



## DAFTAR PUSTAKA

- Andersen, R. A., Berges, J. A., Harrison, P. J., and Watanabe, M. M., 2005, Recipes for freshwater and seawater media, dalam *Algal culturing techniques*, diedit oleh R. A. Andersen, Oxford: Elsevier Academic Press, hal. 429–538.
- Anonim, 2002, Palmelloid, <http://botanydictionary.org/palmelloid.html>, diakses tanggal 03 Maret 2019.
- Anonim, 2012, Linablue® Natural blue colorant derived from DIC *Spirulina*, <http://www.dlt-spl.co.jp/business/en/spirulina/linablue.html>, diakses tanggal 12 Nopember 2018.
- Antajan, E. dan Gasparini, S., 2004, "Assessment of Cryptophyceae ingestion by copepods using alloxanthin pigment: a caution", *Mar Ecol Prog Ser*, 274, 191–198.
- Archibald, J. M., 2007, "Nucleomorph genomes: Structure, function, origin and evolution", *BioEssays*, 29(4), 392–402.
- Bartual, A., Lubián, L. M., Gálvez, J. A., and Niell, F. X., 2002, "Effect of irradiance on growth, photosynthesis, pigment content, and nutrient consumption in dense cultures of *Rhodomonas salina* (Wislouch) (Cryptophyceae)", *Ciencias Marinas*, 28(4). 381–392.
- Becker, M., Stubbs, M. T., and Huber, R., 1998, "Crystallization of phycoerythrin 545 of *Rhodomonas lens* using detergents and unusual additives", *Prot. Sci.*, 7. 580–586.
- Benavides, J. dan Rito-Palomares, M., 2006, "Simplified two-stage method to B-phycoerythrin recovery from *Porphyridium cruentum*", *J. Chrom. B.*, 844, hal. 39 – 44.
- Bomgardner, M.M., 2014a, The new naturals, cover stories: Food additives, *Chemical and Engineering News Magazine*, 92(6), 10.
- Bomgardner, M.M., 2014b, More choices for natural colors, cover stories: Food additives, *Chemical and Engineering News Magazine*, 92(6), 12 – 13.
- Borisov, A. Y., 1989, "Transfer of excitation energy in photosynthesis: some thoughts", *Photosyn. Res.*, 20(1), 35–58.
- BPOM, 2015, Peraturan Kepala Badan Pengawasan Obat dan Makanan nomor 18 tahun 2015, tanggal 31 desember 2015.
- Camara-Artigas, A., Bacarizo, J., Andujar-Sanchez, M., Ortiz-Salmeron, E., Mesa-Valle, C., Cuadri, C., Martin-Garcia, J. M., Martinez-Rodriguez,



- S., Mazzuca-Sobczuk, T., Ibanez, M. J., and Allen, J. P., 2012, "pH dependent structural conformations of B-phycoerythrin from *Porphyridium cruentum*", *FEBS Journal*, 279, 3680–3691.
- Carr, D., 2009, *A guide to the analysis and purification of proteins and peptides by reversed-phase HPLC*, [https://www.hplc.eu/Downloads/ACE\\_Guide\\_Peptides.pdf](https://www.hplc.eu/Downloads/ACE_Guide_Peptides.pdf), diakses tanggal 4 Maret 2019.
- Cavalier-Smith, T., 2002, "Nucleomorphs: Enslaved algal nuclei", *Curr. Opin. Microbiol.*, 5. 612-619.
- Chaloub, R. M., Motta, M. N. S., de Araujo, S. P., de Aguiar, P. F., and da Silva, A. F., 2015, "Combined effects of irradiance, temperature and nitrate concentration on phycoerythrin content in the microalga *Rhodomonas* sp. (Cryptophyceae)", *Algal Res.*, 8. 89–94.
- Corbella, M., Toa, Z. S. D., Scholes, G. D., Luque, F. J., and Curutchet, C., 2018, "Determination of the protonation preferences of bilin pigments in cryptophyte antenna complexes", *Phys. Chem. Chem. Phys.*, 20, 21404-21416.
- da Silva, A. F., Lourenco, S. O., and Chaloub, R. M., 2009, "Effects of nitrogen starvation on the photosynthetic physiology of a tropical marine microalga *Rhodomonas* sp. (Cryptophyceae)", *Aquatic Bot.*, 91. 291–297.
- Doust, A. B., Marai, C. N. J., Harrop, S. J., Wilk, K. E., Curmi, P. M. G., and Scholes, G. D., 2004, "Developing a Structure – Function Model for the Cryptophyte Phycoerythrin 545 Using Ultrahigh Resolution Crystallography and Ultrafast Laser Spectroscopy", *J. Mol. Biol.*, (344), 135–153.
- Dupré, C., Guary, J.C., and Grizeau, D., 1995, "Culture of an autoflocculent microalga in a vertical tubular photobioreactor for phycoerythrin production", *Biotechnol. Techn.* 9(3), 185 – 190.
- Forciniti, D., 2000, Preparation of aqueous two-phase systems, dalam *Aqueous two-phase systems: Methods and protocols*, diedit oleh R. Hatti-Kaul, New Jersey: Humana Press, hal. 23–34.
- Foti, M. dan Ruberto, G., 2001, "Kinetic solvent effects on phenolic antioxidants determined by spectrophotometric measurements", *J. Agric. Food Chem.*, 49, 342-348.
- Gardner, F.P., Pearce, R.B., and Mitchell, R.L., 1991, *Physiology of crop plants*. Diterjemahkan oleh H. Susilo. Jakarta: Universitas Indonesia Press.
- Glazer, A. N., 1994, "Phycobiliproteins — a family of valuable, widely used fluorophores", *J. Appl. Phycol.*, 6(2). 105–112.



- González-Ramírez, E., Andújar-Sánchez, M., Ortiz-Salmerón, E., Bacarizo, J., Cuadri, C., Mazzuca-Sobczuk, T., Ibáñez, M. J., Cámara-Artigas, A., and Martínez-Rodríguez, S., 2014, "Thermal and pH stability of the B-phycoerythrin from the red algae *Porphyridium cruentum*", *Food Biophysics*, 9(2). 184–192.
- Gour, R.S., Kant, A., and Chauhan, R.S., 2014, "Screening of micro algae for growth and lipid accumulation properties", *J Algal Biom. Util.* 5(1). 38 – 46.
- Grossman, A. R., Schaefer, M. R., Chiang, G. G., and Collier, J. L., 1993, "The phycobilisome, a light-harvesting complex responsive to environmental conditionst", *Microbiol. Rev.*, 57(3). 725-749.
- Guevara, M., Arredondo-Vega, B. O., Palacios, Y., Saéz, K., and Gómez, P. I., 2016, "Comparison of growth and biochemical parameters of two strains of *Rhodomonas salina* (Cryptophyceae) cultivated under different combinations of irradiance, temperature, and nutrients", *J. Appl. Phycol.*
- Guillard, R. L. L. dan Sieracki, M. S., 2005, Counting cells in cultures with the light microscope, dalam *Algal culturing techniques*, diedit oleh R. A. Andersen. Oxford: Elsevier Academic Press. hal. 246.
- Guiry, M.D. dan Guiry, G.M., 2017, AlgaeBase, World-wide electronic publication, National University of Ireland, Galway, <http://www.algaebase.org>, diakses tanggal 13 Agustus 2017.
- Hammer, A., Schumann, R., and Schubert, H., 2002, "Light and temperature acclimation of *Rhodomonas salina* (Cryptophyceae): photosynthetic performance", *Aquatic Microb. Ecol.*, 29. 287–296.
- Harrison, P. J. dan Berges, J. A., 2005, Marine Culture Media, dalam *Algal culturing techniques*, diedit oleh R. A. Andersen. Oxford: Elsevier Academic Press. hal. 21–34.
- Herdian, 2013, Permintaan Meningkatkan, Merck Genjot Pasar Pigmen, <http://industri.bisnis.com>, diakses tanggal 26 Nopember 2014.
- Hernandez-Mireles, T. dan Rito-Palomares, M., 2006, "Improved recovery of B-phycoerythrin produced by the red microalga *Porphyridium cruentum*", *J. Chem. Technol. Biotechnol.*, 81, 989–996.
- Hiller, R. G. dan Martin, C. D., 1987, "Multiple forms of a type I phycoerythrin from a *Chroomonas* sp. (Cryptophyceae) varying in subunit composition", *Biochim. Biophys. Acta (BBA)*, 923(1), 98–102.
- Hossain, M. F., Ratnayake, R. R., Meerajini, K., and Wasantha Kumara, K. L., 2016, "Antioxidant properties in some selected cyanobacteria isolated from fresh water bodies of Sri Lanka", *Food Sci. Nutrition*, 4(5). 753–758.



- Huang, D., Ou, B., and Rior, R. L. P., 2005, "The chemistry behind antioxidant capacity assays", *J. Agric. Food Chem.*, 53. 1841–1856.
- Isnansetyo, A. dan Kurniastuty, 1995, *Teknik kultur phytoplankton dan zooplankton: Pakan alami untuk pembenihan organisme laut*, Yogyakarta: Penerbit Kanisius.
- Kaňa, R., Prášil, O., and Mullineaux, C. W., 2009, "Immobility of phycobilins in the thylakoid lumen of a cryptophyte suggests that protein diffusion in the lumen is very restricted", *FEBS Letters*, 583, 670–674.
- Kementerian Kesehatan, 1979, Peraturan Menteri Kesehatan RI No. 235/Menkes/Per/VI/79 tentang Bahan Tambahan Makanan, tanggal 19 Juni 1979.
- Kementerian Kesehatan, 2012, Peraturan Menteri Kesehatan RI No. 033/Menkes/Per/VII/12 tentang Bahan Tambahan Pangan, tanggal 27 Juli 2012.
- Kamble, S. P., Gaikar, R. B., Padalia, R. B., and Shinde, K. D., 2013, "Extraction and purification of C-phycoerythrin from dry *Spirulina* powder and evaluating its antioxidant, anticoagulation and prevention of DNA damage activity", *J. App. Pharmaceut. Sci.*, 3(08), 149 - 153.
- Koller, K.P. dan Wehrmeyer, W., 1975, "B-Phycoerythrin from *Rhodella violacea*: Characterization of two isoproteins", *Arch. Microbiol.*, 104, 255 – 261.
- Lafarga-De la Cruz, F., Valenzuela-Espinoza, E., Millan-Nunez, R., Trees, C. C., Santamaria-del-Angel, E., and Nunez-Cebrero, F., 2006, "Nutrient uptake, chlorophyll *a* and carbon fixation by *Rhodomonas* sp. 105 (Cryptophyceae) cultured at different irradiance and nutrient concentrations", *Aquacul. Engineering*, 35. 51–60.
- Lawrenz, E., Fedewa, E. J., and Richardson, T. L., 2011, "Extraction protocols for the quantification of phycobilins in aqueous phytoplankton extracts", *J. Appl. Phycol.*, 865–871.
- Lee, R. E., 2008, *Phycology* (Fourth edition). New York: Cambridge University Press.
- Lee, Y-K, Chen, W., Shen, H., Han, D., Li, Y., Jones, H.D.T., Timlin, J.A., and Hu, Q., 2013, Basic culturing and analytical measurement techniques, dalam *Handbook of microalgal culture: Applied phycology and biotechnology*, Edisi kedua, Diedit oleh A. Richmond dan Q. Hu, Oxford: Wiley-Blackwell.
- Lewitus, A. J. dan Caron, D. A., 1990, "Relative effects of nitrogen or phosphorus depletion and light intensity on the pigmentation, chemical composition, and volume of *Pyrenomonas salina* (Cryptophyceae)", *Mar. Ecol. Prog.*



*Ser.*, 61. 171–181.

- Liang, N. dan Kitts, D. D., 2014, "Antioxidant property of coffee components: Assessment of methods that define mechanism of action", *Molecules*, 19(11). 19180–19208.
- Lin, R.I-S., 1994, Phytochemicals and antioxidants, dalam *Functional foods: Designer foods, pharmafoods, nutraceuticals*, Diedit oleh I. Goldberg, New York: Champman dan Hall.
- Liu, L.-N., Chen, X.-L., Zhang, X.-Y., Zhang, Y.-Z., and Zhou, B.-C., 2005, "One-step chromatography method for efficient separation and purification of R-phycoerythrin from *Polysiphonia urceolata*", *J. Biotechnol.*, 116(1), 91–100.
- Lu, C. dan Vonshak, A., 2002, "Effects of salinity stress on photosystem II function in cyanobacterial *Spirulina platensis* cells", *Physiologia Plantarum*, 114, 405–413.
- McCann, D., Barrett, A., Cooper, A., Crumpler, D., Dalen, L., Grimshaw, K., Kitchin, E., Lok, K., Porteous, L., Prince, E., Sonuga-Barke, E., Warner, J. O., and Stevenson, J., 2007, "Food additives and hyperactive behaviour in 3-year-old and 8/9-year-old children in the community : a randomised , double-blinded , placebo-controlled trial", terbit pada laman [www.thelancet.com](http://www.thelancet.com), diakses pada 12 Februari 2015.
- MacColl, R. dan Guard-Friar, D., 1983, "Phycocyanin 645: The chromophore assay of Phycocyanin 645 from the Cryptomonad protozoa *Chroomonas* species", *J. Biol. Chem.*, 258(23), 14327–14329.
- MacColl, R., Eisele, L.E., Dhar, M., Ecuyer, J-P., Hopkins, S., Marrone, J., Barnard, R., Malak, H., and Lewitus, A.J., 1999, "Bilin organization in cryptomonad biliproteins", *Biochem.* 38: 4097-4105.
- Markina, Z. V. dan Aizdaicher, N. A., 2016, "Photosynthetic pigments content and growth of microalga *Plagioselmis prologa* (Cryptophyta) under low salinity", *J. Stress Physiol. Biochem.*, 12(3), 77–83.
- Masojídek, J., Torzillo, G., and Koblížek, M., 2013, Photosynthesis in microalgae, dalam *Handbook of microalgal culture: Applied phycology and biotechnology 2nd edition*, Diedit oleh A. Richmond dan Q. Hu, Oxford: Wiley-Blackwell.
- Minkova, K. M., Toshkova, R. A., Gardeva, E. G., Tchorbadjieva, M. I., Ivanova, N. J., Yossifova, L. S., and Gigova, L. G., 2011, "Antitumor activity of B-phycoerythrin from *Porphyridium cruentum*", *J Pharm. Res.*, 4(5). 1480–1482.
- Mulders, K. J. M., Lamers, P. P., Martens, D. E., and Wijffels, H., 2014, "Phototrophic pigment production with microalgae : biological



- constraints and opportunities", *J. Phycol.*, 50. 229–242.
- Munier, M., Jubeau, S., Wijaya, A., Morançais, M., Dumay, J., Marchal, L., Jaouen, P., and Fleurence, J., 2014, "Physicochemical factors affecting the stability of two pigments : R-phycoerythrin of *Grateloupia turuturu* and B-phycoerythrin of *Porphyridium cruentum*", *Food Chem.*, 150. 400–407.
- Neale, P. J., dan Melis, A., 1989, "Salinity-stress enhances photoinhibition of photosynthesis in *Chlamydomonas reinhardtii*", *J. Plant Physiol.*, 134(5), 619–622.
- Nelson, D. dan Cox, M., 2005, *Lehninger Principles of Biochemistry (4th ed.)*, New York: W.H. Freeman and Company.
- Nurhan, A. D., Mu'afa P., T., Rizki W., N., Zuhrufi A., E., Putri, G. A., Firdaus, M. H., Lutfia A., A., Chandra C., E., Mayda P., V., Putri A., A., Peristiwaningrum, A., dan Yulia, Rosa., "Pengetahuan ibu-ibu mengenai kosmetik yang aman dan bebas dari kandungan bahan kimia berbahaya", *Jurnal Farmasi Komunitas*, 4(1), 15-19.
- Ogawa, H., Mizuno, H., Saito, T., Yamada, Y., Oohusa, T., and Iso, N., 1991, "Effects of pH on the conformation of phycoerythrin from nori *Porphyra* sp.", *Nippon-suisan-gakkai-shi* (Vol. 57).
- Overkamp, K. E., Gasper, R., Kock, K., Herrmann, C., Hofmann, E., and Frankenberg-Dinkel, N., 2014, "Insights into the biosynthesis and assembly of Cryptophycean phycobiliproteins", *J. Biol. Chem.*, 289(39). 26691–26707.
- Ozyurt, D., Demirata, B., and Apak, R., 2007, "Determination of total antioxidant capacity by a new spectrophotometric method based on Ce(IV) reducing capacity measurement", *Talanta*, 71(3): 1155 – 1165.
- Pace, C. N., Treviño, S., Prabhakaran, E., Scholtz, J. M., Franks, F., Wilson, K., Daniel, R. M., Halling, P. J., Clark, D. S., and Purkiss, A., 2004, "Protein structure, stability and solubility in water and other solvents", *Philos. Trans. R. Soc. Lond. B Biol. Sci.*, 359(1448). 1225–1235.
- Patel, S. N., Sonani, R. R., Jakharia, K., Bhastana, B., Patel, H. M., Chaubey, M. G., Singh, N. K., and Madamwar, D., 2018, "Antioxidant activity and associated structural attributes of *Halomicronema* phycoerythrin", *Int. J. Biol. Macromol.*, 111, 359–369.
- Prayitno, J., 2016, "Pola Pertumbuhan dan pemanenan biomassa dalam fotobioreaktor mikroalga untuk penangkapan karbon ", *J. Teknol. Lingk.* 17(1), 45–52.
- Pumas, C., Vacharapiyasophon, P., Peerapornpisal, Y., Leelapornpisid, P., Boonchum, W., Ishii, M., and Khanongnuch, C., 2011, "Thermostability



- of phycobiliproteins and antioxidant activity from four thermotolerant cyanobacteria", *Phycol. Res.*, 59(3). 166–174.
- Punampalam, R., Khoo, K. S., and Sit, N. W., 2018, "Evaluation of antioxidant properties of phycobiliproteins and phenolic compounds extracted from *Bangia atropurpurea*", *Malaysian Journal of Fundamental and Applied Sciences*, 14(2). 289–297.
- Rastogi, R. P., Sonani, R. R., and Madamwar, D., 2015, "Physico-chemical factors affecting the *in vitro* stability of phycobiliproteins from *Phormidium rubidum* A09DM", *Bioresour. Technol.*, 190, 219–226.
- Rito-Palomares, M., Nunez, L., and Amador, D., 2001, "Practical application of aqueous two-phase systems for the development of a prototype process for c-phycoerythrin recovery from *Spirulina maxima*", *J. Chem. Technol. Biotechnol.*, 76(12), 1273–1280.
- Román, R. B., Alvarez-Pez, J. M., Fernandez, F. G. A., and Grima, E. M., 2002, "Recovery of pure B-phycoerythrin from the microalga *Porphyridium cruentum*", *J. Biol.*, 93, 73–85.
- Rossano, R., Ungaro, N., D'Ambrosio, A., Liuzzi, G. M., and Riccio, P., 2003, "Extracting and purifying R-phycoerythrin from Mediterranean red algae *Corallina elongata* Ellis & Solander", *J. Biotech.*, 101. 289–293.
- Sanchez, L., 2001, *TCA protein precipitation protocol*. Pasadena, California. Retrieved from [http://www.its.caltech.edu/~bjorker/TCA\\_ppt\\_protocol.pdf](http://www.its.caltech.edu/~bjorker/TCA_ppt_protocol.pdf), diakses tanggal 20 Agustus 2018.
- Sangeetha, P., Babu, S., and Rengasamy, R., 2017, "Antioxidant properties of r-phycoerythrin from *Kappaphycus alvarezii* (doty) doty ex silva", *J. Innov. Res. Sol.*, 3(1), 47–56.
- Satoh, K., Smith, C. M., and Fork, D. C., 1983, "Effects of salinity on primary processes of photosynthesis in the red alga *Porphyra perforata*", *Plant Physiol.*, 73, 643–647.
- Scheer, H. dan Kufer, W., 1977, "Studies on plant bile pigments, IV: Conformational studies on C-phycoerythrin from *Spirulina platensis*", *Z. Naturforsch. C: J. Biosci.*, 32C, 513-519
- Sciandra, A., Lazzara, L., Claustre, H., and Babin, M., 2000, "Responses of growth rate, pigment composition, and optical properties of *Cryptomonas* sp. to light and nitrogen stresses", *Mar Ecol Prog Ser*, 201. 107–120.
- Seixas, P., Coutinho, P., Ferreira, M., and Otero, A., 2009, "Nutritional value of the cryptophyte *Rhodomonas lens* for *Artemia* sp.", *J. Exp. Mar. Biol. Ecol.*, 381(1), 1–9.
- Seoane, S., Laza, A., Urrutxurtu, I., and Orive, E., 2005, "Phytoplankton



- assemblages and their dominant pigments in the Nervion River estuary", *Hydrobiologia*, 549, 1–13.
- Sekar, S. dan Chandramohan, M., 2008, "Phycobiliproteins as a commodity: trends in applied research, patents, and commercialization", *J. Appl. Phycol.*, 20. 113–136.
- Sidler, W., Kumpf, B., Suter, F., Morisset, W., Wehrmeyer, W., and Zuber, H., 1985, "Structural studies on cryptomonad biliprotein subunits. Two different alpha-subunits in *Chroomonas* phycocyanin-645 and *Cryptomonas* phycoerythrin-545", *Biol. Chem. Hoppe-Seyler*, 366(3), 233–244.
- Smith, M. B. dan March, J., 2007, *March's advanced organic chemistry* (6th ed.). New Jersey: John Wiley & Sons, Inc.
- Sonani, R. R., Singh, N. K., Kumar, J., Thakar, D., and Madamwar, D., 2014, "Concurrent purification and antioxidant activity of phycobiliproteins from *Lyngbya* sp . A09DM : An antioxidant and anti-aging potential of phycoerythrin in *Caenorhabditis elegans*", *Proc. Biochem.*, 49(10). 1757–1766.
- Sonani, R. R., Rastogi, R. P., and Madamwar, D., 2015, "Antioxidant potential of phycobiliproteins: Role in anti-aging research", *Biochemi. Analyt. Biochem.*, 4(2), 4–11.
- Spear-Bernstein, L. dan Miller, K. R., 1989, "Unique location of the phycobiliprotein light-harvesting pigment in the cryptophyceae", *J. Phycol.*, 25(3), 412–419.
- Sun, L., Wang, S., Gong, X., Zhao, M., Fu, X., and Wang, L., 2009, "Isolation, purification and characteristics of R-phycoerythrin from a marine macroalga *Heterosiphonia japonica*", *Protein Expr. Purif.*, 64(2), 146–154.
- Suyono, E., 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", *J. Life Sci.*, 9, 229–233.
- Sylvester, B., Nelvy, D.D., dan Sudjiharno, 2002, Persyaratan budidaya fitoplankton, dalam *Budidaya fitoplankton dan zooplankton*, Seri budidaya laut no. 9, Balai Budidaya Laut Lampung, Direktorat Jenderal Perikanan Budidaya, Departemen Kelautan dan Perikanan.
- Tamm, M., Freiberg, R., Ilmar, T., Peeter, N., and Tiina, N., 2015, "Pigment based chemotaxonomy - A quick alternative to determine algal assemblages in Large Shallow Eutrophic Lake?" *Plos One*, 1–15.
- Thimijan, R. W. dan Heins, R. D., 1982, "Photometric, radiometric, and quantum



- light units of measure: A review of procedures for Interconversion", *Hort Science*, 18. 818-822.
- Thinh, L.-V., 1983, "Effect of irradiance on the physiology and ultrastructure of marine cryptomonad, *Cryptomonas* strain Lis (Cryptophyceae)", *Phycol.*, 22(1), 7–11.
- Thoisen, C., Hansen, B. W., and Nielsen, S. L., 2017, "A simple and fast method for extraction and quantification of cryptophyte phycoerythrin". *MethodsX*, 4, 209–213.
- Toole, C. M. dan Allnutt, F. C. T., 2003, Red, cryptomonad and glaucocystophyte algal phycobiliproteins, dalam *Photosynthesis in algae*, Diedit oleh A.W. Larkum, S. Douglas, dan J.A. Raven, Dorcdrecht: Kluwer Academic Publishers.
- Van Der Weij-De Wit, C. D., Doust, A. B., Stokkum, I. H. M. Van, Dekker, J. P., Wilk, K. E., Curmi, P. M. G., Scholes, G. D. and van Grondelle, R., 2006, "How energy funnels from the phycoerythrin antenna complex to Photosystem I and Photosystem II in Cryptophyte *Rhodomonas* CS24 cells", *J. Phys. Chem. B*, 110, 25066–25073.
- Vonshak, A. dan Guy, R., 1986, "Photoadaptation, photoinhibition and productivity in the blue-green alga, *Spirulina platensis* grown outdoors", *Plant Cell Enviro.*, 15, 613–616.
- Vu, M. T. T., Douët, C., Rayner, T. A., Thoisen, C., Nielsen, S. L., and Hansen, B. W., 2015, "Optimization of photosynthesis, growth, and biochemical composition of the microalga *Rhodomonas salina* — an established diet for live feed copepods in aquaculture", *J. Appl. Phycol.*
- Wibowo, S., 2015, 4 Bahan Kimia Berbahaya di Jajanan Sekolah, <http://www.tempo.co/>, diakses 14 April 2015.
- Wilk, K. E., Harrop, S. J., Jankova, L., Edler, D., Keenan, G., Sharples, F., Hiller, R. G., and Curmi, P. M., 1999, "Evolution of a light-harvesting protein by addition of new subunits and rearrangement of conserved elements: crystal structure of a cryptophyte phycoerythrin at 1.63-Å resolution", *Proc. Natl. Acad. Sci. USA*, 96(16), 8901–8906.
- Wood, A. M., Everroad, R. C., and Wingard, L. M., 2005, Measuring growth rates in microalgal cultures, dalam *Photosynthesis in Algae*, Diedit oleh A.W. Larkum, S. Douglas, dan J.A. Raven, Dorcdrecht: Kluwer Academic Publishers. hal. 269–285.
- Yabuta, Y., Fujimura, H., Kwak, C. S., Enomoto, T., and Watanabe, F., 2010, "Antioxidant Activity of the Phycoerythrobilin Compound Formed from a Dried Korean Purple Laver (*Porphyra* sp.) during *in vitro* Digestion", *Food Sci. Technol. Res.*, 16(4), 347–351.



- Yamamoto, S., Yamato, R., and Yoshimatsu, T., 2018, "Optimum culture conditions of *Rhodomonas* sp. Hf-1 strain as a live food for aquatic animals", *Fish. Sci.*, 84(4), 691–697.
- Zeng, M. dan Vonshak, A., 1998, "Adaptation of *Spirulina platensis* to salinity-stress", *Comparative Biochem. Physiol. Part A*, 120, 113–118.
- Zubia, M., Robledo, D., and Freile-pelegrin, Y., 2007, "Antioxidant activities in tropical marine macroalgae from the Yucatan Peninsula, Mexico", *J Appl Phycol*, 19, 449–458.