

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.
- Al Hakim, R. R. (2020). Model Energi Indonesia, Tinjauan Potensi Energi Terbaru untuk Ketahanan Energi di Indonesia: Literatur Review. *ANDASIH Jurnal Pengabdian Kepada Masyarakat*, 1(1), 1–11.
- Al Hinai, M., Al Kalbani, A., Al Rubkhi, B., Al Kalbani, U., & Walke, S. (2019). Protein Extraction from *Spirulina platensis*. *International Journal of Innovative Technology and Exploring Engineering*, 8(12), 1524–1530.
- Alabi, A. O., Tampier, M., & Bibeau, E. (2009). Microalgae Technologies & Processes for Biofuels / Bioenergy Production in British Columbia. In *seed Science*.
- Alam, F., Mobin, S., & Chowdhury, H. (2015). Third Generation Biofuel from Algae. *Procedia Engineering*, 105, 763–768.
- Amir, A., & Singh, S. (2018). Microalgae as Promising and Renewable Energy Source : A Review. *Journal of Fundamentals of Renewable Energy and Applications*. 8(4), 1–4.
- Asiandu, A. P., & Wahyudi, A. (2021). Phycoremediation: Heavy Metals Green-Removal by Microalgae and Its Application in Biofuel Production. *Journal of Environmental Treatment Techniques*. 9(3): 647-656.
- Asiandu, A. P., Widjajanti, H., & Rosalina, R. (2021). The Potential of Tofu Liquid Waste and Rice Washing Wastewater as Cheap Growth Media for *Trichoderma* sp. *Journal of Environmental Treatment Techniques*. 9(4): 769-775.
- Aulia, M., Istirokhatun, T., & Sudarno. (2017). Penyisipan Kadar COD dan Nitrat Melalui Kultivasi *Chlorella* sp. dengan Variasi Konsentrasi Limbah Cair Tahu. *Jurnal Teknik Lingkungan*, 6(2), 1–9.
- 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*, 133, 18–26.
- Bauen, A., Berndes, G., Junginger, M., Vuille, F., Ball, R., Bole, T., Chudziak, C., Faaij, A., & Mozaffarian, H. (2009). Bioenergy – a Sustainable and Reliable Energy Source- Main Report. In *IEA Bioenergy*.
- Bicudo, C. E. D. M., & Menezes, M. (2016). Phylogeny and Classification of Euglenophyceae: A brief review. *Frontiers in Ecology and Evolution*, 4(MAR), 1–15.
- Buetow, D. E. (2011). *Euglena*. *Encyclopedia of Life Sciences*, 1–5.
- Caineng, Z., Qun, Z., Guosheng, Z., & Bo, X. (2016). ScienceDirect Energy revolution : From a Fossil Energy Era to a New Energy Era. *Natural Gas Industry B*, 3(1), 1–11.
- Caraka, R. E., & Ekacitta, P. C. (2016). Simulasi Kalkulator Energi Baru Terbarukan (EBT) Guna Memenuhi Ketahanan Energi di Indonesia.

- STATISTIKA: Journal of Theoretical Statistics and Its Applications*, 16(2), 77–88.
- 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.
- Chen, C. Y., Kuo, E. W., Nagarajan, D., Ho, S. H., Dong, C. Di, Lee, D. J., & Chang, J. S. (2020). Cultivating *Chlorella sorokiniana* AK-1 with Swine Wastewater for Simultaneous Wastewater Treatment and Algal Biomass Production. *Bioresource Technology*, 302(January), 1–10.
- Chen, J., Li, Q., Chang, C., Bai, J., Liu, L., Fang, S., & Li, H. (2017). Techno-Economic Analysis of Biodiesel Production from Microalgae: A Review. *Trends in Renewable Energy*, 3(2), 141–152.
- Chisti, Y. (2007). Biodiesel from Microalgae. *Biotechnology Advances*, 25(3), 294–306.
- Culaba, A. B., Ubando, A. T., Ching, P. M. L., Chen, W. H., & Chang, J. S. (2020). Biofuel from Microalgae: Sustainable Pathways. *Sustainability*, 12(19), 1–19.
- Dang, N. M., & Lee, K. (2018). Recent Trends of Using Alternative Nutrient Sources for Microalgae Cultivation as a Feedstock of Biodiesel Production. *Applied Chemistry for Engineering*, 29(1), 1–9.
- 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.
- De Bhowmick, G., Koduru, L., & Sen, R. (2015). Metabolic Pathway Engineering Towards Enhancing Microalgal Lipid Biosynthesis for Biofuel Application - A review. *Renewable and Sustainable Energy Reviews*, 50, 1239–1253.
- Deb, S. (2016). Morphology and Biochemical Study of a Microalga *Euglena tuba* Reported from the Aquatic Ecosystem of Cachar. *Journal of Pharmacognocny and Phytochemistry*, 3(3), 1–10.
- Dianursanti, Rizkytata, B. T., Gumelar, M. T., & Abdullah, T. H. (2014). Industrial Tofu Wastewater as a Cultivation Medium of Microalgae *Chlorella vulgaris*. *Energy Procedia*, 47, 56–61.
- Direktorat Bioenergi, K. E. S. D. M. (2016). *Pedoman Investasi Bioenergi di Indonesia*. Direktorat Bioenergi, Ditjen Energi Baru Terbarukan dan Konservasi Energi.
- 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.
- Elmoraghy, M. (2013). *Production of bio-jet fuel from microalgae*. University of New Hampshire.
- Elystia, S., Darsy, M. S., & Mulia, S. R. (2021). Analisis Penambahan Bakteri *Azospirillum* sp. terhadap Kepadatan Sel dan Kandungan Lipid Mikroalga *Chlorella* sp. serta penyisihan N Total di Limbah Cair Tahu. *Jurnal Sains & Teknologi Lingkungan*, 13(2), 120–134.
- Elystia, S., Larasati, D., & Muria, S. R. (2020). Produksi Lipid dari Mikroalga *Scenedesmus* sp. pada Media Limbah Cair Tahu dengan Variasi Konsentrasi Limbah dan Photoperiod. *Jurnal Teknik Lingkungan*, 5(2), 54–61.

- Eze, C. N., Ogbonna, J. C., Ndu, O. O., Ochiogu, I. S., & Charles, O. N. (2017). Evaluation of Some Biological Activities of *Euglena gracilis* Biomass Produced by A Fed-Batch Culture with Some Crop Fertilizers. *African Journal of Biotechnology*, 16(8), 337–345.
- Fakhri, M., Antika, P. W., Ekawati, A. W., & Arifin, N. B. (2020). Pertumbuhan, Kandungan Pigmen, dan Protein *Spirulina platensis* yang Dikultur Pada $\text{Ca}(\text{NO}_3)_2$ dengan Dosis yang Berbeda. *Journal of Aquaculture and Fish Health*, 9(1), 38–47.
- Frumento, D., Aliakbarian, B., Casazza, A. A., Converti, A., Al Arni, S., & da Silva, M. F. (2016). *Chlorella vulgaris* as a Lipid Source: Cultivation on Air and Seawater-Simulating Medium in A Helicoidal Photobioreactor. *Biotechnology Progress*, 32(2), 279–284.
- Georgogianni, K. G., Kontominas, M. G., Tegou, E., Avlonitis, D., & Gergis, V. (2007). Biodiesel Production: Reaction and Process Parameters Of Alkali-Catalyzed Transesterification of Waste Frying Oils. *Energy and Fuels*, 21(5), 3023–3027.
- Gielen, D., Boshell, F., Saygin, D., Bazilian, M. D., Wagner, N., & Gorini, R. (2019). The Role of Renewable Energy in The Global Energy Transformation. *Energy Strategy Reviews*, 24(January), 38–50.
- Halek, F., Delavari, A., & Kavousi-ibrahim, A. (2013). Production of Biodiesel as A Renewable Energy Source From Castor Oil. *Clean Technologies and Environmental Policy*, 15(6), 1063–1068.
- Hanief, S., Prasakti, L., Pradana, Y. S., Cahyono, R. B., & Budiman, A. (2020). Growth kinetic of *Botryococcus braunii* Microalgae using Logistic and Gompertz Models. *AIP Conference Proceedings*, 1–7.
- 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.
- Imelda, S., Claudia, C., Lambui, O., & Suwastika, I. N. (2018). Kultivasi Mikroalga Isolat Lokal pada Medium Ekstrak Tauge. *Natural Science: Journal of Science and Technology*, 7(2), 148–157.
- Inwongwan, S., Kruger, N. J., Ratcliffe, R. G., & O’neill, E. C. (2019). *Euglena* Central Metabolic Pathways and Their Subcellular Locations. *Metabolites*, 9(6), 1–25.
- Istirokhatun, T., Aulia, M., & Utomo, S. (2017). Potensi *Chlorella* Sp. untuk Menyisihkan COD dan Nitrat dalam Limbah Cair Tahu. *Jurnal Presipitasi : Media Komunikasi dan Pengembangan Teknik Lingkungan*, 14(2), 88.
- Jalal, K. C. A., Shamsuddm, A. A., Rahman, M. F., Nurzatul, N. Z., & Rozihan, M. (2013). Growth and Total Carotenoid, Chlorophyll A and Chlorophyll B of Tropical Microalgae (*Isochrysis* sp.) in Laboratory Cultured Conditions. *Journal of Biological Sciences*, 13(1), 10–17.
- Khan, S., Siddique, R., Sajjad, W., Nabi, G., Hayat, K. M., Duan, P., & Yao, L. (2017). Biodiesel Production From Algae to Overcome the Energy Crisis. *HAYATI Journal of Biosciences*, 24(4), 163–167.
- 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.
- Kresnaputra, A. R., Rahmawati, S. I., Suprayatmi, M., & Hidayatullah, S. (2016). Ekstrak Biopigmen Biru Fikosianin *Spirulina plantesis* sebagai Pewarna Alami Minuman Ringan Karbonasi. *Jurnal Agroindustri Halal*, 2(2), 97–108.
- Kuhavichanan, A., Kusolkumbot, P., Sirisattha, S., & Areeprasert, C. (2018). Mechanical Extraction of Protein Solution from Microalgae by Ultrasonication. *IOP Conference Series: Earth and Environmental Science*, 159(1).
- Kurniawati, R., Praharyawan, S., & Panji, T. (2020). Optimasi Nisbah Natrium Nitrat : Urea dan Konsentrasi Nitrogen Pada Kultivasi *Spirulina platensis* untuk Produksi Protein dan Pigmen Fikosianin. *E-Journal Menara Perkebunan*, 88(2), 130–140.
- Lee, R. (2008). *Phycology Fourth Edition*. Cambridge University Press.
- Lee, R. A., & Lavoie, J. M. (2013). From First- to Third-Generation Biofuels: Challenges of Producing A Commodity From A Biomass of Increasing Complexity. *Animal Frontiers*, 3(2), 6–11.
- Maeda, Y., Nojima, D., Yoshino, T., & Tanaka, T. (2017). Structure and Properties of Oil Bodies in Diatoms. *Philosophical Transactions of the Royal Society: Biological Sciences*, 372, 1–16.
- Mæhre, H. K., Dalheim, L., Edvinsen, G. K., Elvevoll, E. O., & Jensen, I. J. (2018). Protein Determination—method Matters. *Foods*, 7(1).
- 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.
- Meng, T. K., & Kassim, M. A. (2020). Growth, Carbohydrate Productivity and Growth Kinetic Study Of *Halochlorella rubescens* Cultivated Under CO₂-Rich Conditions. *Malaysian Applied Biology*, 49(1), 1–11.
- Mondal, M., Goswami, S., Ghosh, A., Oinam, G., Tiwari, O. N., Das, P., Gayen, K., Mandal, M. K., & Halder, G. N. (2017). Production of Biodiesel from Microalgae Through Biological Carbon Capture: A Review. *3 Biotech*, 7(2), 1–21.
- Mubarok, A., Setyaningsih, I., & Uju, U. (2018). Karakteristik Eksopolisakarida Mikroalga *Porphyridium cruentum* yang Berpotensi untuk Produksi Bioetanol. *Jurnal Pengolahan Hasil Perikanan Indonesia*, 21(1), 24–34.
- Negara, B. F. S., Irfandi, I., Nursalim, N., & Herliany, N. E. (2019). Potensi *Nannochloropsis oculata* dan *Tetraselmis chuii* sebagai Bahan Baku Bioetanol. *Jurnal Laot Ilmu Kelautan*, 1(2), 23.
- 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.
- Owusu, P. A., & Asumadu-sarkodie, S. (2016). A review of Renewable Energy Sources, Sustainability Issues and Climate Change Mitigation. *Cogent Engineering Civil and Environmental Engineering*, 3, 1–14.
- Pavlečić, M., Crnić, D., Jurković, E., Šantek, M. I., Rezić, T., & Šantek, B. (2018).

- Heterotrophic Cultivation Of *Euglena gracilis* on Chemically Pretreated Media. *Brazilian Journal of Chemical Engineering*, 35(1), 19–26.
- 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.
- Prescott, G. W. (1970). *Algae of The Western Great Lakes Area* (Second Edi). WM. C. Brown Company Publishers.
- Putri, S., Supranto, & Sudiyo, R. (2012). Studi Proses Pembuatan Biodiesel dari Minyak Kelapa (Coconut Oil) dengan Bantuan Gelombang Ultrasonik. *Jurnal Rekayasa Proses*, 6(1), 20–25.
- Rehman, A. (2011). Heavy Metals Uptake by *Euglena proxima* Isolated from Tannery Effluents and Its Potential Use in Wastewater Treatment. *Russian Journal of Ecology*, 42(1), 44–49.
- Rezić, T., Filipović, J., & Šantek, B. (2013). Photo-mixotrophic Cultivation of Algae *Euglena gracilis* for Lipid Production. *Agriculturae Conspectus Scientificus*, 78(1), 65–69.
- Rocchetta, I., & Küpper, 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.
- Salim, M., Yuniarti, Y., & Hasby, R. (2011). Pengaruh CO₂ terhadap Pertumbuhan *Staurastrum* sp. *Jurnal Kajian Islam, Sains, dan Teknologi*, 5(1), 127–138.
- Schuchardt, U., Sercheli, R., & Matheus, R. (1998). Transesterification of Vegetable Oils: a Review General Aspects of Transesterification Transesterification of Vegetable Oils Acid-Catalyzed Processes Base-Catalyzed Processes. *Journal of Brazilian Chemical Society*, 9(1), 199–210.
- Sidabutar, H. B. R., Hasbi, M., & Bidijono. (2014). The Effectiveness of Tofu Liquid Waste for Growing *Chlorella* sp. *Jurnal Online Mahasiswa Fakultas Perikanan dan Ilmu Kelautan*, 3(2), 1–8.
- Silalahi, F. T. R., Simatupang, T. M., & Siallagan, M. P. (2020). Biodiesel Produced From Palm Oil in Indonesia: Current Status and Opportunities. *AIMS Energy*, 8(1), 81–101.
- Simionescu, M., Strielkowski, W., & Tvaronavičiene, M. (2020). Renewable Energy in Final Energy Consumption and Income in the EU-28 Countries. *Energies*, 13(9), 1–18.
- Singh, J., & Gu, S. (2010). Commercialization Potential of Microalgae for Biofuels Production. *Renewable and Sustainable Energy Reviews*, 14(9), 2596–2610.
- Sudibyo, H., Purwanti, Y., Pradana, Y. S., Samudra, T. T., Budiman, A., & Suyono, E. A. (2018). Modification of Growth Medium of Mixed-Culture Species of Microalgae Isolated from Southern Java Coastal Region. *MATEC Web of Conferences*, 154, 1–6.
- Sulastri. (2018). *FITOPLANKTON Danau-Danau di Pulau Jawa-Keanekaragaman dan Perannya sebagai Bioindikator Perairan*. LIPI Press.
- Sumida, S., Lyman, H., Kiyohara, N., & Osafune, T. (2007). Mechanism of Conversion from Heterotrophy to Autotrophy in *Euglena gracilis*. *Cytologia*,

72(4), 447–457.

- Suyono, E. A., Nopitasari, S., Zusron, M., Khoirunnisa, P., Islami, D. A., & Prabeswara, C. B. (2016). Effect of Silica on Carbohydrate Content of Mixed Culture *Phaeodactylum* sp. and *Chlorella* sp. *Biosciences Biotechnology Research Asia*, 13(1), 109–114.
- 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.
- Tan, J., Lee, S. Y., Chew, K. W., Lam, M. K., Lim, J. W., Ho, S. H., & 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., & Wakisaka, M. (2020). Effect of Protocatechuic Acid on *Euglena gracilis* Growth and Accumulation of Metabolites. *Sustainability*, 12, 1–11.
- Tomečková, L., Tomčala, A., Oborník, M., & Hampl, V. (2020). The Lipid Composition of *Euglena gracilis* Middle Plastid Membrane Resembles that of Primary Plastid Envelopes. *Plant Physiology*, 184(4), 2052–2063.
- 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.
- Turnip, G., Nomleni, A., & Adin, L. (2021). Laju Pertumbuhan Spesifik dan Total Lipid *Chaetoceros calcitrans* yang Diinjeksi dengan Konsentrasi CO₂ yang Berbeda. *Jurnal Akrab Juara*, 6(4), 158–166.
- Wang, Y., Seppänen-Laakso, 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.
- WBA, W. B. A. (2020). *Global Bioenergy Statistics 2020 World Bioenergy Association*. https://worldbioenergy.org/uploads/201210_WBA_GBS_2020.pdf
- Widayat, & Hadiyanto. (2015). Pemanfaatan Limbah Cair Industri Tahu untuk Produksi Biomassa Mikroalga *Nannochloropsis* sp. sebagai Bahan Baku Biodiesel. *Reaktor*, 15(4), 253–260.
- Widayat, Philia, J., & Wibisono, J. (2018). Cultivation of Microalgae *Chlorella* sp on Fresh Water and Waste Water of Tofu Industry. *E3S Web of Conferences* 31, 04009, 1–3.
- Widiyani, P., & Dewi, E. R. S. (2014). Penurunan Konsentrasi Logam Berat Kadmium (Cd) dan Pertumbuhan Mikroalga *Chlorella vulgaris* pada Media Kultur. *Bioma*, 3(2), 17–26.
- Wolken, J. J. (1967). *Euglena-An Experimental Organism for Biochemical and Biophysical Studies*. In *System* (Vol. 2). Appleton-Century-Crofts 1967 Division of Meredith Publishing Company.
- Wu, M., Li, J., Qin, H., Lei, A., Zhu, H., Hu, Z., & Wang, J. (2020). Pre-Concentration of Microalga *Euglena gracilis* by Alkaescent pH Teatment and Flocculation Mechanism of Ca₃(PO₄)₂, Mg₃(PO₄)₂, and Derivatives. *Biotechnology for Biofuels*, 13(98), 1–13.

- Zahan, K. A., & Kano, M. (2018). Biodiesel Production from palm Oil, Its By-Products, and Mill Effluent: A review. *Energies*, 11(8), 1–25.
- Zakryś, B., Milanowski, R., & Karnkowska, A. (2017). Evolutionary Origin of *Euglena*. In *Advances in Experimental Medicine and Biology* (Vol. 979, pp. 3–18).
- Zhou, W., Chen, P., Min, M., Ma, X., Wang, J., Griffith, R., Hussain, F., Peng, P., Xie, Q., Li, Y., Shi, J., Meng, J., & Ruan, R. (2014). Environment-enhancing Algal Biofuel Production Using Wastewaters. *Renewable and Sustainable Energy Reviews*, 36, 256–269.
- Zhu, Jiangyu, & Wakisaka, M. (2018). Growth Promotion of *Euglena gracilis* by Ferulic Acid From Rice Bran. *AMB Express*, 8(16), 1–7.
- Zhu, Junying, Chen, W., Chen, H., Zhang, X., He, C., Rong, J., & Wang, Q. (2016). Improved Productivity of Neutral Lipids in *Chlorella* sp. A2 by Minimal Nitrogen Supply. *Frontiers in Microbiology*, 7(557), 1–11.