

DAFTAR PUSTAKA

- Abd El-Aty, A. M., Mohamed, A. A., & Samhan, F. A. (2014). In vitro antioxidant and antibacterial activities of two fresh water Cyanobacterial species, *Oscillatoria agardhii* and *Anabaena sphaerica*. *Journal of Applied Pharmaceutical Science*, 4(7), 69–75. <https://doi.org/10.7324/JAPS.2014.40712>
- Agustina, E., Andiarna, F., Lusiana, N., Purnamasari, R., & Hadi, M. I. (2018). Identifikasi Senyawa Aktif dari Ekstrak Daun Jambu Air (*Syzygium aqueum*) dengan Perbandingan Beberapa Pelarut pada Metode Maserasi. *Biotropic : The Journal of Tropical Biology*, 2(2), 108–118. <https://doi.org/10.29080/biotropic.2018.2.2.108-118>
- Aprilia, A., Putri, S., & Hidajati, D. N. (2015). Uji Aktivitas Antioksidan Senyawa Fenolik Ekstrak Metanol Kulit Batang Tumbuhan Nyiri Batu (*Xylocarpus moluccensis*) Activity Antioxidant Test Of Phenolic Compound Methanol Extract From Stem Bark Nyiri Batu (*Xylocarpus moluccensis*). *UNESA Journal of Chemistry*, 4(1), 37–42.
- Astuti, & Sriwuryandari, L. (2010). Biodiesel Dari Mikroalga: Perbanyak Biomassa Melalui Penambahan Nutrisi Secara Bertahap. *Bionatura: Jurnal Ilmu-Ilmu Hayati dan Fisik*, 12(3), 160–168.
- Auliaa, A. E., Maimunaha, Y., & Suprastyania, H. (2021). Sebagai Pupuk Dengan Salinitas Yang Berbeda Terhadap Laju. *Journal of Fisheries and Marine Research*, 5(1), 47–55.
- Berbantuan, M., Phycobiliproteins, E., Bioaktivitasnya, E., Huang, C., Chen, W., Gao, Y., Chen, G., & Lin, H. V. (2021). *Metode Berbantuan Enzim untuk Ekstraksi Phycobiliproteins dari Porfiradan Evaluasi Bioaktivitasnya*.
- Chernyavskaya, O., & Lale, R. (2014). Developing molecular tools for the genetic manipulation of *Nannochloropsis*. 131, July. <https://brage.bibsys.no/xmlui/handle/11250/246154>
- Cuellar-Bermudez, S. P., Aguilar-Hernandez, I., Cardenas-Chavez, D. L., Ornelas-Soto, N., Romero-Ogawa, M. A., & Parra-Saldivar, R. (2015). Extraction and purification of high-value metabolites from microalgae: Essential lipids, astaxanthin and phycobiliproteins. *Microbial Biotechnology*, 8(2), 190–209. <https://doi.org/10.1111/1751-7915.12167>
- Dagnino-Leone, J., Figueroa, C. P., Castañeda, M. L., Youlton, A. D., Vallejos-Almirall, A., Agurto-Muñoz, A., Pavón Pérez, J., & Agurto-Muñoz, C. (2022). Phycobiliproteins: Structural aspects, functional characteristics, and biotechnological perspectives. *Computational and Structural Biotechnology Journal*, 20, 1506–1527. <https://doi.org/10.1016/j.csbj.2022.02.016>

- Damanis, F. V. M., Wewengkang, D. S., & Antasionasti, I. (2020). Uji Aktivitas Antioksidan Ekstrak Etanol Ascidian *Herdmania Momus* Dengan Metode DPPH (1,1-difenil-2-pikrilhidrazil). *Pharmacon*, 9(3), 464. <https://doi.org/10.35799/pha.9.2020.30033>
- Delgado, E. (2017). From Wetland to Saltland: Natural Obstacles and Socioecological Consequences in the Production of Solar Salt in Venezuela. *Society and Natural Resources*, 30(7), 797–811. <https://doi.org/10.1080/08941920.2017.1290181>
- Djenar, N. S., & Suryadi, J. (2022). Isolasi dan Pemurnian Protein dari Lembaga Jagung (Corn Germ) Menggunakan Metode Presipitasi dan Dialisis. *KOVALEN: Jurnal Riset Kimia*, 8(1), 60–66. <https://doi.org/10.22487/kovalen.2022.v8.i1.15790>
- Dolganyuk, V., Belova, D., Babich, O., Prosekov, A., Ivanova, S., Katserov, D., Patyukov, N., & Sukhikh, S. (2020). Microalgae: A promising source of valuable bioproducts. *Biomolecules*, 10(8), 1–24. <https://doi.org/10.3390/biom10081153>
- Dwirejeki, S., & Ermavitalini, D. (2019). Pengaruh Cekaman Nitrogen dan Fotoperiode terhadap Kurva pertumbuhan Kultur *Nannochloropsis* sp. *Jurnal Sains dan Seni ITS*, 8(1). <https://doi.org/10.12962/j23373520.v8i1.41642>
- Ermavitalini, D., Dwirejeki, S., Nurhatika, S., & Saputro, T. B. (2019). Pengaruh kombinasi cekaman nitrogen dan fotoperiode terhadap biomassa, kandungan kualitatif triasilgliserol dan profil asam lemak mikroalga *Nannochloropsis* sp. *Akta Kimindo*, 4(1), 32–49.
- Erzinger, G. S., Lopes, P. C., del Ciampo, L. F., Zimath, S. C., Vicente, D., Martins de Albuquerque, F., & Prates, R. C. (2021). Bioactive compounds of hops resulting from the discarding of the beer industry in the control of pathogenic bacteria. In *Natural Bioactive Compounds* (Nomor July). <https://doi.org/10.1016/b978-0-12-820655-3.00003-3>
- Fithriani, D., Amini, S., Melanie, S., & Susilowati, R. (2015). Uji Fitokimia, Kandungan Total Fenol dan Aktivitas Antioksidan Mikroalga *Spirulina* sp., *Chlorella* sp., dan *Nannochloropsis* sp. *Jurnal Pascapanen dan Bioteknologi Kelautan dan Perikanan*, 10(2), 101. <https://doi.org/10.15578/jpbkp.v10i2.270>
- Fitriani, Sayekti, E., & Sapar, A. (2022). *Indonesian Journal of Pure and Applied Chemistry n -Hexane Fraction In Seaweed (Caulerpa sertularioides) F ROM*. 5(1), 40–54.
- Galasso, C., Gentile, A., Orefice, I., Ianora, A., Bruno, A., Noonan, D. M., Sansone, C., Albini, A., & Brunet, C. (2019). Microalgal derivatives as potential nutraceutical and food supplements for human health: A focus on cancer prevention and interception. *Nutrients*, 11(6), 1–22.

<https://doi.org/10.3390/nu11061226>

- Gazali, M., Nurjanah, ., & Zamani, N. P. (2019). The Screening of Green Algae *Halimeda opuntia* (Linnaeus) as an Antioxidant from the Coast of West Aceh. *Jurnal Ilmu Pertanian Indonesia*, 24(3), 267–272. <https://doi.org/10.18343/jipi.24.3.267>
- Gharbi, K., Fathalli, A., Essid, R., Fassatoui, C., Romdhane, M. S., Limam, F., & Rejeb Jenhani, A. Ben. (2021). Tunisian inland water microflora as a source of phycobiliproteins and biological activity with beneficial effects on human health. *Oceanological and Hydrobiological Studies*, 50(4), 385–397. <https://doi.org/10.2478/oandhs-2021-0033>
- Gultom, S. O. (2018). Mikroalga: Sumber Energi Terbaru Masa Depan. *Jurnal Kelautan: Indonesian Journal of Marine Science and Technology*, 11(1), 95. <https://doi.org/10.21107/jk.v11i1.3802>
- Gunawan, G. (2021). Pengaruh Perbedaan pH Pada Pertumbuhan Mikroalga Klas Chlorophyta. *Bioscientiae*, 9(2), 62. <https://doi.org/10.20527/b.v9i2.3875>
- Hadi, S., Hapifah, U. N., & Khairunnisa, A. (2022). Analisis Antioksidan Ekstrak Etanol Daun Ceguk (*Combretum indicum* L .) varr . M dengan Berbagai Lokasi Kalimantan Selatan , Indonesia. *Journal of Food and Pharmaceutical Sciences*, 10(3), 721–731.
- Hartini, H., Rosmiati, K., & Sihombing, A. F. R. (2021). Analisis Kandungan Fitokimia dan Aktivitas Antioksidan Mikroalga *Chlorella* sp. Berdasarkan Variasi Waktu Pencahayaan. *Jurnal Kesehatan Perintis (Perintis's Health Journal)*, 8(2), 139–146. <https://doi.org/10.33653/jkp.v8i2.642>
- Hasanela, N., Gaspersz, N., Silaban, R., & Sohilit, M. R. (2020). Pengaruh Lama Penyimpanan Ekstrak Kasar Makroalga *Ulva lactuca* Terhadap Kestabilan Pigmen Fotosintesis. *Jurnal Inovasi Pendidikan Dan Sains*, 1(3), 72–78. <https://doi.org/10.51673/jips.v1i3.441>
- Hassani, K., Shio, M. T., Martel, C., Faubert, D., & Olivier, M. (2014). Absence of metalloprotease GP63 alters the protein content of leishmania exosomes. *PLoS ONE*, 9(4), 1–14. <https://doi.org/10.1371/journal.pone.0095007>
- Hayati, F., Dewi, E. N., & Suharto, S. (2020). Karakteristik Dan Aktivitas Antioksidan Edible Film Alginat Dengan Penambahan Serbuk *Spirulina platensis* (Characteristic And Antioxidant Activity of Alginate Edible Film With The Addition Of *Spirulina platensis* Powder). *Saintek Perikanan : Indonesian Journal of Fisheries Science and Technology*, 16(4), 286–293. <https://doi.org/10.14710/ijfst.16.4.286-293>
- Hidayati, D.N et al. (2017). Pengujian Aktivitas Antioksidan Ekstrak Dan Fraksi Jantung Pisang Mas (*Musa acuminata* Colla) Menggunakan Metode Dpph Antioxidant. *PHARMACY*, 14(01), 1–14.

- Hidayati, J. R., Yudiati, E., Pringgenies, D., Oktavianti, D. T., & Kusuma, A. P. (2020). Comparative Study on Antioxidant Activities, Total Phenolic Compound and Pigment Contents of Tropical *Spirulina platensis*, *Gracilaria arcuata* and *Ulva lactuca* Extracted in Different Solvents Polarity. *E3S Web of Conferences*, 147. <https://doi.org/10.1051/e3sconf/202014703012>
- Hidayati, N., Agustini, N. W. S., Apriastini, M., & Margaretha, C. (2020). Potensi Pigmen Fikobiliprotein Sebagai Agen Antioksidan Dan Toksisitas Hayati Dari Sianobakteria *Chroococcus turgidus* (Potency of Phycobiliprotein Pigment as Antioxidant and Biological Toxicity Agents from Cyanobacteria *Chroococcus turgidus*). *Biopropal Industri*, 11(1), 41. <https://doi.org/10.36974/jbi.v11i1.5540>
- Hikmawan, B. D., & Praharyawan, S. (2022). *Optimalisasi Produksi Fikosianin pada Sianobakteria Laut BTM 11 dan Uji Aktivitas Antioksidannya (Optimization of Phycocyanin Production of Marine Cyanobacteria BTM 11 and Its Antioxidant Properties Test)*. 20(2), 217–224.
- Hindarti, F., & Ayuningtyas, E. (2020). The Development of *Spirulina Sp* . Cultivation Technique as A Renewable Energy Biomass Source in The Airlift Fotobioreactor. *Jurnal Energi dan Lingkungan*, 16, 17–24.
- Hossain, S., Khatoon, H., Veterinary, C., Rahman, M. R., Veterinary, C., & Islam, Z. (2022). *Journal of Aquaculture & Livestock Characterization of Nitrogen Stress-induced Growth, Proximate, and Pigment Contents of Nannochloropsis sp* . 2022(September). [https://doi.org/10.47363/JALP/2022\(3\)115](https://doi.org/10.47363/JALP/2022(3)115)
- Husain, S., Kandungan, K., Pertumbuhan, N., & Stresnannokloropsissp, D. (2022). *Jurnal Budidaya Perairan & Produksi Ternak*. September. [https://doi.org/10.47363/JALP/2022\(3\)115](https://doi.org/10.47363/JALP/2022(3)115)
- Islam, Z., Khatoon, H., Rahman, M. R., & Hasan, J. (2022). *Screening of natural pigments from indigenous marine microalgae isolated from different coastal aquafarms of Bangladesh* Screening of natural pigments from indigenous marine microalgae isolated from different coastal aquafarms of Bangladesh. *March*.
- Ivandri, H., Mulyatno, I. P., & Kiryanto. (2017). Pengaruh Natrium Clorida, Asam Sulfat dan Air Laut terhadap Laju Korosi Baja SS 400 sebagai Bahan Material Kapal dengan Metode Weight Loss. *Jurnal Teknik Perkapalan*, 5(4), 785. <http://ejournal3.undip.ac.id/index.php/naval>
- Jati, B. N., Yunilawati, R., Nuraeni, C., Oktarina, E., Aviandharie, S. A., & Rahmi, D. (2019). Ekstraksi dan Identifikasi Fitosterol pada Mikroalga *Nannochloropsis oculata*. *Jurnal Kimia dan Kemasan*, 41(1), 31. <https://doi.org/10.24817/jkk.v41i1.4969>
- Julianti, E., Fathurohman, M., Damayanti, S., & Kartasmita, R. E. (2018). Isolate of Heterotrophic Microalgae As a Potential Source for Docohexaenoic Acid

(Dha). *Marine Research in Indonesia*, 43(2), 79–84.
<https://doi.org/10.14203/mri.v43i2.264>

- Julianti, E., Susanti, Singgih, M., & Neti Mulyani, L. (2019). Optimization of extraction method and characterization of phycocyanin pigment from spirulina platensis. *Journal of Mathematical and Fundamental Sciences*, 51(2), 168–176. <https://doi.org/10.5614/j.math.fund.sci.2019.51.2.6>
- Julrohiniar, A., Ayuni, S. P., & ... (2022). Pembuatan Biodiesel Dari Mikroalga Nannochloropsis sp. Menggunakan Metode Transesterifikasi Insitu dengan Katalis SO₄²⁻/TiO₂. *Prosiding Senastitan ...*, 6(2), 476–480. <http://ejournal.itats.ac.id/senastitan/article/view/2774%0Ahttp://ejournal.itats.ac.id/senastitan/article/download/2774/2158>
- Kamble, S. P., Gaikar, R. B., Padalia, R. B., & Shinde, K. D. (2013). Extraction and purification of C-phycocyanin from dry Spirulina powder and evaluating its antioxidant, anticoagulation and prevention of DNA damage activity. *Journal of Applied Pharmaceutical Science*, 3(8), 149–153. <https://doi.org/10.7324/JAPS.2013.3826>
- Kim. et al. (2018). Identification and antioxidant activity of synthetic peptides from phycobiliproteins of Pyropia yezoensis. *International Journal of Molecular Medicine*, 42(2), 789–798. <https://doi.org/10.3892/ijmm.2018.3650>
- Kim, S. (2015). Bioremediation of Heavy Metals by Microalgae [IN:] Handbook of marine microalgae biotechnology advances. Kim S-K. [ed.]. In *Elsevier*.
- Kristiawan, O., Agustin, Z. L., Hanupurti, D. A., Nirwawan, R., & Hendrayanti, D. (2018). Pengaruh Bikarbonat Terhadap Pertumbuhan Mikroalga Nannochloropsis Sp. Sebagai Sumber Biomassa Biofuel. *Lembaran publikasi minyak dan gas bumi*, 52(2), 95–103. <https://doi.org/10.29017/lpmgb.52.2.349>
- Kurniawan, M., ruf, W., & Agustini, T. (2014). Pengaruh Penambahan Mgco₃ Dan Nahco₃ Dengan Perbedaan Pencahayaan Terhadap Stabilitas Pigmen Klorofil-a Mikroalga Chlorella Vulgaris. *Jurnal Pengolahan dan Bioteknologi Hasil Perikanan*, 3(2), 25–33.
- Laksmiwati, A. A. I. A. M., Prastika, H. H., Ratnayani, K., & Puspawati, N. M. (2019). Penggunaan Enzim Pepsin untuk Produksi Hidrolisat Protein Kacang Gude (Cajanus cajan (L.) Millsp.) yang Aktif Antioksidan. *Indonesian E-Journal of Applied Chemistry*, 7(2), 180–188.
- Lauceri, R., Chini Zittelli, G., & Torzillo, G. (2019). A simple method for rapid purification of phycobiliproteins from Arthrospira platensis and Porphyridium cruentum biomass. *Algal Research*, 44(September). <https://doi.org/10.1016/j.algal.2019.101685>
- Liang, N., & Kitts, D. D. (2014). Antioxidant property of coffee components: Assessment of methods that define mechanism of action. *Molecules*, 19(11),

19180–19208. <https://doi.org/10.3390/molecules191119180>

- Literate, S., & Indonesia, J. I. (2020). *View metadata, citation and similar papers at core.ac.uk*. 2(2), 274–282.
- Lourenço-lobos, C., Fraga-coral, M., Jimenez-lopez, C., Pereira, A. G., Garcia-oliveira, P., Carpena, M., Prieto, M. A., & Simal-gandara, J. (2020). *Metabolites from Macroalgae and Its Applications in the Cosmetic Industry : A Circular Economy Approach*.
- Lumempouw, L. I., Paendong, J., Momuat, L. I., & Suryanto, E. (2012). Potensi Antioksidan Dari Ekstrak Etanol Tongkol Jagung (*Zea mays L.*). *Chemistry Progress*, 5(1), 49–56.
- Mahmud, I., Pertiwi, R., Azis, N. R., & Reviana, D. N. (2014). Pemanfaatan Potensi Ganggang Hijau (*Ulva Lactuca*) sebagai Antioksidan Alami pada Pencegahan Infark Miokard Akut. *Pekan Ilmiah Mahasiswa Nasional Program Kreativitas Mahasiswa - Penelitian 2014*, 1–7.
- Mangurana, W. O. I., Yusnaini, Y., & Sahidin, S. (2019). Analisis LC-MS/MS (Liquid Chromatography Mass Spectrometry) Dan Metabolit Sekunder Serta Potensi Antibakteri Ekstrak n-HEKSANA SPONS *Callyspongia aerizusa* Yang Diambil Pada Kondisi Tutupan Terumbu Karang Yang Berbeda Di Perairan Teluk Staring. *Jurnal Biologi Tropis*, 19(2), 131–141. <https://doi.org/10.29303/jbt.v19i2.1126>
- Manirafasha, E., Guo, L., & Jing, K. (2020). Pigments from Microalgae Handbook. In *Pigments from Microalgae Handbook* (Nomor January). Springer International Publishing. <https://doi.org/10.1007/978-3-030-50971-2>
- Marthia, N. (2020). Pengaruh Jenis Media Kultur Terhadap Konsentrasi Biomassa *Nannochloropsis* sp. *Pasundan Food Technology Journal*, 7(3), 97–101. <https://doi.org/10.23969/pftj.v7i3.3190>
- Mayasari, N. R., Karseno, K., & Setyawati, R. (2019). Identifikasi Pigmen Fikobiliprotein Pada *Kappaphycus Alvarezii* Dalam Pelarut Buffer Fosfat Dengan Metode Freeze Thaw Cycle. *Jurnal Mitra Kesehatan*, 1(2), 87–94. <https://doi.org/10.47522/jmk.v1i2.17>
- Mokoginta, R. V., Simbala, H. E. I., & Mansauda, K. L. . (2020). Uji Aktivitas Antioksidan Ekstrak Etanol Bulbus Bawang Dayak (*Eleutherine americana* Merr) Dengan Metode DPPH (1,1-Diphenyl-2-Picrylhydrazyl). *Pharmacon*, 9(3), 451. <https://doi.org/10.35799/pha.9.2020.30031>
- Montero-Lobato, Z., Fuentes, J. L., Garbayo, I., Ascaso, C., Wierzechos, J., Vega, J. M., & Vílchez, C. (2020). Identification, biochemical composition and phycobiliproteins production of *Chroococcidiopsis* sp. from arid environment. *Process Biochemistry*, 97(May), 112–120. <https://doi.org/10.1016/j.procbio.2020.07.005>

- Muslim, U., & Al, N. (2022). *Journal of Health and Medical Science Uji Aktivitas Antioksidan Ekstrak Etanol Daun Jeruk Kasturi (Citrus microcarpa Bunge) Di Daerah Labuhanbatu , Sumatera Utara Dengan Metode Antioksidan merupakan senyawa yang dapat menghambat reaksi oksidasi , dengan. 1, 100–109.*
- Muyassaroh, Dewi, R. kartika, & Anggorowati, D. (2018). Kultivasi Mikroalga *Spirulina platensis* dengan Variasi Pencahayaan Menggunakan Lampu TL dan Matahari. *Prosiding Seminar Nasional Aplikasi Sains & Teknologi (SNAST) 2018, 15(9), 381–387.*
- Nair, D., Krishna, J. G., Panikkar, M. V. N., Nair, B. G., Pai, J. G., & Nair, S. S. (2018). Identification, purification, biochemical and mass spectrometric characterization of novel phycobiliproteins from a marine red alga, *Centroceras clavulatum*. *International Journal of Biological Macromolecules, 114(April), 679–691.* <https://doi.org/10.1016/j.ijbiomac.2018.03.153>
- Neti, L., Larasati, V., & Permahani, A. (2018). Natural Combination Extract of Mangosteen Pericarp and Phycocyanin of *Spirulina Platensis* Decreases Plasma Malonaldehyde Level In Acute Exercise-Induced Oxidative Stress. *Majalah Ilmiah Sriwijaya, XXX(17), 1–17.*
- Noerdjito, D. R. (2019). Interaksi Mikroalga-Bakteri Dan Peranannya Dalam Produksi Senyawa Dalam Kultur Mikroalga. *Oseana, 44(2), 25–34.* <https://doi.org/10.14203/oseana.2019.vol.44no.2.48>
- Nurhasanah, Sudarti, & Supriadi, B. (2018). Analisis Medan Magnet ELF terhadap Nilai pH Ikan dalam Proses Pengawetan Ikan Bandeng (*Chanos chanos*). *Jurnal Pembelajaran Fisika, 7(2), 116–122.*
- Okryreza, A., Mutiara, M., & Buchori, L. (2013). Pengikatan Karbon Dioksida Dengan Mikroalga (*Chlorella vulgaris*, *Chlamydomonas* sp., *Spirulina* sp.) Dalam Upaya Untuk Meningkatkan Kemurnian Biogas. *Jurnal Teknologi Kimia dan Industri, 2(4), 212–216.* <http://ejournal-s1.undip.ac.id/index.php/jtki>
- Osório, C., Machado, S., Peixoto, J., Bessada, S., Pimentel, F. B., Alves, R. C., & Oliveira, M. B. P. P. (2020). Pigments content (Chlorophylls, fucoxanthin and phycobiliproteins) of different commercial dried algae. *Separations, 7(2), 1–14.* <https://doi.org/10.3390/separations7020033>
- Pan, Q., Chen, M., Li, J., Wu, Y., Zhen, C., & Liang, B. (2013). Antitumor function and mechanism of phycoerythrin from *porphyra haitanensis*. *Biological Research, 46(1), 87–95.* <https://doi.org/10.4067/S0716-97602013000100013>
- Pandey, V. D., Pandey, A., & Sharma, V. (2013). Biotechnological applications of cyanobacterial phycobiliproteins. *International Journal of Current Microbiology and Applied Sciences, 2(9), 89–97.*

- Pradifta, R., Marlina, M., & Lucida, H. (2021). Analisis Protein Pada Medium Terkondisi Sel Punca Mesenkimal. *Jurnal Media Kesehatan*, 14(2), 137–145. <https://doi.org/10.33088/jmk.v14i2.720>
- Pranata & Busman. (2020). Potensi Antioksidan Kedelai Terhadap Penangkapan Radikal Bebas Potential of Soybean Antioxidant (Glycine Max L) on Capturing Free Radicals. *Jurnal Ilmiah Kesehatan Sandi Husada*, 11(1), 497–504. <https://doi.org/10.35816/jiskh.v10i2.333>
- Prasetyo, L. D., Supriyantini, E., & Sedjati, S. (2022). Pertumbuhan Mikroalga *Chaetoceros calcitrans* Pada Kultivasi Dengan Intensitas Cahaya Berbeda. *Buletin Oseanografi Marina*, 11(1), 59–70. <https://doi.org/10.14710/buloma.v11i1.31698>
- Pratiwi, A., Rohmat, & Purba, E. (2019). Penentuan Jumlah Nutrisi Magnesium dari *Tetraselmis chuii* terhadap Kandungan Lipid. *Inovasi Pembangunan-Jurnal Kelitbangan*, 7(1).
- Prayinto, J. (2016). mikroalga 16 fase lag 2.pdf. *Jurnal Teknologi Lingkungan*, vol.17, No, 45–52.
- Prayitno, J. (2016a). Pola Pertumbuhan dan Pemanenan Biomassa dalam Fotobioreaktor Mikroalga untuk Penangkapan Karbon. *Jurnal Teknologi Lingkungan*, 17(1), 45. <https://doi.org/10.29122/jtl.v17i1.1464>
- Prayitno, J. (2016b). Pola Pertumbuhan dan Pemanenan Biomassa dalam Fotobioreaktor Mikroalga untuk Penangkapan Karbon Growth Pattern and Biomass Harvesting in Microalgal Photobioreactor for Carbon Sequestration. *Jurnal Teknologi Lingkungan*, 17(1), 45–52.
- Primaryadi, I. N. B., Anggreni, A. A. M. D., & Wartini, N. M. (2015). Pengaruh Penambahan Magnesium Sulfat Heptahidrat dan Feri Klorida pada Blue Green Medium-11 terhadap Konsentrasi Biomassa Mikroalga *Tetraselmis chuii*. *Jurnal Rekayasa Dan Manajemen Agroindustri*, 3(2), 92–100.
- Puspitasari, A. D., Yuita, N. E., & Sumantri, S. (2017). Krim Antioksidan Ekstrak Etanol Daun Kopi Arabika (*Coffea Arabica*). *Jurnal Ilmiah Teknosains*, 3(2). <https://doi.org/10.26877/jitek.v3i2.1884>
- Putri & Hidajati. (2015). Uji Aktivitas Antioksidan Senyawa Fenolik Ekstrak Metanol Kulit Batang Tumbuhan Nyiri Batu (*Xylocarpus moluccensis*). *Unesa Journal of Chemistry*, 4(1), 1–6. <https://jurnalmahasiswa.unesa.ac.id/index.php/unesa-journal-of-chemistry/article/viewFile/10820/10386>
- Putri, A. M., & Udju, H. S. D. (2021). Pengaruh Jenis Pelarut dan Ultrasonikasi terhadap Ekstrak Fikoeritrin dari *Kappaphycus alvarezii*. *Jurnal Pengolahan Hasil Perikanan Indonesia*, 24(2), 269–283. <https://doi.org/10.17844/jphpi.v24i2.37182>

- Rafaelina, M., Rustam, Y., & Amini, S. (2016). Pertumbuhan Dan Aktivitas Antioksidan Dari Mikroalga *Porphyridium cruentum* dan *Chlorella* sp. Monika. *BIOMA*, *12*(1), 12–21.
- Rahayu, W. S., Utami, P. I., & Haryadin, F. (2020). Analisis Asam Amino Dengan Metode Kckt Dan Agen Penderivat Ninhidrin. *Semnas LPPM Universitas Muhammadiyah Purwokerto*, 154–157. <https://semnaslppm.ump.ac.id/index.php/semnaslppm/article/view/137/132>
- Rahmawati, S., Hidayatullah, S., & Suprayatmi, M. (2017). Ekstraksi Fikosianin Dari *Spirulina* Plantesis Sebagai Biopigmen Dan Antioksidan. *Jurnal Pertanian*, *8*(1), 36. <https://doi.org/10.30997/jp.v8i1.639>
- Rahmawati, S., Hidayatulloh, S., & Suprayatmi, D. M. (2017). Ekstraksi Fikosianin Dari *Spirulina* Plantesis Sebagai Biopigmen Dan Antioksidan Extraction of Phycocyanin From *Spirulina* Plantesis for Biopigment and Antioxidant. *Jurnal Pertanian*, *8*(1), 36–45.
- Ramos-Romero, S., Torrella, J. R., Pagès, T., Viscor, G., & Torres, J. L. (2021). Edible microalgae and their bioactive compounds in the prevention and treatment of metabolic alterations. *Nutrients*, *13*(2), 1–16. <https://doi.org/10.3390/nu13020563>
- Ratianingsih, R. (2020). *Model Matematika Kendali Optimal Intensitas Cahaya Dan*. 17.
- Richmond, A. (2006). Handbook of Microalgal Culture. *Handbook of Microalgal Culture*, 253–448.
- Righini, H., Francioso, O., Di Foggia, M., Quintana, A. M., & Roberti, R. (2020). Preliminary Study on the Activity of Phycobiliproteins against *Botrytis cinerea*. *Marine Drugs*, *18*(12), 1–14. <https://doi.org/10.3390/md18120600>
- Rizki, M. ., Nurlily, Fadlilaturrahmah, & Ma'shumah. (2021). Antioxidant activity of ethanol extract of cempedak (*Artocarpus integer*), jackfruit (*Artocarpus heterophyllus*), and tarap (*Artocarpus odoratissimus*) leaves from South Kalimantan. *Journal of Current Pharmaceutical Sciences*, *4*(2), 367–372. <https://journal.umbjm.ac.id/index.php/jcps/article/view/720>
- Rosahdi, T. D., Susanti, Y., & Suhendar, D. (2015a). Uji aktivitas daya antioksidan biopigmen pada fraksi aseton dari mikroalga *Chlorella vulgaris*. *Jurnal ISTEK*, *9*(1), 1–16.
- Rosahdi, T. D., Susanti, Y., & Suhendar, D. (2015b). Uji aktivitas daya antioksidan biopigmen pada fraksi aseton dari mikroalga *Chlorella vulgaris*. *Jurnal ISTEK*, *9*(1), 1–16.
- Rukminasari, N., Nadiarti, & Awaluddin, K. (2014). Pengaruh derajat keasaman (pH) air laut terhadap konsentrasi kalsium dan laju pertumbuhan *Halimeda* sp. *Jurnal Ilmu Kelautan dan Perikanan*, *24*(1), 28–34.

<https://www.scribd.com/document/363166182/ph-derajat-air-laut-pdf>

- Safari, A., Ginting, S. D. R. B., Fadhlillah, M., Rachman, S. D., Anggraeni, N. I., & Ishmayana, S. (2020). Ekstraksi dan Penentuan Aktivitas Antioksidan Ekstrak Ubi Jalar Ungu (*Ipomoea batatas* L.). *al-Kimiya*, 6(2), 46–51. <https://doi.org/10.15575/ak.v6i2.6039>
- Salamah, N., & Widyasari, E. (2015). Aktivitas Antioksidan Ekstrak Metanol Daun Kelengkeng (*Euphoria longan* (L) Steud.) Dengan Metode Penangkapan Radikal 2,2'-DIFENIL-1-PIKRILHIDRAZIL. *Pharmaciana*, 5(1), 25–34. <https://doi.org/10.12928/pharmaciana.v5i1.2283>
- Salbitani et al. (2021a). *Peningkatan Produksi Pigmen dengan Nannochloropsis oculata Sel dalam Menanggapi Pasokan Bikarbonat*. C.
- Salbitani, G., Del Prete, F., Carfagna, S., Sansone, G., & Barone, C. M. A. (2021b). Enhancement of pigments production by nannochloropsis oculata cells in response to bicarbonate supply. *Sustainability (Switzerland)*, 13(21), 1–8. <https://doi.org/10.3390/su132111904>
- Sani, R. N., Nisa, F. C., Andriani, R. D., & Maligan, J. M. (2014). Analisis Rendemen Dan Skrining Fitokimia Ekstrak Etanol Mikroalga Laut Tetraselmis chuii Yield Analysis and Phytochemical Screening Ethanol Extract of Marine Microalgae Tetraselmis chuii. *Jurnal Pangan dan Agroindustri*, 2(2), 121–126.
- Sansone, C., & Brunet, C. (2019). Promises and challenges of microalgal antioxidant production. *Antioxidants*, 8(7). <https://doi.org/10.3390/antiox8070199>
- Satria, R., Hakim, A. R., & Darsono, P. V. (2022). Penetapan Kadar Flavonoid Total Dari Fraksi n-Heksana Ekstrak Daun Gelinggang dengan Metode Spektrofotometri UV-Vis. *Journal of Engineering, Technology, and Applied Science*, 4(1), 33–46. <https://doi.org/10.36079/lamintang.jetas-0401.353>
- Sedjati, S., Supriyantini, E., Ridlo, A., Soenardjo, N., & Santi, V. Y. (2018). Kandungan Pigmen, Total Fenolik Dan Aktivitas Antioksidan Sargassum sp. *Jurnal Kelautan Tropis*, 21(2), 137. <https://doi.org/10.14710/jkt.v21i2.3329>
- Selawa, W. (2013). Kandungan Flavonoid Dan Kapasitas Antioksidan Total Ekstrak Etanol Daun Binahong [*Anredera cordifolia*(Ten.)Steenis.] Widya. *Jurnal Bios Logos*, 3(1), 18–23. <https://doi.org/10.35799/jbl.3.1.2013.14504>
- Setiasih, I. B., Sabdono, A., & Pramesti, R. (2020). Pengaruh Salinitas terhadap Pertumbuhan dan Aktivitas Antioksidan *Dunaliella salina* (Chlorophyceae: Dunaliellaceae). *Journal of Marine Research*, 9(2), 181–185. <https://doi.org/10.14710/jmr.v9i2.27028>
- Shanab, S. M. M., Mostafa, S. S. M., Shalaby, E. A., & Mahmoud, G. I. (2012). Aqueous extracts of microalgae exhibit antioxidant and anticancer activities.

Asian Pacific Journal of Tropical Biomedicine, 2(8), 608–615.
[https://doi.org/10.1016/S2221-1691\(12\)60106-3](https://doi.org/10.1016/S2221-1691(12)60106-3)

- Silva, S. C., Ferreira, I. C. F. R., Dias, M. M., & Barreiro, M. F. (2020). Review and Industry and Market Trend Analysis. *Molecules*, 25(3406), 1–23.
- Simanjuntak, G., & Kemer, K. (2016). Pertumbuhan Dan Kandungan Pigmen Klorofil Mikroalga *Botryococcus braunii*. *Jurnal Pesisir dan Laut Tropis*, 2, 23–29.
- Sinaga, L., Putriningtias, A., & Komariyah, S. (2021). Pengaruh Intensitas Cahaya Terhadap Pertumbuhan *Nannochloropsis* sp. *Jurnal Akuakultura Universitas Teuku Umar*, 4(2), 31–37.
- Sinatari, H., Aminin A L N, & Sarjono, P. R. (2013). Pemurnian Selulase dari Isolat KB Kompos Termofilik Desa Bayat Klaten Menggunakan Fraksinasi Amonium Sulfat. *Chem Info*, 1(1), 130–140.
- Siregar, Y. D. I., Heryanto, R., Lela, N., & Lestari, T. H. (2015). Karakterisasi Karbon Aktif Asal Tumbuhan dan Tulang Hewan Menggunakan FTIR dan Analisis Kemometrika. *Jurnal Kimia VALENSI*, 1(November), 103–116.
<https://doi.org/10.15408/jkv.v0i0.3146>
- Su'i, M. S. (2013). Lipase fractionation of Coconut Endosperm by Salting out Method. *Agritech*, 33(4), 377–384.
- Supriyantini, E. (2013). The effect of salinity on the nutrient content of *Skeletonema costatum*. *Buletin Oseanografi Marina*, 2(1), 51–57.
<https://doi.org/10.14710/buloma.v2i1.6927>
- Syarif, S., Kosman, R., & Inayah, N. (2015). Uji Aktivitas Antioksidan Terong Belanda (*Solanum betaceum* Cav.) DENGAN METODE FRAP. *Jurnal Ilmiah As-Syifaa*, 7(1), 26–33. <https://doi.org/10.33096/jifa.v7i1.18>
- Tambunan, A. L., Yuniar, I., Hang, U., & Surabaya, T. (2022). Kultur Pertumbuhan Mikroalga *Spirulina* sp. Pada Media Asam, Netral Dan Alkaline Skala Laboratorium Mikroalga. *Fisheries*, 4(1), 28–37.
- Tan, H. T., Yusoff, F. M., Khaw, Y. S., Ahmad, S. A., & Shahrudin, N. A. (2021). Uncovering research trends of phycobiliproteins using bibliometric approach. *Plants*, 10(11), 1–28. <https://doi.org/10.3390/plants10112358>
- Taniyo, W., Salimi, Y. K., & Iyabu, H. (2021). Karakteristik Dan Aktivitas Antioksidan Hidrolisat Protein Ikan Nike (*Awaous melanocephalus*). *Dalton : Jurnal Pendidikan Kimia dan Ilmu Kimia*, 4(2), 52–63.
<https://doi.org/10.31602/dl.v4i2.5935>
- Tewal, F., Kemer, K., Rimper, J. R. T. S. L., Mantiri, D. M. H., Pelle, W. E., & Mudeng, J. D. (2021). Laju Pertumbuhan Dan Kepadatan Mikroalga *Dunaliella* sp. Pada Pemberian Timbal Asetat Dengan Konsentrasi Yang

Berbeda. *Jurnal Pesisir Dan Laut Tropis*, 9(1), 30.
<https://doi.org/10.35800/jplt.9.1.2021.33571>

To, Q. M., Tran, N. D., Pham, P. T., & Ho, M. T. (2022). *Kajian Ekstraksi Fikosianin Kasar dari Ganggang Spirulina dan Menentukan Kemampuannya dalam Melindungi Fibroblas dari Stres Oksidatif Hidroksil Peroksida Kajian Ekstraksi Fikosianin Kasar dari Ganggang Spirulina dan Menentukan Fibroblas dari Stres Oksidat*. <https://doi.org/10.1007/978-3-030-75506-5>

Toy, B. A. I., & Puspita, D. (2019). Liquid media as a growth media for white root fungus (*Rigidoporus microporus*). *Jurnal Biosains dan Edukasi*, 1(September), 1–4. <https://e-journal.unmuhkupang.ac.id/index.php/biosed/article/view/2>

Tristantini, D., Ismawati, A., Pradana, B. T., & Gabriel, J. (2016). Pengujian Aktivitas Antioksidan Menggunakan Metode DPPH pada Daun Tanjung (*Mimusops elengi* L). *Universitas Indonesia*, 2.

Ulagesan, S., Nam, T. J., & Choi, Y. H. (2021). Extraction and purification of r-phycoerythrin alpha subunit from the marine red algae *pyropia yezoensis* and its biological activities. *Molecules*, 26(21). <https://doi.org/10.3390/molecules26216479>

Valuta, A., Cepoi, L., Rudi, L., Bulhac, I., Bourosh, P., & Bologna, O. (2015). Phycobiliprotein accumulation in *Cyanobacterium Nostoc linckia* and modification of antioxidant activity. *the Annals of Oradea University, Biology Fascicle*, 21(1), 13–19. https://www.researchgate.net/profile/Liliana_Cepoi/publication/276203665_Phycobiliprotein_accumulation_in_cyanobacterium_Nostoc_linckia_and_modification_of_antioxidant_activity/links/55520a7b08ae6943a86d6a7f.pdf

Vieira, M. V., Pastrana, L. M., & Fuciños, P. (2020). Microalgae Encapsulation Systems for Food, Pharmaceutical and Cosmetics Applications. *Marine Drugs*, 18(12). <https://doi.org/10.3390/md18120644>

Wada, N., Sakamoto, T., & Matsugo, S. (2013). Multiple roles of photosynthetic and sunscreen pigments in cyanobacteria focusing on the oxidative stress. *Metabolites*, 3(2), 463–483. <https://doi.org/10.3390/metabo3020463>

Waktu, P., & Aksay, S. (2018). *Dari Spirulina (Spirulina platensis) Pigmen Klorofil-a dan Phycocyanin*. 16(3), 307–312. <https://doi.org/10.24323/makanan-akademis.475362>

Wali, A. F., Dhaheri, Y. Al, Pillai, J. R., Mushtaq, A., Rao, P. G. M., Rabbani, S. A., Firdous, A., Elshikh, M. S., & Al Farraj, D. A. (2020). Lc-ms phytochemical screening, in vitro antioxidant, antimicrobial and anticancer activity of microalgae *nannochloropsis oculata* extract. *Separations*, 7(4), 1–11. <https://doi.org/10.3390/separations7040054>

- Wanita, D. (2019). Uji Aktivitas Antioksidan Ekstrak Etanol Daun Beluntas (*Pluchea indica* L.) Dengan Metode DPPH (2, 2-DIFENIL-1-PIKRILHIDRAZIL). *Indonesian Chemistry and Application Journal*, 2(2), 25. <https://doi.org/10.26740/icaj.v2n2.p25-28>
- Wattanasiritham, L. S., Boonbumrung, S., & Mookdasanit, J. (2022). *Arthrospira platensis* Mutagenesis untuk Peningkatan Protein dan C-Phycocyanin dan Pendekatan Proteomik. 1–14.
- Wilapangga, A., & Sari, L. P. (2018). Analisis Fitokimia dan Antioksidan Metode DPPH Ekstrak Metanol Daun Salam (*Eugenia Polyantha*). *Ijobb*, 2(1), 19–24.
- Windyaswari, A. S., Elfahmi, E., Faramayuda, F., Riyanti, S., Luthfi, O. M., Ayu, I. P., Pratiwi, N. T. M., Husna, K. H. N., & Magfirah, R. (2019). Profil fitokimia selada laut (*Ulva lactuca*) dan mikro alga filamen (*Spirogyra* sp) sebagai bahan alam bahari potensial dari perairan Indonesia. *Kartika : Jurnal Ilmiah Farmasi*, 7(2), 88. <https://doi.org/10.26874/kjif.v7i2.288>
- Winfrontstein, N., Olfan, W., & Barat, B. (2022). Analisa Variasi Bentuk Kincir Paddle Wheel Photovoltaic Pada Kultivasi Mikroalga Terhadap Pemakaian Energi Listrik. *Prosiding SNTTM XX*, 13–14.
- Wu, J., Gu, X., Yang, D., Xu, S., Wang, S., Chen, X., & Wang, Z. (2021). Bioactive substances and potentiality of marine microalgae. *Food Science and Nutrition*, 9(9), 5279–5292. <https://doi.org/10.1002/fsn3.2471>
- Yani, A., Murwani, S., & Rusyani, E. (2015). Kultur *Nannochloropsis* sp. Dan Pembuatan PastA *Nannochloropsis*Sp. Dengan Menggunakan Dosis NaOH Yang Berbeda Di Balai BesarPerikanan Budidaya Laut(BBPBL) Lampung. *Prosiding Seminar Nasional Swasembada Pangan, April*, 588–595.
- Yanuhar, U., & Khumaidi, A. (2017). The application of pigment-protein fraction from *Nannochloropsis oculata* on β -actin response of *Cromileptes altivelis* infected with viral nervous necrosis. *Jurnal Akuakultur Indonesia*, 16(1), 22. <https://doi.org/10.19027/jai.16.1.22-32>
- Yudiati, E., Putri, A. N., Harahap, A., Azhar, N., Suryono, C. A., Prabowo, D. A., & Alghazeer, R. (2022). Light Intensity Promote Pigment Contents, Biomass Production, Total Lipid and Specific Fatty Acid Profile on *Nannochloropsis* sp. Culture. *Ilmu Kelautan: Indonesian Journal of Marine Sciences*, 27(2), 101–110. <https://doi.org/10.14710/ik.ijms.27.2.101-110>
- Yuliani, N., N., Sambara, J., & Mau, M. A. (2016). Uji Aktivitas Antioksidan Fraksi Etilasetat Ekstrak Etanol Rimpang Jahe Merah (*Zingiber officinale* var. *Rubrum*) Dengan Metode DPPH(1,1-Diphenyl-2- Picrylhydrazyl). *Informasi Kesehatan*, 14(1), 1091–1111.

- Yuniarti, D. P., Ria, K., & Aziz, S. (2019). Pengaruh Proses Aerasi Terhadap Pengolahan. *Redoks*, 4, 7–16.
- Yuniarti, R., Nadia, S., Alamanda, A., Zubir, M., Syahputra, R. A., & Nizam, M. (2020). Characterization, Phytochemical Screenings and Antioxidant Activity Test of Kratom Leaf Ethanol Extract (*Mitragyna speciosa* Korth) Using DPPH Method. *Journal of Physics: Conference Series*, 1462(1). <https://doi.org/10.1088/1742-6596/1462/1/012026>
- Zavřel, T., Chmelík, D., Sinetova, M. A., & Červený, J. (2018). Spectrophotometric determination of phycobiliprotein content in cyanobacterium *synechocystis*. *Journal of Visualized Experiments*, 2018(139), 1–9. <https://doi.org/10.3791/58076>
- Zulfahmi, I., Meria, R., & Puspitasari, W. (2021). Teknik Kultur Nannochloropsis Sp. Skala Laboratorium di Balai Perikanan Budidaya Air Payau Ujung Batee, Aceh Besar. *KENANGA Journal of Biological Sciences and Applied Biology*, 1(1), 31–38. <https://doi.org/10.22373/kenanga.v1i1.800>