

## DAFTAR PUSTAKA

- Achmad, Herliyana, E. N., & Octaviani, E. A. (2013). Influence of pH, Shaked Medium, and Addition of Sawdust on the Growth of *Xylaria* sp. *Jurnal Silvikultur Tropika*, 4(2): 57–61.
- Agustini, N. W. S., & Nadhil, F. (2019). Hidrolisis Biomassa Mikroalga *Porphyridium cruentum* Menggunakan Asam ( $H_2SO_4$  dan  $HNO_3$ ) Dalam Produksi Bioethanol. *Jurnal Kimia dan Kemasan*. 41(1): 1-10.  
<http://dx.doi.org/10.24817/jkk.v41i1.3962>
- Alabi, A. O., Tampier, M., & Bibeau, E. (2009). Microalgae Technologies & Processes for Biofuels/Bioenergy Production in British Columbia. In *seedScience*
- Almutairi, A. W., & Toulabah, H. E. (2017). Effect of Salinity and pH on Fatty Acid Profile of The Green Algae *Tetraselmis suecica*. *J. Pet. Environ. Biotechnol.*, 08(03): 3–8.
- Amaro, H. M., Catarina, G. A., & Xavier, F. M. (2011). Advances and Perspectives in Using Microalgae to Produce Biodiesel. *Applied Energi*, 88 (11): 3402–3410.
- Anam, K. (2010). Pengukuran Kadar Protein dengan Metode Bradford. Bogor: Bioteknologi Sekolah Pascasarjana Institut Pertanian Bogor.
- Andersen, R. A. (2005). *Algae Culturing Technique*. United Kingdom: Elsevier Academic Press.
- Ando, S., Tanaka Y. (1996). Carotenoid Form in the Exoskeleton of Crawfish and Kuruma Prawn. *Mem. Fac. Fish. Kagoshima Univ.* 45: 5-12.
- Assadad, L., Bagus, S, B, U., & Rodiah, N. S. (2010). Pemanfaatan Mikroalga Sebagai Bahan Baku Bioethanol. *Squalen*. 5(2): 51-57.
- Azizah, N., Al-Baarri, A. N., Mulyani, S. (2012). Effect of Fermentation Time on Alcohol Content, pH, and Gas Production in the Fermentation Process of Bioethanol from Whey with Pineapple Skin Substitution. *Jurnal Aplikasi Teknologi Pangan*. 1(2): 72-77.
- Azizullah, A., Richter, P., & Häder, D. P. (2014). Photosynthesis and Photosynthetic Pigments in the Flagellate *Euglena gracilis* - As Sensitive Endpoints for Toxicity Evaluation of Liquid Detergents. *Journal of Photochemistry and Photobiology B: Biology*, 133, 18–26.  
<https://doi.org/10.1016/j.jphotobiol.2014.02.011>

- Barsanti, Vismara, L. R., Passarelli, V., & Gualtieri, P. (2001). Paramylon ( $\beta$ -1,3-glucan) Content in Wild Type and WZSL Mutant of *Euglena gracilis* Effect of Growth Conditions. *Journal of Applied Phycology*. 13: 59 – 65.
- Bauernfeind, J. (1981). Carotenoids as Colorants and Vitamin A Precursors: Technological and Nutritional Applications. Academic Press, New York.
- Baumeler, A., Eugster, C. H. (1992). Synthesis of (6*R*, all-*E*)-Neoxanthin and Related Allenic Carotenoids. *Helv. Chim. Acta* 75: 773–790. doi: 10.1002/hlca.19920750314.
- Baumeler, A., Zerbe, O., Kunz, R., Eugster, C. H. (1994). [(6*R*,9'*Z*)-Neoxanthin: Synthesis, Physical Properties, Spectra, and Calculations of Its Conformation in Solution]. *Helv. Chim. Acta* 77: 909–930. doi: 10.1002/hlca.19940770405.
- Bell, T., Alamzad R., & Graf B. A. 2016. Effect of pH on the chemical stability of carotenoids in juice. *Proceedings of the Nutrition Society*. 75 (OCE3): E94. doi:10.1017/S0029665116001099
- Bligh, E. G., & Dyer, W. J. (1959). A rapid Method for Total Lipid Extraction and Purification. *Journal of Biochem Physiology*, 37(1): 911- 917.
- Boon, C. S., Mcclements, D. J., Weiss, J., & Decker, E. A. (2010). Factors Influencing the Chemical Stability of Carotenoids in Foods, Critical Reviews in Food Science and Nutrition. 50(6): 515–532.
- Borie, F., & Rubio, R. (2003). Total and Organic Phosphorus in Chilean Volcanic Soils. *Gayana Botánica*, 60: 69-78. <http://dx.doi.org/10.4067/s0717-66432003000100011>.
- Boussiba, S., Fan, L., Vonshak, A. (1992). Enhancement and Determination of Astaxanthin Accumulation in Green Alga *Haematococcus pluvialis*. *Methods In Enzymology* 213: 386-391. doi: 10.1016/0076-6879(92)13140-S.
- Bradford, M. M. (1976). A Rapid and Sensitive Method or the Quantitation Microgram Quantities of Protein Utilizing the Principle of Protein-Dye Binding. *Analytical Biochemistry*, 254: 248–254.
- Buetow, D. E. (2011). *Euglena*. *Encyclopedia of Life Sciences*, 1–5.
- Campo, A. J., Garcia, G. M., & Guerrero. M. G. (2007). Outdoor Cultivation of Microalgae for Carotenoid Production: Current State and Perspectives. *Apply Microb Biotechnol*. 74: 1163-1174.
- Casper-Lindley, C., & Björkman, O. (1998). Fluorescence Quenching in Four Unicellular Algae with Different Light-Harvesting and Xanthophyll-Cycle Pigments. *Photosynthesis Research*, 56(3): 277–289. <https://doi.org/10.1023/A:1006037516479>.

- Cholnoky, L., Györgyfy, K., Rónai, A., Szabolcs, J., Tóth, G., Galasko, G., Mallams, A. K., Waight, E. S., Weedon, B. C. L. (1969). Carotenoids and Related Compounds. Part XXI. Structure of Neoxanthin (Folioxanthin). *J. Chem. Soc. C*. 1: 1256–1263. doi: 10.1039/j39690001256.
- Christaki, E., Bonos, E., & Paneri, P. F. (2015). Innovative Microalgae Pigments as Functional Ingredients in Nutrition, *Handbook of Marine Microalgae*, Academic Press, 233-243. <https://doi.org/10.1016/B978-0-12-800776-1.00014-5>.
- Christi, Y. (2007). Biodiesel from microalgae. *Biotechnology Advances*, 25(3): 294–306. <https://doi.org/10.1016/j.biotechadv.2007.02.001>.
- Cotteau, P. (1996). Microalgae. In: Lavens, P & P. Sorgeloos (Eds.). *Manual on Production and Use of Live Food for Aquaculture*, FAO. Fisheries Technical Paper Edition. Rome, Italia pp: 8-87.
- Cramer, M., & Myers, J. (1952). Growth and Photosynthetic Characteristics of *Euglena gracilis*. *Archiv Fur Mikrobiologie*, 17(4): 384–402. doi: 10.1007/BF00410835.
- Danilov, R. A., & Ekelund, N. G. A. (2001). Effects of pH on the Growth Rate, Motility and Photosynthesis in *Euglena gracilis*. *Folia Microbiologica*, 46(6): 549–554. <https://doi.org/10.1007/BF02818001>.
- Danilov, R., & Ekelund, N. (2000). Applicability of growth rate, cell shape, and motility of *Euglena gracilis* as physiological parameters for bioassessment at lower concentrations of toxic substances: an experimental approach. *Environmental Toxicology*. 16: 7.
- Dimara, L., Tuririday, H., Tien, D., Yenusi, N. B. (2012). Identification and Photodegradation of Chlorophyll Pigments in Seaweed *Caulerpa racemosa* (Forsskal) J. Agardh. *Jurnal Biologi Papua*, 4(2): 47-53.
- Dougall, D. K. (1980). Nutrition and Metabolism, in Staba ET (Ed) *Plant Tissue Culture as a Source of Biochemicals*, Boca Raton, Florida: CRC Press, pp. 21–58.
- Dubois, M., Gilles, K. A., Hamilton, J. K., Rebers, P. A., & Smith, F. (1956). Colorimetric Method for Determination of Sugars and Related Substances, 350–56.
- Effendi, H. (2003). *Telaah Kualitas Air Bagi Pengelolaan Sumber Daya dan Lingkungan Perairan*. Kanisius. Yogyakarta, 256.

- Egbo, M. K., Okoani, A. O., & Okoh, I. (2018). Photobioreactors for Microalgae Cultivation – An Overview. *International Journal of Scientific & Engineering Research*, 9(11): 65–74.
- Eonseon, J., Polle, J. E. W., Lee, H. K., Hyund, S. M., Chang, M. (2003). Xanthophylls in Microalgae: from Biosynthesis to Biotechnological Mass Production and Application. *Microb. Biotechnol.* 13: 165–174.
- Evans, E. T., Scragg, A. H., Ratledge, C. (1981). Regulation of Citrate Efflux from Mitochondria of Oleaginous and Non-oleaginous Yeasts by Adenine Nucleotides. *Eur. J. Biochem.*, 132: 609-615.
- Fennema, O. R. (1996). Food Chemistry: 3rd ed., Marcel Dekker, Inc., New York.
- Ferruzzi, M. G., Blakeslee, J. (2007). Digestion, Absorption, and Cancer Preventative Activity of Dietary Chlorophyll Derivatives. *Nutrition Research*, 27: 1-12. doi: 10.1016/j.nutres.2006.12.003.
- Fischer, M. E., Eugster, C. H. (1990). Neoflor and 6-Epineoflor from Flowers of *Trollius europaeus*; Highfield <sup>1</sup>H-NMR Spectra of (all-E)-Neoxanthin and (9'Z)-Neoxanthin. *Helv. Chim. Acta* 73: 1637–1643. Doi: 10.1002/hlca.19900730608.
- George, E. F., Hall, M. A., & De Klerk, G. J. (2008). The Components of Plant Tissue Culture Media II: Organic Additions, Osmotic and pH Effects, and Support Systems, in Plant Propagation by Tissue Culture: Volume 1. The Background, E. F. George, M. A. Hall, and G.-J. De Klerk, Eds. Dordrecht: Springer Netherlands, pp. 115–173.
- Giese, A. C. (1973). Cell Physiology, 4th ed., Saunders Company, Philadelphia.
- Gissibl, A., Sun, A. A., & Nevalainen, H. S. A. (2019). Bioproducts from *Euglena gracilis*: Synthesis and Applications. *Biotechnol Journal*, 7 (1): 108-114.
- Goldman, C. R., & Horne, A. J. (1983). Limnology, McGraw-Hill, Inc., Auckland.
- Gong, M., & Bassi, A. (2016). Carotenoids from Microalgae: A Review of Recent Developments. *Biotechnology Advances*. 34(8): 1396-1412. <https://doi.org/10.1016/j.biotechadv.2016.10.005>
- Gong, Y., Patterson, D. J., Li, Y., Hu, Z., Sommerfeld, M., Chen, Y., Hu, Q. (2015). *Vernalophrys algivore* gen. nov., sp. nov. A New Algal Predator Isolated from Outdoor Mass Culture of *Scenedesmus dimorphus*. *Applied and Environmental Microbiology*, 81: 3900–3913.
- Grossman, A. R., Bhaya, D. Apt K. E., Kehoe, D. M. (1995). Light Harvesting Complexes in Oxygenic Photosynthesis: Diversity, Control, and Evolution. *Annu. Rev. Genet.* 29: 231–288. doi: 10.1146/annurev.ge.29.120195.001311.

- Grouneva, I., Jakob, T., Wilhelm, C., & Goss, R. (2006). Influence of Ascorbate and pH on the Activity of the Diatom Xanthophyll Cycle Enzyme Diadinoxanthin de-epoxidase. *Physiologia Plantarum*. 126: 205-211. doi: 10.1111/j.1399-3054.2006.00613.x.
- 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.
- Hargreaves, J. W., & Whitton, B. A. (1976). Effect of pH on Tolerance of *Hormidium rivulare* to Zinc and Copper. *Oecologia* 26: 235–243.
- Harmoko, & Krisnawati, Y. (2018). Keanekaragaman Mikroalga Divisi Cyanobacteria di Danau AUR Musi Rawas. *Jurnal Biodjati*, 3(1): 8-14.
- Hathcock, J. (2004). Vitamin and Mineral Safety. Council for Responsible Nutrition, Washington, DC.
- Havlik, I., Lindner, Patrick., Scheper., Thomas., Reardon., Kenneth., F. (2013). On-line Monitoring of Large Cultivations of Microalgae and Cyanobacteria. *Trends in Biotechnology*, 31(7): 406–414. doi:10.1016/j.tibtech.2013.04.005
- Hayashi, M., Toda K., Ishiko, H., Komatsu R., & Kitaoka, S. 1994. Effects of Shifting pH in the Stationary Phase of Growth on the Chemical Composition of *Euglena gracilis*. *Bioscience, Biotechnology, and Biochemistry*, 58(11): 1964-1967.
- Helly de Fretes, Susanto, A. B., Budhi, P., Limantara, L. (2012). Carotenoids from Macroalgae and Microalgae: Potential Health Applications and Biotechnology. *Jurnal Teknologi dan Industri Pangan*. 23(2): 221-228. doi: 10.6066/jtip.2012.23.2.221
- Hermiastuti, M. (2013). Analisis Kadar Protein dan Identifikasi Asam Amino Pada Ikan Patin (*Pangasius djambal*). Skripsi. Jember: Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Jember.
- Hirschberg, J. M., Cohen, M., Harker, T., Lotan, V., Mann, I., Pecker. (1997). Molecular Genetics of the Carotenoid Biosynthesis pathway in plants and algae. *Pure and Appl Chem*. 69 (10): 2151-2158. doi:10.1351/pac199769102151.
- Hu, Q., Sommerfeld, M., Jarvis, E., Ghirardi, M., Posewitz, M., Seibert, M., Darzins, A. (2008). Microalgal Triacylglycerols as Feedstocks for Biofuel Production: Perspectives and Advances. *Plant J*. 54: 621-639.
- Huang, Y., Li, L., Liu, J., & Lin, W. (2013). Botanical pesticides as potential rotifer-control agents in microalgal mass culture. *Algal Research*, 4(1), 62–69
- Husna, F., Rachmawati, B., Samudra, T. T., Surya, Y., Budiman, A., & 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, 040017(2020), 1–7.
- Hutajulu, T. F., Hartanto, E. S., Subagja. (2008). Extraction Process of Chlorophyll for Food and Its Characteristics. *Jurnal Riset Industri* 2 (1): 44-55.
- Irhamni., Elvitriana, & Viena, V. (2014). Kultivasi Mikroalga Hijau Pada Sumber Nitrogen Berbeda Untuk Ekstraksi Lipida. *Jurnal Purifikasi*, 14(2): 99–105.
- Istirokhatun, T. (2017). Potensi *Chlorella* sp. Untuk Menyisihkan COD dan Nitrat dalam Limbah Cair Tahu. Universitas Diponegoro, Semarang.
- Jelizanur, P., & Muria, S. R. (2019). Kultivasi Mikroalga Menggunakan Media AF6 pada Berbagai pH. *Jom FTEKNIK*. 6(2): 1-5.
- Jones, C. R., & Cook, J. R. (1978). Culture pH, CO<sub>2</sub> Tension, and Cell Division in *Euglena gracilis* Z. *Journal of Cellular Physiology*, 96(2): 253–259.
- Kawaroe, M., Prartono, T. A. Sunuddin, S. D., Wulan, & Augustine, D. (2010). Mikroalga Potensi dan Pemanfaatannya untuk Produksi Bio Bahan Bakar. Bogor, IPB Press.
- Khanra, A., Vasistha, S., & Rai, M. P. (2017). Glycerol on Lipid Enhancement and FAME Characterization in Algae for Raw Material of Biodiesel. *International Journal of Renewable Energy Research*, 7(4): 1970–1978.
- Khanra, U. (2017). Biogas as a Renewable Energy Fuel. A Review of Biogas Upgrading, Utilization and Storage. *Energy Conversion and Management*, 150: 277-294.
- Kiokias, S., Proestos, C., Varzakas, T. H. (2016). A Review of the Structure, Biosynthesis, Absorption of Carotenoids Analysis and Properties of their Common Natural Extracts. *Current Research in Nutrition and Food Science*. 4(1): 25-37. doi: 10.12944/CRNFSJ.4.Special-Issue1.03
- Konur, O. (2020). Handbook of Algal Science, Technology and Medicine. Academic Press, pp. 1-705. doi:10.1016/B978-0-12-818305-2.09995-2.
- Krishnan, V., Uemura, Y., Thanh, N. T., Khalid, N. A., Osman, N., & Mansor, N. (2015). Three Types of Marine Microalgae and *Nannochloropsis Oculata* Cultivation for Potential Source of Biomass Production. *Journal of Physics: Conference Series*, 622(2015):012034.
- Lam, M. K., Lee, K. T., & Mohamed, A. R. (2012). Current Status and Challenges on Microalgae-based Carbon Capture, *Int. J. Greenhouse Gas Control*. 10: 456-469.
- Lane, A. E. & Burris, J. E. (1981). *Plant Physiol*, 68-439.



- Lavens, P., & Sorgeloos, P. (1996). Manual on The Production and Use of Live Food for Aquaculture. FAO Fisheries Technical Paper. No. 361. Rome. pp. 295
- Lee, Y. K., Shen, H. (2004). Basic Culturing Techniques. In: Handbook of Microalgal Culture: Biotechnology and Applied Phycology, Richmond A, eds. Oxford, Blackwell Publishing Ltd.
- Leedale, G. F. (1964). Pellicle Structure in *Euglena*. *British Phycological Bulletin*. 2: 291-306. <https://doi.org/10.1080/00071616400650021>.
- Lichtenthaler, H. K., & Buschmann, C. (2001). Chlorophylls and Carotenoids: Measurement and Characterization by UV-VIS Spectroscopy. *Current Protocols in Food Analytical Chemistry*. John Wiley & Sons, Inc.
- Lichtenthaler, H.K. (1999). The 1-Deoxy-D-Xylulose 5 Fosfate Pathway of Isoprenoid Biosynthesis in Plant. *Annual Review of Plant Physiology and Plant Molecular Biology*. 1(50):47-65.
- Limantara, L., Koehler, P., Wilhelm, B., Porra, R. J., Scheer, H. (2006). Photostability of Bacteriochlorophyll-a and Derivatives: Potential Sensitizer for Photodynamic Tumor Therapy. *Photochemistry and Photobiology*, 82:770-780. doi: 10.1562/2005-09-07-RA-676.
- Lindqvist, A., Andersson, S. (2002). Biochemical Properties of Purified Recombinant Human  $\beta$ -carotene 15,15' Monooxygenase. *The J of Biol Chem*, 277 :23942-23948. doi: 10.1074/jbc.M202756200.
- Mahapatra, D. M., Chanakya, H. N., & Ramachandra, T. V. (2013). *Euglena* sp. as a Suitable Source of Lipids for Potential Use as Biofuel and Sustainable Wastewater Treatment. *Journal of Applied Phycology*, 25(3): 855–865.
- Maharani, A., D. Kurniawati dan N. Aryanti. (2012). Pengaruh jenis agen pengendap alami terhadap karakteristik tahu. *J. Teknologi Kimia dan Industri*, 1 (1): 528 – 533
- Mahdi, M. Z., Yasinta, N. T., & Hadiyanto. (2012). Evaluasi Pertumbuhan Mikroalga dalam Medium Pome: Variasi Jenis Mikroalga, Medium, dan Waktu Penambahan Nutrient. *Jurnal Teknologi Kimia dan Industri*. 1(1): 284-291.
- Mata, T. M., Martins, A. A., & Caetano, N. S. (2010). Microalgae for Biodiesel Production and Other Applications. *Renewable and Sustainable Energy*, 14 (11): 217-232.
- Mimuro, M., Akimoto, S. (2003). Carotenoids of Light Harvesting Systems: Energy Transfer Processes from Fucoxanthin and Peridinin to Chlorophyll. *Photosynthesis in Algae*. pp 335–349

- Morales, S. D., Martinez, R. O. A., & Martinez, A. (2017). Heterotrophic Cultivation of Microalgae: Production of Metabolites of Commercial Interest. *Journal Chemical Technology and Biotechnology*, 92: 36-55.
- Mortensen, A. (2006). Carotenoids and other Pigments as Natural Colorants. *Journal of Pure and Applied Chemistry*, 78(8): 1477-1491. doi:10.1351/pac200678081477.
- Natasya, G. Y. (2009). Pengaruh Sedimen Berminyak Terhadap Pertumbuhan Mikroalga *Isochrysis* Sp. Bogor: IPB Press.
- Nemerow, N. L. (1991). *Strem, Lake, Estuary, and Ocean Pollution*. Second Edition. Van Nostrand Reinhold, New York
- Nielsen, S. S., 2010. Introduction to Food Analysis, In: Nielsen SS (editor.) *Food Analysis* 4th ed, Springer, USA.
- Nur, M. M. A. (2014). Potensi Mikroalga sebagai Sumber Pangan Fungsional di Indonesia (overview). *Eksergi*, 11(2): 01-06.
- Nurhayati, T., Mochamad, B. H., & Musthofa, L. (2013). Penggunaan Fotobioreaktor Sistem Batch Tersirkulasi Terhadap Tingkat Pertumbuhan Mikroalga *Chlorella vulgaris*, *Chlorella* sp. dan *Nannochloropsis oculata*. *Jurnal Keteknikaan Pertanian Tropis dan Biosistem*. 1(3): 249-257.
- O'Neill, E. C., Trick, M., Hill, L., Rejzek, M., Dusi, R. G., Hamilton, C. J., Zimba, P.V., Henrissat, B., & Field, R. A. (2015). The Transcriptome of *Euglena gracilis* Reveals Unexpected Metabolic Capabilities for Carbohydrate and Natural Product Biochemistry. *Molecular BioSystems*, 11(10): 2808–2820. <https://doi.org/10.1039/c5mb00319a>
- Olson, J. A., & Krinsky, N. I. (1995). Introduction. The Colorful, Fascinating World of the Carotenoids: Important Physiologic Modulators. *FASEB Journal*. 9(1): 1547–1550.
- Pagels, F., Salvaterra, D., Amaro, H. M., Guedes, A. C. (2020). Pigments from Microalgae. Department of Biology, Faculty of Sciences, University of Porto (FCUP), Porto. Portugal. <https://doi.org/10.1016/B978-0-12-818536-0.00018-X>
- Panggabean & Lily. G. M. (1998). Mikroalga: Alternatif Pangan dan Bahan Industri di Masa Mendatang. *Oseana Journal*, 23(1): 19-26.
- Patmawati, R., Endrawati, H., & Santoso, A. (2018). Struktur Komunitas Zooplankton Di Perairan Pulau Panjang dan Teluk Awur, Kabupaten Jepara. *Buletin Oseanografi Marina*, 7(1): 37 – 42. DOI: 10.14710.buloma.v7i1.19041



- Prakash, S., Bhimba, B. V. (2004). Pharmaceutical Development of Novel Microalgae Comounds for Mdr. Mycobacterium tuberculosis. *Natural Product Radiance*.4(4): 264-268.
- Pratiwi, R., & Limantara, L. (2008). Potensi Astaxantin Sebagai Senyawa Antikanker. *Indonesian Journal of Cancer*, 4: 149–154.
- Prayitno, J. (2016). Pola Pertumbuhan dan Pemanenan Biomassa dalam Fotobioreaktor Mikroalga untuk Penangkapan Karbon. *Jurnal Teknologi Lingkungan* 17 (1): 45-52.
- Prihantini, B. N., Putri, B., Yuniati, R. (2005). Pertumbuhan *Chlorella* spp. dalam Medium Ekstrak Tauge (met) dengan Variasi pH Awal. *Makara Science*, 9 (1) :1-6.
- Pruvost, J., Vooren, G. V., Le, G. B., Couzinet, M. A., Legrand, J. (2011). Systematic Investigation of Biomass and Lipid Productivity by in Photobioreactors for Biodiesel Application. *Bioresource Technology*, 102(1): 150-158. doi: 10.1016/j.biortech.2010.06.153.
- Punchard, N. A. (2001). *Haemocytometer Instruction Sheet* (for improved Neubauer Haemocytometer). University of East London. London:UK.
- Richmond, A. (2004). *Handbook of Microalgal Culture: Biotechnology and Applied Phycology*. WILEY.
- Robinson, T. (1991). Kandungan Organik Tumbuhan Tingkat Tinggi. Bandung: Penerbit ITB. 152-196.
- Rodriguez, Z. J. S., Ortiz, C. M. A., Mendoza, G. H. R., Sanchez, M. (2010). Increased Synthesis of  $\alpha$ -tocopherol, Paramylon and Tyrosine by *Euglena gracilis* Under Conditions of High Biomass Production. *J. Appl. Microbiol.*, 109(6), pp. 2160-217
- Saini, R. K., & Keum, Y. S. (2018). Carotenoid Extraction Methods: A Review of Recent Developments. *Food Chemistry* 240: 90–103. Elsevier Ltd.
- Salim, M., Yuniarti, Y., & Hasby, R. (2011). Pengaruh CO<sub>2</sub> Terhadap Pertumbuhan *Staurastrum* sp. *Jurnal ISTEK*, 5(1): 127–138.
- Santek, B., Rezic, T. (2017). Cultivation of Microalgae *Euglena gracilis*: Mixotrophic Growth in Photobioreactor. *MOJ Food Process Technol*, 4(5): 125-127. DOI: 10.15406/mojfpt.2017.04.00102
- Sastrohamidjojo. (2007). Spektroskopi. Yogyakarta: Liberty. Warono Dwi dan Syamsudin. 2013. Unjuk Kerja Spektrofotometer Untuk Analisa Zat Aktif Ketoprofen. *Jurnal Konversi*.

- Schulze, P. S. C., Pereira, H. G. C., Santos, T. F. C., Schueler, L., Guerra, R., Barreira A., Perales, J. A., Varela, J. C. S. (2016). Effect of Light Quality Supplied by Light Emitting Diodes (LEDs) on Growth and Biochemical Profiles of *Nannochloropsis oculata* and *Tetraselmis chuii*. *Algal Research*. 16: 387-398. <https://doi.org/10.1016/j.algal.2016.03.034>
- Scope, R. K. (1994). Proteins purification, Principles and Practice, Second Edition, Springer-verleg, New York, 246-25.
- Shaheen, M., Choi, M., Ang, W., Zhao, Y., Xing, J., Yang, R., Xing, J., Zhang, J., Chen, J. (2013). Application of Low-Intensity Pulsed Ultrasound to Increase Bio-Ethanol Production. *Renewable Energy*. 57: 462-468.
- Skill, S. (2007). Microalgae *Biofuels*. Marine Futures Conferenc. *National Marine Aquarium Journal*. 18(1): 54-65.
- Sobari, R., Susanto, AB., Susilaningsih, D., & Yunita, R. Y. (2013). Kandungan Lipid Beberapa Jenis Sianobakteria Laut Sebagai Bahan Sumber Penghasil Biodiesel. *Journal of Marine Research*. 2: 113
- Soni, R. A., Sudhakar, K., & Rana, R. S. (2017). Spirulina from Growth to Nutritional Product: A review. *Trends in Food Science and Technology*, 69: 157-171.
- Sulastri. (2018). *Fitoplankton Danau-Danau di Pulau Jawa- Keanekaragaman dan Perannya sebagai Bioindikator Perairan*. LIPI Press.
- Suyono, E. A., & Samudra, T. T. (2015). Growth and Lipid Content of Microalgae *Tetraselmis* sp. Culture using Combination of Re-Blue Light and Nitrogen Starvation as an Effort to Increase Biodiesel Production. *Journal of Microbiology Biotechnology Engineering*, 1: 1-7.
- Suzuki, K. (2017). Large-Scale Cultivation of *Euglena*. *Euglena: Biochemistry, Cell and Molecular Biology*.p:285–293.
- Suzuki, K., Mitra, S., Iwata, O., Ishikawa, T., Kato, S., & Yamada, K. (2015). Selection and Characterization of *Euglena anabaena* var. *Minor* as a New Candidate *Euglena* Species for Industrial Application. *Bioscience, Biotechnology and Biochemistry*, 79 (10): 1730–1736. <https://doi.org/10.1080/09168451.2015.1045828>
- Tan, X., Zhu, J., & Wakisaka, M. (2020). Effect of Protocatechuic Acid on *Euglena gracilis* Growth and Accumulation of Metabolites. *Sustainability*, 12: 1–11.
- Tatsuzawa, H., Takizawa, E., Wada, M., Yamamoto, Y. (1996). Fatty Acid and Lipid Composition of The Acidophilic Green Alga *Chlamydomonas* sp. *Journal of Phycology*. 32: 598-601. <https://doi.org/10.1111/j.0022-3646.1996.00598.x>

- Taw. (1990). Instructions for Maintaining Pure and Mass Microalgae Culture. United Nations Development Programme. Food and Agriculture Organizations of the United Nations
- Thrane, J., Kyle, M., Striebel, M., Haande, S., Grung, M., Rohrlack, T., & Andersen, T. (2015). Spectrophotometric Analysis of Pigments: A Critical Assesment of a High-Throughput Method for Analysis of Algal Pigment Mixtures by Spectral Deconvolution. *PLoS ONE*. 10 (9): 1-24.
- Tomečková, L., Tomčala, A., Oborník, M., & Hampl, V. (2020). The Lipid Composition of *Euglena Gracilis* Middle Plastid Membrane Resemble that of Primary Plastid Envelopes. *Plant Physiology*, 184(4): 2052–2063. <https://doi.org/10.1104/pp.20.00505>
- Toyama, T., Hanaoka, T., Yamada, K., Suzuki, K., Tanaka, Y., Morikawa, M., & Mori, K. (2019). Enhanced Production of Biomass and Lipids by *Euglena Gracilis* Via Co-Culturing with A Microalga Growth-Promoting Bacterium, *Emeticia* sp. EG3. *Biotechnology for Biofuels*, 12(1): 1–12. <https://doi.org/10.1186/s13068-019-1544-2>
- Vonshak, A. (1997). *Spirulina platensis (Arthrospira): Physiology, Cell Biology and Biotechnology*. UK: Taylor & Francis Ltd.
- Wahyuni, D. T., & Widjanarko, S. B. (2015). Pengaruh Jenis Pelarut dan Lama Ekstraksi terhadap Ekstrak Karotenoid Labu Kuning dengan Metode Gelombang Ultrasonik. *Jurnal Pangan dan Agroindustri*. 3(2): 390-401.
- Wang, Y., Cui, R., Xiao, Y., Fang, J., Xu, Q. (2015). Effect of Carotene and Lycopene on the Risk of Prostate Cancer: A Systematic Review and Dose–Response Meta-Analysis of Observational Studies. *PLoS One* 10: e0137427.
- Wang, Y., Seppänen, L. T., Rischer, H., & Wiebe, M. G. (2018). *Euglena gracilis* Growth and Cell Composition Under Different Temperature, Light and Trophic Conditions. *PLoS ONE*, 13(4): 1–17. <https://doi.org/10.1371/journal.pone.0195329>
- Wijanarko, A., Dianursanti, Gozan, M., Andika, S. M. K., Widiastuti, P., Hermansyah, H., Witarto, A. B., Asami, K., Soemantojo, R.W., Ohtaguchi, K., & Song, S. K. (2006). Enhancement of Carbondioxide Fixation by Alteration of Illumination during *Chlorella vulgaris* Buitenzorg's Growth. *Biotechnology and Bioprocess Engineering*, 11: 484-488.
- Winarno F. G. (2002). Kimia Pangan dan Gizi. Jakarta: PT. Gramedia Pustaka Utama.
- Winarsih, H. (2007). Antioksidan Alami dan Radikal Bebas, Kanisius. Yogyakarta.

- Wolken, J. J. (1967). *Euglena*- An Experimental Organism for Biochemical and Biophysical Studies. In *System*. Appleton-Century-Crofts. Division of Meredith Publishing Company.
- Zakryś, B., Milanowski, R., & Karnkowska, A. (2017). Evolutionary Origin of *Euglena*. In *Advances in Experimental Medicine and Biology*, 979: 3–18. [https://doi.org/10.1007/978-3-319-54910-1\\_6](https://doi.org/10.1007/978-3-319-54910-1_6).
- Zeebe, R. E. & Wolf, G. D. A. (2001). CO<sub>2</sub> in Seawater: Equilibrium, Kinetics, Isotopes. Gulf Professional Publishing.