*, 13: 59-65.
- Barsanti, L., Gualtieri, P., 2020. *Anatomy of Euglena gracilis*. Handbook of Algal Science, Technology and Medicine. National Council of Research: Pisa, Italy. pp. 61-69.

- Barsanti, L., Birindeli, L. and Gualtieri, P. 2022. Paramylon and other bioactive molecules in micro and macroalgae. *Int. J. Mol. Sci.*, 23(15):1-10.
- Battah, M., El-Ayoty, Y., Abomohra, A. E. F., El-Ghany, S. A. and Esmael, A. 2013. Optimization of growth and lipid production of the chlorophyte microalga *Chlorella vulgaris* as a feedstock for biodiesel production. *World Applied Sciences Journal*, 28(11): 1536–1543.
- BBL. Balai Budidaya Laut Lampung. 2007. *Budidaya Fitoplankton dan Zooplankton*. Dirjen Budidaya, DKP Lampung.
- Beck, G. S. 1996. Magnesium starved cells of *Euglena gracilis*-a possible model system for studying Mg²⁺ Influx?. *Z. Naturforsch.*, 51c:165-173.
- Becker, E. W. 1994. *Microalgae-Biotechnology and Microbiology*. Cambridge University Press:Cambridge.
- Becker, W. 2004. *Microalgae in Human and Animal Nutrition*. Blackwell: Oxford. p. 312–351.
- Benasla, A. and Hausler, R. 2018. Optimization of growth of *Raphidocelis subcapitata* immobilised for biofuel production: influence of alginate and CaCl₂ concentrations on growth. *Environments*, 5(5):60.
- Bhakar, R. N., Kumar, R. and Pabbi, S. 2013. Total lipids and fatty acid profile of different *Spirulina* strains as affected by salinity and incubation time. *Vegetos*, 26: 148-154.
- Bischoff, H.W. and Bold, H.C. 1963. *Some Soil Algae from Enchanted Rock and Related Algal Species*. Phycological Studies IV. Univ. Texas Publ.6318: 1-95.
- Borowitzka, M. A. and Borowitzka, L. J. 1988. *Microalgal Biotechnology*. Cambridge University Press: Cambridge. Pp. 27-58.
- Brandenburg, W. and Kleier, C. 2011. Effect of MgCl₂ on germination, growth, and biomass allocation of the radish CV. "Cherry Belle". *American Journal of Environmental Sciences*, 7 (2): 132-135.
- Brennan, L. and Owende, P. 2010b. Biofuels from microalgae - a review of technologies for production, processing, and extractions of biofuels and co-products. *Renewable Sustainable Energy Review*, 14:557–577.
- Buetow, D. E. 1989. *The Mitochondrion In The Biology of Euglena*. Academic Press:New York. pp. 247–314.
- Bohnert, H. J., Nelson, D. E. and Jensen, R. G. 1995. Adaptations to environmental stresses. *The Plant Cell*, 7: 1099-1111.
- Burlew, J. S. 1953. *Algal Culture from Laboratory to Pilot Plant*. Carnegie Institution, Washington DC. pp. 235–281.
- Brindley, C., Garcia-Malea, M. C., Acien, F. G., Fernandez, J. M., Garcia, J. L. and Molina, E. 2004. Influence of power supply in the feasibility of phaeodactylum *Tricornutum* cultures. *Biotechnology and Bioengineering*, 87:723-733.
- Cai, T., Park, S. Y. and Li, Y. B. 2013. Nutrient recovery from wastewater streams by microalgae: status and prospects. *Renewable and Sustainable Energy Reviews*, 19:360-369.
- Cakmak, I. and Kirkby, E. A. 2008. Role of magnesium in carbon partitioning and alleviating photooxidative damage. *Physiol Plantarum*, 133: 692-704.
- Caprio, D. F., Altamari, P. and Pagnanelli, F. 2018. Effect of Ca concentration on *Scenedesmus* sp. growth in heterotrophic and photoautotrophic cultivation. *New Biotechnology*, 40:228–235.

- Carvalho, A. P., Silva S. O., Baptista J. M., Malcata F. X. 2011. Light requirements in microalgal photobioreactors: an overview of biophotonic aspects. *Appl. Microbiol. Biotechnol*, 89(5):1275–1288.
- Chang., Angela Y., Chau, V. W. Y., Landas, J. A. and Pang, Y. 2017. Preparation of calcium competent *Escherichia coli* and heat-shock transformation. *JEMI Methods*, 1: 22-25.
- Chen, H., Zhang, Y. M., He, C. L. and Wang, Q. 2014. Ca²⁺ signal transduction related to neutral lipid synthesis in an oil-producing green alga *Chlorella* sp. C2. *Plant Cell Physiology*, 55: 634–644.
- Chen, Y., Yao, Q., Zeng, X., Hao, C., Li, X., Zhang, L. and Zeng, P. 2022. Determination of monosaccharide composition in human serum by an improved HPLC method and its application as candidate biomarkers for endometrial cancer. *Frontiers in Oncology*, 12: 1-5.
- Cheirslip, B. and Salwa, T. 2012. Enhanced growth and lipid production of microalgae under mixotrophic culture condition: effect of light intensity, glucose concentration and fed-batch cultivation. *Bioresour Technol*, 110: 510.
- Chowdury, K. H., Nahar, N. and Deb, U. K. 2020. The growth factors involved in microalgae cultivation for biofuel production: a review. *Computational Water, Energy, and Environmental Engineering*, 9: 185-215.
- Chu, W.-L. 2017. Strategies to enhance production of microalgal biomass and lipids for biofuel feedstock. *European Journal of Phycology*, 52(4): 419–437.
- Clark, A. E. and Stone, B. A. 1960. Structure of the paramylon from *Euglena gracilis*. *Biochimica et Biophysica Acta*, 44:161-163.
- Clément-Larosière, B., Lopes, F., Gonçalves, A., Taidi, B., Benedetti, M., Minier, M. and Pareau, D. 2014. Carbon dioxide biofixation by *Chlorella vulgaris* at different CO₂ concentrations and light intensities. *Eng. Life Sci*, 14(5):509–519.
- Costa, J. A. V. and de Moraes, M. G. 2014. An open pond system for microalgal cultivation. *Biofuels from Algae*. Elsevier. p. 1–22.
- da Fontoura, J. T., Rolim, G. S., Farenzena, M. and Gutterres, M. 2017. Influence of light intensity and tannery wastewater concentration on biomass production and nutrient removal by microalgae *Scenedesmus* sp. *Process Safety and Environmental Protection*, 111: 355-362.
- Danilov, R. A. and Ekelund, N. G. A. 2001. Effects of pH on the growth rate, motility, and photosynthesis in *Euglena gracilis*. *Folia Microbiologica*, 46(6): 549-554.
- Daou, C. and Zhang, H. 2012. Oat beta-glucan: its role in health promotion and prevention of diseases. *Comprehensive Reviews in Food Science and Food Safety*, 11(4): 355.
- Deb, U. K., Shahriar, M., Bhowmik, J. and Chowdury, M. K. H. 2017. The effect of irradiance related temperature on microalgae growth in a tubular photobioreactor for cleaner energy. *American Journal of Computational Mathematics*, 7:371-384.
- Decamp, A., Michelo, O., Rabbat, C., Laroche, C., Grizeau, D., Pruvos, J. and Goncalves, O. 2021. A new, quick and simple protocol to evaluate microalgae polysaccharide composition. *Marine Drugs*, 19 (2):1-16.

- Dhiab, R., Ouada, H., Bousetta, H., Franck, F., Elabed, A. and Brouers, M. 2007. Growth, fluorescence, photosynthetic O₂ production and pigment content of salt adapted cultures of *Arthrospira (Spirulina) platensis*. *Journal of Applied Phycology*, 19(4): 293-301.
- Díaz, J. M., Herencia, C., Martínez, J. M., Oca, A. M., Rodríguez, M. E., Vergara, N., Blanco, A., Stepan, S., Almadén, Y., Rodríguez, M. and Muñoz, J. R. Magnesium Chloride promotes Osteogenesis through Notch signaling activation and expansion of Mesenchymal Stem Cells. *Scientific Reports*, 7:1-12.
- Do, J., Yeo, H., Suh, H. S. and Yoon, H. 2023. Effect of salt stress on the biomass productivity and potential bioenergy feedstock of *Graesiella emersonii* KNUA204 isolated from Ulleungdo Island, South Korea. *Frontiers in Energy Research*, 11:1-7.
- Dougall, D. K. 1980. Nutrition and Metabolism. In Plant Tissue Culture as a Source of Biocliemicals (E. John Staba, ed.), pp. 21-58. CRC Press:Boca Raton.
- Doughty, M. J. and Diehn, B. 1979. Photosensory transduction in the flagellated alga *Euglena gracilis*. *Biochimica et Biophysica Acta*, 588: 148--168.
- Dragone, G., Fernandes, B. D., Vicente, A. A., Teixeira, J. A. 2010. Third generation biofuels from microalgae. *Current Research, Technology and Education Topics in Applied Microbiology and Microbial Biotechnology*, 2:1355–1366.
- Dujjanutat, P. and Kaewkannetra, P. 2011. Effects of wastewater strength and salt stress on microalgal biomass production and lipid accumulation. *World Academy of Science, Engineering and Technology International Journal of Environmental and Ecological Engineering*, (12)5: 832-836.
- Ehrenberg, C. G. 1830. Neue Beobachtungen über blutartige Erscheinungen in Aegypten, Arabien und Sibirien, nebst einer Uebersicht und Kritik der früher bekannten. *Annalen der Physik und Chemie Ser*, 28: 477-514.
- Elloumi, W., Jebali, A., Maalej, A., Chamkha, M. and Sayadi, S. 2020. Effect of mild salinity stress on the growth, fatty acid and carotenoid compositions, and biological activities of the thermal freshwater microalgae *Scenedesmus* sp.. *Biomolecules*, 10 (11): 1-17.
- Ermis, H. and Altinbas, M. 2020. Effect of salinity on mixed microalgae grown in anaerobic liquid digestate. *Water and Environment Journal*, 17: 1-11.
- Fal, S., Aasfar, A., Rabie, R., Smouni, A. and Arroussi, H. E. 2022. Salt induced oxidative stress alters physiological, biochemical and metabolomic responses of green microalga *Chlamydomonas reinhardtii*. *Heliyon*, 8(1):1-5.
- Feuzing, F., Mbakidi, J. P., Marchal, L., Bouquillon, S. and Leroy, E. 2022. A review of *paramylon* processing routes from microalga biomass to non-derivatized and chemically modified products. *Carbohydrate Polymers*, 288:119-181.
- Fogg, G. E. and Thake, B. 1987. *Alga Cultured and Phytoplankton Ecology*. 3rd Edition. The University of Winsconsins. Press. London.
- Gan, H., Enomoto, Y., Kabe, T., Ishii, D., Hikima, T., Takata, M. and Iwata, T. 2017. Synthesis, properties and molecular conformation of *paramylon* ester derivatives. *Polymer Degradation and Stability*, 145:142-149.

- Gao, F. and Peng Y-Y, L. C. 2018. Simultaneous nutrient removal and biomass/lipid production by *Chlorella* sp. in seafood processing wastewater. *Sci Total Environ*, 640(641):943–953.
- Gao, L., Zhao, X., Zhao, X. 2022. The characterization and functional properties of *Euglena gracilis paramylon* treated with different methods. *International Journal of Analytical Chemistry*:1-8.
- Gehl, K. A. and Colman, B. 1985. Effect of external pH on the internal pH of *Chlorella saccharophila*. *Plant Physiology*, 77: 917-921.
- Gissibl, A., Sun, A. A., Nevalainen, H. S. A. 2019. Bioproducts from *Euglena gracilis*: synthesis and applications. *Biotechnol Journal*, 7(1):108-114.
- Goncalves, A. L., Almeida, F., Rocha, F. A., Ferreira, A. 2021. Improving CO₂ mass transfer in microalgal cultures using an oscillatory flow reactor with smooth periodic constrictions. *Journal of Environmental Chemical Engineering*, 9:1-12.
- Gonzales, S., Gomez, J., Perales, H. and Moreno, R. 2006. Multiple effects of salinity on photosynthesis of the protist *Euglena gracilis*. *Physiologia Plantarum*, 101(4) : 777-786.
- Gorain, P. C., Bagchi, S. K. and Mallick, N. 2013. Effects of calcium, magnesium, and sodium chloride in enhancing lipid accumulation in two green microalgae. *Environment Technology*, 34(13–14): 1887–1894.
- Grimm, P., Risse, J. M., Cholewa, D., Müller, J. M., Beshay, U., Friehs, K. and Flaschel, E , 2015. Applicability of *Euglena gracilis* for biorefineries demonstrated by the production of f -tocopherol and *paramylon* followed by anaerobic digestion. *Journal of Biotechnology*, 215: 72–79.
- Guidara, M., Yaich, H., Amor, I. B., Fakhfakh, J., Gargouri, J., Lassoued, S., Blecker, C., Richel, A., Attia, H., Garna, H. 2021. Effect of extraction procedures on the chemical structure, antitumor and anticoagulant properties of ulvan from *Ulva lactuca* of tunisia coast. *Carbohydr Polym*, 253:117-283.
- Guo, W., Cong, Y., Hussain, N., Wang, Y., Liu, Z., Jiang, L., Liang, Z., Chen, K. 2014. The remodeling of seedling development in response to long-term magnesium toxicity and regulation by ABA-DELLA signaling in Arabidopsis. *Plant Cell Physiol*, 55:17-26.
- Guo, Q., Bi, D., Wu, M., Yu, B., Hu, L., Liu, C., Gu, L., Zhu, H., Lei, A. and Wang, J. 2020. Immune activation of murine RAW264.7 macrophages by sonicated and alkalized *paramylon* from *Euglena gracilis*. *BMC Microbiology*, 171(20):1-10.
- Grimm, P., Risse, J. M., Cholewa, D., Müller, J. M., Beshay, U. and Friehs, K. 2015. Applicability of *Euglena gracilis* for biorefineries demonstrated by the production of α-tocopherol and *paramylon* followed by anaerobic digestion. *J Biotechnol*. 215:72–79.
- Hader, D., Jaoudat, F., Michael, L., Peter, R., Martin, S., Roland, R., Sebastian, M. S. and Viktor, D. 2011. Investigation of gravitaxis and phototaxis in *Euglena gracilis*. *Advances in Life Sciences*, 4: 118.
- Hadiyanto, dan Azim, M. 2012. *Mikroalga: Sumber Pangan dan Energi Masa Depan*. UPT UNDIP Press: Semarang. hal. 11 – 12.
- Halter, D., Goulhen-Chollet, F., Gallien, S., Casiot, C., Hamelin, J., Gilard, F., Heintz, D., Schaeffer, C., Carapito, C., Dorsaselaer, A. V., Tcherkez, G., Ploetze, F. A. and Bertin, P. N. 2012. In situ proteo-metabolomics reveals

- metabolite secretion by the acid mine drainage bio-indicator, *Euglena mutabilis*. *The ISME Journal*, 6(7): 1391–1402.
- Hang, L. T., Mori, K., Tanaka, Y., Morikawa, M. and Toyama, T. 2020. Enhanced lipid productivity of *Chlamydomonas reinhardtii* with combination of NaCl and CaCl₂ stresses. *Bioprocess and Biosystems Engineering*, 1:1-8.
- Hanifzadeh, M., Garcia, E. C. and Viamajala, S. 2018. Production of lipid and carbohydrate from microalgae without compromising biomass productivities: Role of Ca and Mg. *Renewable Energy*, 127: 989–997.
- Hansen, P. J., 2002. Effect of high pH on the growth and survival of marine phytoplankton: implications for species succession. *Aquatic Microbial Ecology*, 28: 279-288.
- Harada, R., Nomura, T., Yamada, K., Mochida, K. and Suzuki, K. 2020. Genetic engineering strategies for *Euglena gracilis* and its industrial contribution to sustainable development goals : a review. *Frontiers in Bioengineering and Biotechnology*, 8: 1-10.
- Harmoko. dan Krisnawati, Y. 2018. Keankeragaman mikroalga divisi Cyanobacteria di Danau AUR Musi Rawas. *Jurnal Biodjati*, 3(1):8-14.
- Harvey, D. J. 2011. Derivatization of carbohydrates for analysis by chromatography; electrophoresis and mass spectrometry. *Journal of Chromatography B*, 879(17–18):1196–1225.
- Harwood, J. L. 2004. Involvement of chloroplast lipids in the reaction of plants submitted to stresses. *Russian Journal of Plant Physiology*, 59 : (167-176).
- Havlik, I., Lindner, P., Scheper, T. and Reardon, K. F. 2013. On-line monitoring of large cultivations of microalgae and cyanobacteria. *Trends in Biotechnology*, 20: 1-9.
- Hirschi, K. D. 2004. The calcium conundrum. Both versatile nutrient and specific signal. *Plant Physiology*, 136(1): 2438–2442.
- Hoang, A. T., Sirohi, R. S., Pandey, A., Nizetic, S., Lam, S. S., Chen, W., Luque., Thomas, S., Arici, M. and Pham, V. V. 2022. Biofuel production from microalgae: challenges and chances. *Phytochem Rev*, 1-34.
- Hoiriyah, Y. U. 2019. Peningkatan kualitas produksi garam menggunakan teknologi geomembran. *Jurnal Studi Manajemen dan Bisnis*, 6(2):35-42.
- Hosotani, K., Ohkochi, T., Inui, H., Yokota, A., Nakano, Y. and Kitaoka, S. 1988. Photoassimilation of fatty acids, fatty alcohols and sugars by *Euglena gracilis* Z. *Microbiology*, 134(1): 61–66.
- Hossain, A. S., Salleh, A., Boyce, A. N., Chowdhury, P. and Naqiuddin, M. 2008. Biodiesel fuel production from algae as renewable energy. *Am. J. Biochem. Biotech*, 4(3): 250–254.
- Hudlicky, T., Entwistle, D. A., Pitzer, K. K. and Thorpe, A. J. 1996. Modern methods of monosaccharide synthesis from non-carbohydrate sources. *Chemical Reviews*, 96(3): 1-26.
- Huesemann, M. H., Van Wagenen, J., Miller, T., Chavis, A., Hobbs, S. and Crowe, B. 2013. A screening model to predict microalgae biomass growth in photobioreactors and raceway ponds. *Biotechnology and Bioengineering*, 110:1583-1594.
- Hurlbert, R. E. and Bates, R. C. 1971. Glucose utilization by *Euglena gracilis* var. *bacillaris* at Higher pH. *The Journal of Protozoology*, 18(2): 298–306.

- Husna, F., Rachmawati, B., Samudra, T. T., Surya, Y., Budiman, A. and Suyono, E. A. 2020. Effectivity of various media for biomass and lipid production of mixed culture of *Glagah* in open pond. *AIP Conference Proceedings* 2260. p. 1-7.
- Hussain, F., Shah, S. Z., Ahmad H., Abubshait, S. A., Abubshait, H. A., Laref, A., Manikandan, A., Kusuma, H. S. and Iqbal, M. 2021. Microalgae an ecofriendly and sustainable wastewater treatment option: biomass application in biofuel and bio-fertilizer production. *Renewable and Sustainable Energy Reviews*, 137: 2-10.
- Husseini, Z. N., Tafreshi, S. A. H., Aghaie, P. and Toghyani, M. A. 2020. $CaCl_2$ pretreatment improves gamma toxicity tolerance in microalga *Chlorella vulgaris*. *Ecotoxicology and Environmental Safety*, 192: 1-11.
- Ieiri, H., Kameda, N., Naito, J., Kawano, T., Nishida, N., Takahashi, M. and Katakura, Y. 2021. *paramylon* extracted from *Euglena gracilis* EOD-1 augmented the expression of SIRT1. *Cytotechnology*, 73:755–759.
- Indahsari, H. S., Tassakka, A. C. M. A. R., Dewi, E. N., Yuwono, M. and Suyono, E. A. 2022. Effects of salinity and bioflocculation during *euglena* sp. harvest on the production of lipid, chlorophyll, and carotenoid with *Skeletonema* sp. as a bioflocculant. *J Pure Appl Microbiol*, 16(4):2901-2911.
- Irhamni., Elvitriana. and Viena, V. 2014. Green microalgae cultivation at different nitrogen sources for lipid extraction. *Journal of Purification*, 14(2): 99-105.
- Ishika, T., Moheimani, N. R. and Bahri, P.A. 2017. Sustainable saline microalgae co-cultivation for biofuel production: a critical review. *Renewable and Sustainable Energy Reviews*, 78: 356–368.
- Isnadia, D. R. M. 2013. Pengaruh konsentrasi bahan organik, salinitas, dan pH terhadap laju pertumbuhan alga. Laporan Thesis. Surabaya: Institut Teknologi Sepuluh Nopember.
- Ivusic, F., Rezić, T. and Santek, B. 2022. Heterotrophic cultivation of *Euglena gracilis* in stirred tank bioreactor: a promising bioprocess for sustainable *paramylon* production. *Molecules*, 27(18):58-66.
- Jaleel, C. A., Manivannan, P., Sankar, B., Kishorekumar, A., Gopi, R., Somasundaram, R. and Panneerselvam, R. 2007a. Water deficit stress mitigation by calcium chloride in *Catharanthus roseus*: effects on oxidative stress, proline metabolism and indole alkaloid accumulation. *Colloids Surf. B Biointerfaces*, 60 (1): 110–116.
- Jaleel, C. A., Manivannan, P., Sankar, B., Kishorekumar, A. and Panneerselvam, R. 2007b. Calcium chloride effects on salinity-induced oxidative stress, proline metabolism, and indole alkaloid accumulation in *Catharanthus roseus*. *CR Biology*, 330(9): 674–683.
- Jaleel, C. A. and Azooz, M., 2009. Exogenous calcium alters pigment composition, γ -glutamyl kinase, and proline oxidase activities in salt-stressed *Withania somnifera*. *Plant Omics*, 2(2): 85-90.
- Jeon, M. S., Oh, J.-J., Kim, J. Y., Han, S.-I., Sim, S. J. and Choi, Y.-E. 2019. Enhancement of growth and *paramylon* production of *Euglena gracilis* by co-cultivation with *Pseudoalteromonas* sp. MEBiC 03485. *Bioresource Technology*, 288:1-6.
- Jones, C. R. and Cook, J. R. 1978. Culture pH, CO_2 tension, and cell division in *Euglena gracilis* Z. *Journal of Cellular Physiology*, 96(2), 253–259.

- Kaewkannetra, P., Enmak, P. and Chiu, T. Y. 2012. The effect of CO₂ and salinity on the cultivation of *Scenedesmus obliquus* for biodiesel production. *Biotechnology and Bioprocess Engineering*, 17: 591-97.
- Kanna, S. D., Domonkos, I., Kóbori, T. O., Dergez, A., Böde, K., Nagyapáti, S., Zsiros, O., Ünneper, R., Nagy, G., Garab, G., Szilák, L., Solymosi, K., Kovács, L. and Ughy, B. 2021. Salt stress induces *paramylon* accumulation and fine-tuning of the macro-organization of thylakoid membranes in *Euglena gracilis* cells. *Frontiers in Plant Science*, 12: 1-15.
- Kazbar, A., Cogne, G., Urbain, B., Marec, H., Le, B., Tallec, J., Takache, H., Ismail, A. and Pruvost, J. 2019. Effect of dissolved oxygen concentration on microalgal culture in photobioreactors. *Algal Research*, 39:1-11.
- Khavari, F., Saidijam, M., Thaeri, M. and Nouri, F. 2021. Microalgae: therapeutic potentials and applications. *Molecular Biology Reports*, 48:4757–4765.
- Kim, S. K., Venkatesan, J. and Manivasagan, P. 2015. *Handbook of Marine Microalgae Biotechnology Advances*. Academic press: Oxford. pp. 1, 56-60.
- Kim, J. Y., Oh, J.-J., Kim, D. H., Kim, H. S., Lee, C., Park, J. and Choi, Y.-E. 2021. Application of electrical treatment on *Euglena gracilis* for increasing paramylon production. *Applied Microbiology and Biotechnology*, 105(3):1031-1039.
- Kim, S., Wirasnita, R., Lee, D., Yu, J. and Lee, T. 2021. Enhancement of growth and *paramylon* production of *Euglena gracilis* by upcycling of spent tomato by product as an alternative medium. *Applied Sciences*, 11(17):1-11.
- Kim, S., Im, H., Yu, J., Kim, K., Kim, M. and Lee, T. 2023. Biofuel production from *Euglena*: Current status and techno-economic perspectives. *Bioresource Technology*, 371:1-12.
- Kitaya, Y., Azuma, H. and Kiyota, M. 2005. Effects of temperature, CO₂/O₂ concentrations and light intensity on cellular multiplication of microalgae, *Euglena gracilis*. *Advances in Spaces Research*, 35: 1584-1588.
- Ko, S., Speckmaier, S. and Wang, N. 2020. The effect of temperature on the growth rate of *Euglena gracilis*. *The Expedition*, 9: 1-6.
- Kobayashi, H., Masaoka, Y. and Sato, S. 2005. Effects of excess magnesium on the growth and mineral content of rice and *Echinochloa*. *Plant Prod Sci*, 8: 38-43.
- Koyande, A. K., Chew, K. W., Rambabu, K., Tao, Y., Chu, D. T. and Show, P. 2019. Microalgae: A potential alternative to health supplementation for humans. *Food Science and Human Wellness*, 8(1):16-24.
- Krajčovič, J., Vesteg, M., Schwartzbach, S. D. 2015. Euglenoid flagellates: A multifaceted biotechnology platform. *Journal of Biotechnology*, 202: 135-142.
- Kumari, S., Satapathy, S., Datta, M. and Savindra, K. 2022. *Adaptation of Microalgae to Temperature and Light Stress*. Plant Stress: Challenge and Management in the New Decade. Switzerland: Springer Nature. p. 123-134.
- Lakatos, G. E., Ranglová, K., Manoel, J. C., Grivalský, T., Kopecký, J. and Masojídek, J. 2019. Bioethanol production from microalgae polysaccharides. *Folia Microbiologica*, 64:627–644.
- Lane, A. E. and Burris, J. E. 1981. Effects of environmental pH on the internal pH of *Chlorella pyrenoidosa*, *Scenedesmus quadricauda*, and *Euglena mutabilis*, *Plant Physiology*, 68: 439-442.

- Lane, T. W. 2021. Barriers to microalgal mass cultivation. *Current Opinion in Biotechnology*, 73:323–328.
- Lewis, W. M., 2001. Evaluation and Comparison of Three Chemical Deicers for Use in Colorado. *Colorado Department of Transportation*. pp.1-39.
- Lin, W.-R., Lai, Y.-C., Sung, P.-K., Tan, S.-I., Chang, C.-H., Chen, C.-Y., Chang, J. -S. and Ng, I.-S. 2018. Enhancing carbon capture and lipid accumulation by genetic carbonic anhydrase in microalgae. *Journal of the Taiwan Institute of Chemical Engineers*, 10:1-11.
- Liu, J., Huang, J. and Chens, F. 2014. Microalgae as Feedstocks for Biodiesel Production. *Biodiesel Feedstocks and Processing Technologies*, 7: 133-152.
- Liu, D., Tang, W., Yin, J., Nie, S. and Xie, M. 2021. Monosaccharide composition analysis of polysaccharides from natural sources: Hydrolysis condition and detection method development. *Food Hydrocolloids*, 116:1-21.
- Lonergan, T. A. 1984. Regulation of cell shape in *Euglena gracilis*. *Journal Cell Science*, 71: 37-50.
- Macdonald, I. and Turner, L. J. 1968. Serum-fructose levels after sucrose or its constituent monosaccharides. *The Lancet*, 291(7547): 841–843.
- Maghfiroh, K. Q., Erfianti, T., Afifah, I. N., Amelia, R., Kurnianto, D., Sadewo, B. R., Maggandari, R., Aji, B. R., Budiman, A. and Suyono, E. A, 2023. The effect of photoperiodism on nutritional potency of *Euglena* sp. Indonesian strains. *Mal J Nutr*, 29 (3): 453-466.
- Mahapatra, D. M., Chanakya, H. N. and Ramachandra, T. V. 2013. *Euglena* sp. as a suitable source of lipids for or potential use as biofuel and sustainable wastewater treatment. *Journal of Applied Phycology*, 25(3): 855-865.
- Mantovani, V., Galeotti, F., Maccari, F. and Volpi, N. 2018. Recent advances in capillary electrophoresis separation of monosaccharides, oligosaccharides, and polysaccharides. *Electrophoresis*, 39(1):179–189.
- Markou, G., Vandamme, D. and Muylaert, K. 2014. Microalgal and cyanobacterial cultivation: the supply of nutrients. *Water Research*, 65:186-202.
- Mendonca, H. V., Assemany, P., Abreu, M., Couto, E., Maciel, A. M., Duarte, R. L., Santos, M. G. B. and Reis, A. 2021. Microalgae in a global world : new solutions for old problems? *Renewable Energy*, 165:842–862.
- Mousavian, Z., Safavi, M., Salehirad, A., Azizmohseni, F., Hadizadeh, M. and Mrdamadi, S. 2023. Improving biomass and carbohydrate production of microalgae in the rotating cultivation system on natural carriers. *AMB Express*, 39(13): 1-12.
- Muchut, R. J., Calloni, R. D., Herrera, F. E., Garay, S. A., Arias, D. G., Iglesias, A. A. and Guerrero. S. A. 2018. Elucidating *paramylon* and other carbohydrate metabolism in *Euglena gracilis*: Kinetic characterization, structure and cellular localization of UDP-glucose pyrophosphorylase. *Biochimie*, 154: 176-186.
- Muchut, R. J., Calloni, R. D., Herrera, F. E., Garay, S. A., Arias, D. G., Iglesias, A. A. and Guerrero. S. A. 2021. Elucidating carbohydrate metabolism in *Euglena gracilis*: Reverse genetics-based evaluation of genes coding for enzymes linked to *paramylon* accumulation. *Biochimie*, 184: 125-131.
- Muller, F. L., Lustgarten, M. S., Jang, Y., Richardson, A. and Van, R. H. 2007. Trends in oxidative aging theories. *Free Radical Bio Med*, 43: 477-503.

- Mutawie, H. H. 2015. Growth and metabolic response of the filamentous cyanobacterium *Spirulina platensis* to salinity stress of sodium chloride. *Life Science Journal*, 12(5): 71–78.
- Nagayama, Y., Isoo, N., Nakashima, A., Suzuki, K., Yamano, M., Nariyama, T., Yagame, M., Matsui, K. 2020. Renoprotective effects of *paramylon*, a β -1,3-D-glucan isolated from *Euglena gracilis* Z in a rodent model of chronic kidney disease. *Plos One*, 15(8): 1-17.
- Nurafifah, I., Hardianto, M. A., Erfianti, T., Amelia, R. and Maghfiroh, K. Q. 2023. The effect of acidic pH on growth kinetics, biomass productivity, and primary metabolite contents of *Euglena* sp. *Makara Journal of Science*, 27(2):97-104.
- Oktora, A. R., Ma'ruf, W. F. dan Agustini, T. W. 2016. Pengaruh penggunaan senyawa fiksator terhadap stabilitas ekstrak kasar pigmen β -karoten mikroalga *Dunaliella salina* pada kondisi suhu berbeda. *Jurnal Pengolahan Hasil Perikanan Indonesia*, 19(3): 206-213.
- Olaizola, M. 2004. Commercial development of microalgal biotechnology: from the test tube to the marketplace. *Journal of Biomolecular*, 20(2): 459-466.
- Olaveson, M. M. and Stokes, P. M. 1989. Responses of the acidophilic alga *Euglena mutabilis* (Euglenophyceae) to carbon enrichment at pH 3. *Journal Phycology*, 25(3): 529–539.
- Oliveira, C. Y. B., Jacob, A., Nader, C., Oliveira, C. D. L., Matos, A. P., Araujo, E. S., Shabnam, N., Ashok, B. and Galvez, A. O. 2022. An overview on microalgae as renewable resources for meeting sustainable development goals. *Journal of Environmental Management*, 320 : 1-14.
- O'Neill, E., Kuhaudomlarp, S., Rejzek, M., Fangel, J., Alagesan, K., Kolarich, D., Willats, W. G. T. Field, R. A. 2017. Exploring the glycans of *Euglena gracilis*. *Biology*, 6(4): 45.
- Ortiz-Tena, J. G., Rühmann, B., Schieder, D. and Sieber, V. 2016. Revealing the diversity of algal monosaccharides: fast carbohydrate fingerprinting of microalgae using crude biomass and showcasing sugar distribution in *Chlorella vulgaris* by biomass fractionation. *Algal Research*, 17: 227–235.
- Pancha, K., Chokshi, R., Maurya, K., Trivedi, S. K., Patidar, A., Ghosh, S. and Mishra. 2015. Salinity induced oxidative stress enhanced biofuel production potential of microalgae *Scenedesmus* sp. CCNM 1077. *Bioresour. Technol*, 189: 341–348.
- Pandit, P. R., Fulekar, M. H. and Karuna, M. S. L. 2017. Effect of salinity stress on growth, lipid productivity, fatty acid composition, and biodiesel properties in *Acutodesmus obliquus* and *Chlorella vulgaris*. *Environmental Science and Pollution Research*, 24(15): 13437–13451.
- Pego, J. V., Kortstee, A. J., Huijser, C. and Smeekens, S. C. M. 2000. Photosynthesis, sugars and the regulation of gene expression. *Journal of Experimental Botany*, 51: 407–416.
- Peng, J., Yin, K., Yuan, J. P., Cao, G. X., Xue, M., Wu, S. F. and Wang, J. H. 2012. Characterization of a newly isolated green microalgae *Scenedesmus* sp. as a potential source of biodiesel. *African Journal of Biotechnology*, 11(9): 16083-16094.
- Platt, T., Fuentes-Yaco, C, K. T. and Frank. 2003. Marine ecology : spring algal bloom and larval fish survival. *Nature*, 423(6938): 398–399.

- Pol, K., Graaf, K., Bruin, M. D., Balvers, M. and Mars, M. 2020. The effect of replacing sucrose with L-arabinose in drinks and cereal foods on blood glucose and plasma insulin responses in healthy adults. *Journal of Functional Foods*, 73: 1-8.
- Polat, E., Yuksel, E. and Altinbas, M. 2020. Mutual effect of sodium and magnesium on the cultivation of microalgae *Auxenochlorella protothecoides*. *Biomass and Bioenergy*, 132:1-8.
- Prayitno, J. 2015. Pola Pertumbuhan dan pemanenan biomassa dalam fotobioreaktor mikroalga untuk penangkapan karbon. *Jurnal Teknologi Lingkungan*, 17(1): 45-52.
- Qiu, R., Gao, S., Lopez, P. A. and Ogden, K. L. 2017. Effects of pH on cell growth, lipid, production and CO₂ addition of microalgae *Chlorella sorokiniana*. *Algal Research*, 28: 192-199.
- Raeisossadati, M., Moheimani, N. R., Parlevliet, D. 2019. Red and blue luminescent solar concentrators for increasing *Arthrospira platensis* biomass and phycocyanin productivity in outdoor raceway ponds. *Bioresour. Technol.* 291:1-7.
- Randrianarison, G. and Ashraf, M. A. 2017. Microalgae: a potential plant for energy production. *Geol Ecol Landscapes*, 1(2):104–120.
- Rangkuti, P. M., Siswanti, D. U. and Suyono, E. A. 2023. Salinity treatment as bacterial control and its impact on growth and nutritional value of *Spirulina* (*Arthrospira platensis*) culture in open pond system. *Journal of Fisheries and Environment*, 47(1): 63-74.
- Rahman, A., Prihantini, B. N. and Nasruddin. 2019. Fatty acid of microalgae as a potential feedstock for biodiesel production in Indonesia. *AIP Conference Proceedings*, 2062: 1-8.
- Rath, K. M., Maheshwari, A. and Rousk, J. 2019. Linking microbial community structure to trait distributions and functions using salinity as an environmental filter. *mBio*, 10(4): 1-12.
- Ray, P. D., Huang, B. W. and Tsuji, Y. 2012. Reactive oxygen species (ROS) homeostasis and redox regulation in cellular signaling. *Cellular Signalling*, 24: 981–990.
- Reid, S. J. and Abratt, V. R. 2005. Sucrose utilisation in bacteria: genetic organisation and regulation. *Applied Microbiology and Biotechnology*, 67(3): 312–321.
- Renaud, S. M., Thinh, L. V., Lambrinidis, G. and Parry, D. L. 2002. Effect of temperature on growth, chemical composition and fatty acid composition of tropical Australian microalgae grown in batch cultures. *Aquaculture*, 211: 195-214.
- Richmond, A., Lichtenberg, E., Stahl, B. and Vonshak, A. 1990. Quantitative assessment of the major limitations on productivity of *Spirulina platensis* in open raceways. *Journal Appl. Phycol*, 2: 195-206.
- Richmond, A. 2004. *Handbook of Microalgal Culture Biotechnology and Applied Phycology*. Blackwell Science: USA. pp. 10-11, 49, 99-125.
- Richmond A. and Hu, Q. 2013. *Handbook of Microalgal Culture: Applied Phycology and Biotechnology*. Wiley-Blackwell: USA. pp.114-121.

- Richter, P., Boring, A., Streb, C., Ntefidou, M., Lebert, M. and Hader, D. P. 2003. Effects of increased salinity on gravitaxis in *Euglena gracilis*. *Journal Plant Physiol*, 160(6):651-656.
- Rocchetta, I. and Kupper, H. 2009. Chromium-and-copper-induced inhibition of photosynthesis in *euglena gracilis* analysed on the single-cell level by fluorescence kinetic microscopy. *New Phytologist*, 182(2): 405-420.
- Rubiyatno., Matsui, T., Mori, K. and Toyama, T. 2021. Paramylon production by *Euglena gracilis* via mixotrophic cultivation using sewage effluent and waste organic compounds. *Bioresource Technology Reports*, 15:8-11.
- Ruiz, C. A. S., Baca, S. Z., Broek, L. A. M., Berg, C., Wijffels, R. H. and Eppink, M. H. M. 2020. Selective fractionation of free glucose and starch from microalgae using aqueous two-phase systems. *Algal Research*, 46:1-7.
- Russo, R., Barsanti, L., Evangelista, V., Frassanito, A. M., Longo, V., Pucci, L., Penno, G. Gualtieri, P. 2016. *Euglena gracilis* paramylon activates human lymphocytes by upregulating pro-inflammatory factors. *Food Science and Nutrition*, 5(2): 205-214.
- Salama, E. S., Kim, H. C., Abou-Shanab, R. A., Ji, M. K., Oh, Y.K., Kim, S.H. and Jeon, B. H. 2013. Biomass, lipid content, and fatty acid composition of freshwater *Chlamydomonas mexicana* and *Scenedesmus obliquus* grown under salt stress. *Bioprocess and Biosystems Engineering*, 36(6): 827–833.
- Salman, J. M., Grmasha, R. A., Stenger-Kovács, C., Lengyel, E., Al-Sareji, O. J., Al-Cheban, A. M. A. A. and Meiczinger, M. 2023. Influence of magnesium concentrations on the biomass and biochemical variations in the freshwater algae. *Chlorella vulgaris*. *Heliyon*, 9(1):1-7.
- Sanders, D., Pelloux, J., Brownlee, C. and Harper, J. F. 2002. Calcium at the crossroads of signaling. *Plant Cell*, 14 (1): 401–417.
- Santos-Ballardo, D. U., Rossi, S., Reyes-Moreno, C. and Valdez-Ortiz, A. 2016. Microalgae potential as a biogas source: current status, restraints and future trends. *Rev. Environ. Sci. Biotechnol*, 15(2): 243-264.
- Scartazza, A., Picciarelli, P., Mariotti, L., Curadi, M., Barsanti, L. and Gualtieri, P. 2017. The role of *Euglena gracilis* paramylon in modulating xylem hormone levels, photosynthesis and water-use efficiency in *Solanum lycopersicum* L. *Physiologia Plantarum*, 161(4): 486–501.
- Schwartzbach, S. D. and Shigeoka, S. 2017. *Euglena*: biochemistry, cell and molecular biology. *Advances in Experimental Medicine and Biology*, 979: 69-71.
- Scott, S. A., Davey, M. P., Dennis, J. S., Horst, I., Howe, C. J., Lea-Smith, D. J. and Smith, A. G. 2010. Biodiesel from algae: challenges and prospects. *Curr Opin Biotechnol*, 21: 277–286.
- Shabala, S. and Hariadi, Y. 2005. Effects of magnesium availability on the activity of plasma membrane ion transporters and light-induced responses from broad bean leaf mesophyll. *Planta*, 221: 56-65.
- Shetty, P., Gitau, M. M. and Maroti, G. 2019. Salinity stress responses and adaptation mechanisms in eukaryotic green microalgae. *Cells*, 8(12): 1657.
- Shigeoka, S. and Maruta, T. 2014. Cellular redox regulation, signaling, and stress response in plants. *Bioscience Biotechnology Biochemistry*, 78: 1457–1470.
- Sies, H. 2014. Role of metabolic H_2O_2 generation: redox signaling and oxidative stress. *Journal Biology Chemistry*, 289: 8735–8741.

- Singh, R. N. and Sharma, S. 2012. Development of suitable photobioreactor for algae production - a review. *Renewable and Sustainable Energy Reviews*, 16: 2347-2353.
- Soletto, D., Binaghi, L., Lodi, A., Carvalho, J. C. M. and Converti, A. 2005. Batch and fed-batch cultivations of *Spirulina platensis* using ammonium sulphate and urea as nitrogen sources. *Aquaculture*, 243, 217–224.
- Spolaore, P., Joaniss-Cassan, C., Duran, E. and Isambert, A. 2006. Commercial applications of microalgae. *Journal of Bioscience and Bioengineering*. 101(2): 87–96.
- Srivastava, G., Nishchal. and Goud, V. V. 2017. Salinity induced lipid production in microalgae and cluster analysis (ICCB 16-BR_047). *Bioresource Technology*, 242:244–252.
- Sudas, D. P., Kuznetsov, P. I., Savelyev, E. A. and Golant, K. M. 2022. Monitoring the vital activity of microalgae cells using a fiber-optical refractometer. *Photonics*, 10(19): 1-10.
- Sumida, S., Harvard, L., Nobuhiko, K. and Tetsuaki, O. 2007. Mechanism of conversion from heterotrophy to autotrophy in *Euglena gracilis*. *Cytologia*, 72(4): 447.
- Sun, X.-M., Ren, L.-J., Bi, Z.-Q., Ji, X.-J., Zhao, Q.-Y. and Huang, H. 2018. Adaptive evolution of microalgae *Schizochytrium* sp. under high salinity stress to alleviate oxidative damage and improve lipid biosynthesis. *Bioresour. Technol*, 267: 438–444.
- Suyono, E. A., Haryadi, W., Zusron, M., Nuhamunada, M., Rahayu, S. and Nugroho, A. P. 2015. The effect of salinity on growth, dry weight, and lipid content of the mixed microalgae culture isolated from Glagah as biodiesel substrate. *Journal of Life Sciences*, 9: 229-233.
- Suyono, E. A., Nopitasari, S., Zusron, M., Khoirunnisa, P., Islami, D. A. and Prabeswara, C. B. 2016. Effect of silica on carbohydrate content of mixed culture *Phaedactylum* sp. and *Chlorella* sp. *Biosciences Biotechnology Research Asia*, 13(1): 109-114.
- Suyono, E. A., Sudibyo, H., Purwanti, Y., Pradana, Y. S., Samudra, T. T. and Budiman, A. 2018. Modification of growth medium of mixed-culture species of microalgae isolated from southern java coastal region. *MATEC Web of Conferences*, 154: 3-6.
- Suyono, E. A., Yuarrina, W. P., Pradana, Y. S., Budiman, A., Majid, A.I. and Indarto. 2018. Study of cultivation and growth rate kinetic for mixed cultures of local microalgae as third generation (G-3) bioethanol feedstock in thin layer photobioreactor. *Journal of Physics: Conference Series*, 1022(1): 1- 7.
- Suzuki, K. 2017. Large-Scale Cultivation of *Euglena*. *Advances in Experimental Medicine and Biology*, 979: 285–293.
- Taiz, L. and Zeiger, E. 2002. *Plant Physiology*. 3rd Edition. Sunderland: Sinauer Associates. pp: 116-119.
- Talebi, A. F., Mohtashami, S. K., Tabatabaei, M., Tohidfar, M., Bagheri, A., Zeinalabedini., Mirzaei, H. H., Mirzajanzadeh, M., Shafaroudi, S. M. and Bakhtiari, S. 2013. Fatty acids profiling: a selective criterion for screening microalgae strains for biodiesel production. *Algal Research*, 2: 258-267.
- Talebi, A. F., Tabatabaei, M., Mohtashami, S. K., Tohidfar, M. and Moradi, F. 2013. Comparative salt stress study on intracellular ion concentration in

- marine and salt adapted freshwater strains of microalgae. *Not. Sci. Biol.*, 5:309–315.
- Tamponnet, C., Barbotin, J. and Calvayrac, R. 1989. Physiological stabilization of *Euglena gracilis* cells by high extracellular calcium (100 mM). *Applied Microbiology and Biotechnology*, 32:211-217.
- Tan, J., Lee, S. Y., Chew, K. W., Lam, M. K., Lim, J. W., Ho, S. H. and Show, P. L. 2020. A review on microalgae cultivation and harvesting, and their biomass extraction processing using ionic liquids. *Bioengineered*, 11(1): 116-129.
- Tan, X., Zhu, J. and Wakisaka, M. 2020. Effect of protocatechuic acid on *Euglena gracilis* growth and accumulation of metabolites. *Sustainability*, 12: 1-11.
- Taw. 1990. *Instructions for Maintaining Pure and Mass Microalgae Culture*. United Nations Development Programme. Food and Agriculture Organizations of the United Nations.
- Taw, N. 1990. *Petunjuk Pemeliharaan Kultur Murni dan Massal Mikroalga*. UNDP-FAO, hal. 4-32.
- Tena, J. G. O., Rühmann, B., Schieder, D. and Sieber, V. 2016. Revealing the diversity of algal monosaccharides: fast carbohydrate fingerprinting of microalgae using crude bio-mass and showcasing sugar distribution in *Chlorella vulgaris* by biomass fractionation. *Algal Res*, 17: 227–235.
- Tewari, R. K., Kumar, P. and Sharma, P. N. 2005. Magnesium deficiency induced oxidative stress and antioxidant responses in mulberry plants. *Sci Hortic*, 108: 7-14.
- Timotius, V., Suyono, E. A., Suwanti, L. T., Koerniawan, M. D., Budiman, A. and Siregar, U. J. 2022. The content of lipid, chlorophyll, and carotenoid of *Euglena* sp. under various salinities. *AsPac J. Mol. Biol. Biotechnol*, 30 (3): 114-122.
- Tiwari, S. and Updadhayay, S. 2019. Potential applications of microalgae in bioproduct production: a review. *Octa Journal of Biosciences*, 7(1): 1-5.
- Tomaselli, L. 2004. *The Microalgal Cell*. In: *Richmond A (ed) Handbook of Microalgal Culture: Biotechnology and Applied Phycology*. Blackwell Science: Oxford. pp. 3–19.
- Toyama, T., Hanaoka, T., Yamada, K., Suzuki, K., Tanaka, Y., Morikawa, M. and Mori, K. (2019). Enhanced production of biomass and lipids by *Euglena gracilis* via co-culturing with a microalga growth-promoting bacterium, *Emeticicia* sp. EG3. *Biotechnology for Biofuels*, 12(1):1-11.
- Trappeniers, N. J., Biswas, S. N. and van't Klooster, P. 1978. Glass enclosed resistance thermometer for temperature measurement inside a high pressure vessel. *Review of Scientific Instruments*, 49(7): 1007-1008.
- Tredici, M. R. 2010. Photobiology of microalgae mass cultures: under standing the tools for the next green revolution. *Biofuels*, 1: 143–162.
- Uliether, N., Nurafifah, I., Rohmawati, I., Putri, R. A. E., Erfianti, T. and Suyono, E. A. Different carbon source alternative medium improves *Euglena* sp. growth and paramylon production. *Biogenesis: Jurnal Ilmiah Biologi*, 11(1): 102-110.
- Velasco, J., Gutiérrez-Cánovas, C., Botella-Cruz, M., Sánchez-Fernández, D., Arribas, P., Carbonell, J. A. 2019. Effects of salinity changes on aquatic

- organisms in a multiple stressor context. *Philos. Trans. R. Soc. Lond. Ser. B: Biol.Sci.* 374:1-7.
- Vidhya, C. V. 2022. Microalgae—the ideal source of biofuel. *Biofuels and Bioenergy*, 389-405.
- Vonshak, A. 1997. *Spirulina platensis (Arthrospira): Fisiologi, Biologi Sel, dan Bioteknologi*. Taylor dan Francis: Israel. hal. 1-227.
- Vonshak, A. & Richmond, A. 1988. Mass production of the blue-green alga *Spirulina*: An overview. *Biomass*, 15(4): 233-247.
- Volgusheva, A., Kukarskikh, G., Krendeleva, T., Rubina, A., Mamedov, F. 2015. Hydrogen photoproduction in green algae *Chlamydomonas reinhardtii* under magnesium deprivation. *RSC Adv*, 5: 5633–5637.
- Wang, L. and Nancollas, G. H. 2008. Calcium orthophosphates: crystallization and dissolution. *Chemical Reviews*, 108: 4628-4669.
- Wang, Y., Seppänen-Laakso, T., Rischer, H. and Wiebe, M. G. 2018. *Euglena gracilis* growth and cell composition under different temperature, light, and trophic conditions. *PLoS ONE*, 13(4):1-14.
- Wells, M. L., Potin, P., Craigie, J. S., Raven, J. A., Merchant, S. S., Helliwell, K. E., Smith, A.G., Camire, M. E., Brawley, S. H. 2017. Algae as nutritional and functional food sources: Revisiting our understanding. *J. Appl. Phycol*, 29:949-982.
- Wood, D. A. 2021. Microalgae to biodiesel- review of recent progress. *Bioresource Technology Reports*, 14: 1–13.
- Wu, W., Peters, J., Berkowitz, G. A. 1991. Surface charge-mediated effects of Mg^{2+} on K^{+} flux across the chloroplast envelope are associated with regulation of stromal pH and photosynthesis. *Plant Physiol*, 97: 580–587.
- Wu, L., Luthringer, B. J. C., Feyerabend, F., Schilling, A. and Willumeit, R. 2014. Effects of extracellular magnesium on the differentiation and function of human osteoclasts. *Acta Biomaterialia*, 10:2843–2854.
- Xia, Y., Kishi, M., Sugai, Y. and Toda, T. 2022. Microalgal focculation and sedimentation: spatiotemporal evaluation of the effects of the pH and calcium concentration. *Bioprocess and Biosystems Engineering*, 45:1489-1498.
- Xu, C., Li, X. and Zhang, L. 2013. The effect of calcium chloride on growth, photosynthesis, and antioxidant responses of *Zoysia japonica* under drought conditions. *Plos One*, 8(7): 1-10.
- Yamane, Y., Utsunomiya, T., Watanabe, M. and Sasaki, K. 2001. Biomass production in mixotrophic culture of *Euglena gracilis* under acidic condition and its growth energetic. *Biotechnology Letters*, 23(15):1223-1228.
- Yan, N., Marschner, P., Cao, W., Zuo, C. and Qin, W. 2015. Influence of salinity and water content on soil microorganisms. *International Soil and Water Conservation Research*, 3(4): 316–323.
- Yang, J., Li, W., Xing, C., Xing, G., Guo, Y. and Yuan, H. 2022. Ca^{2+} participates in the regulation of microalgae triacylglycerol metabolism under heat stress. *Biology Engineering*, 1:1-6.
- Yousuf, A. 2020. *Microalgae Cultivation for Biofuels Production*. Elsevier Academic Press: Oxford. pp. 36-37.
- Yue, F., Zhang, J., Xu, J., Niu, T., Lü, X. and Liu, M. 2022. Effects of monosaccharide composition on quantitative analysis of total sugar content by phenol-sulfuric acid method. *Frontiers in Nutrition*, 9: 1-7.

- Zavala, J. S. R., Cruz, M. A. O., Herna'ndez, G. M. and Sa'nchez, R. M. 2010. Increased synthesis of α -tocopherol, *paramylon* and tyrosine by *Euglena gracilis* under conditions of high biomass production. *Journal of Applied Microbiology*, 109:2160-2172.
- Zhang, Z. Q., Khan, N. M., Nunez, K. M., Chess, E. K. and Szabo, C. M. 2012. Complete monosaccharide analysis by high-performance anion-exchange chromatography with pulsed amperometric detection. *Analytical Chemistry*, 84(9): 4104–4110.
- Zhu, J. K. 2001. Plant salt tolerance. *Trends Plant Sci.* 6:66–71.
- Zhu, L. D., Li, Z. H. and Hiltunen, E. 2016. Strategies for lipid production improvement in microalgae as a biodiesel feedstock. *BioMed Research International*, 2016: 1-8.
- Zhu, J., Chen, W., Chen, H., Zhang, X., He, C., Rong, J. and Wang, Q. 2016b. Improved productivity of neutral lipids in *Chlorella* sp. A2 by minimal nitrogen supply. *Frontiers in Microbiology*, 7: 1–11.
- Zhu, J., Wakisaka, M. 2021. Application of lignosulfonate as the growth promoter for freshwater microalgae *Euglena gracilis* to increase productivity of biomass and lipids. *Fuel*, 283: 2-9.