

DAFTAR PUSTAKA

- Abd El-Baky, H. H., & El-Baroty, G. S. (2012). Characterization and Bioactivity of Phycocyanin Isolated from *Spirulina maxima* Grown Under Salt Stress. *Food & Function*, 3(4), 381.
- Amin, K. A., Hameid, H. A., & Elsttar, A. H. A. (2010). Effect of Food Azo Dyes Tartrazine and Carmoisine on Biochemical Parameters Related to Renal , Hepatic Function and Oxidative Stress Biomarkers in Young Male Rats. *Food and Chemical Toxicology*, 48(10), 2994–2999.
- Bajpai, P., & Bajpai, P. K. (1993). Eicosapentaenoic Acid (EPA) Production from Microorganisms : a review, 30, 161–183.
- Bakowska-Barczak, A. (2005). Acylated Anthocyanins as Stable, Natural Food Colorants – a review, 14(2), 107–115.
- Baltschun, D., Beutner, S., Briviba, K., Martin, H., Paust, J., Peters, M., Rover, S., Sies, H., Stahl, W., Steigel, A., Stenhorst, F. (1997). Singlet Oxygen Quenching Abilities of Carotenoids, 1887–1893.
- Ban, J., Tan, L., Lim, Y. Y., & Lee, S. M. (2014). *Rhoeo spathacea* (Swartz) Stearn leaves, a Potential Natural Food Colorant. *Functional Foods*, 7, 443–451.
- Bennett, A., & Bogorad, L. (1973). Complementary Chromatic Adaptation in a Filamentous Blue-Green Alga, 58.
- Boussiba, S., & Richmond, A. E. (1979). Isolation and Characterization of Phycocyanins from The Blue-Green Alga *Spirulina platensis*. *Archives of Microbiology*, 120 (2), 155–159.
- Campana, E. (2003). Rapid Separation of Chlorophylls a and b and Their Demetallated and Dephytylated Derivatives Using a Monolithic Silica C-18 Column and a Pyridine-Containing Mobile Phase, 994, 85–92.
- Chairul dan Murningsih, T. (2000). Introducing to HPLC: Its Roles on Analysis and Isolation Processes of Natural Chemical Product. Bogor: Puslitbang Biologi-LIPI.
- Christiana, R., Kristopo, H., & Limantara, L. (2008). Photodegradation and Antioxidant Activity of Chlorophyll a from *Spirulina* (*Spirulina* sp .)

- Powder. *Indo. J. chem*, 8(2), 236–241.
- Cronberg, G. (2006). An Experimental Study of Toxin Production in *Arthrospira fusiformis* (Cyanophyceae) Isolated from African Waters. *Toxicon*, 48, 1027–1034.
- Dasgupta, T., Banerjee, S., Yadav, P. K., & Rao, A. R. (2001). Chemomodulation of Carcinogen Metabolising Enzymes, Antioxidant Profiles and Skin and Fore- Stomach Papillomagenesis by *Spirulina platensi*. *Molecular and Cellular Biochemistry*, 226, 27–38.
- Devitt, L. C., Fanning, K., Dietzgen, R. G., & Holton, T. A. (2010). Isolation and Functional Characterization of a Lycopene b-cyclase Gene That Controls Fruit Colour of Papaya (*Carica papaya L.*). *Experimental Botany*, 61(1), 33–39.
- Dufoss, L. (2006). Microbial Production of Food Grade Pigments. *Biotechnology*, 44(3), 313–321.
- Dufosse, L., Galaup, P., Yaron, A., Arad, S., Blanc, P., Murthy, N. C., & Ravishankar, G. (2005). Microorganisms and Microalgae As Sources of Pigments for Food Use: a Scientific Oddity or an Industrial Reality?, 16, 389–406.
- El-baky, H. H. A., Baz, F. K. El, & El-baroty, G. S. (2008). Characterization of Nutraceutical Compounds in Blue Green Alga *Spirulina maxima*. *Medicinal Plants Research*, 2(10), 292–300.
- Eriksen, N. T. (2008). Production of Phycocyanin - A Pigment with Applications in Biology, Biotechnology, Foods and Medicine. *Applied Microbiology and Biotechnology*, 80(1), 1–14.
- Fernández-rojas, B., & Hernández-juárez, J. (2014). Nutraceutical Properties of Phycocyanin. *Functional Foods*, 11, 375–392.
- Fouillaud, M., Caro, Y., Mapari, S. A. S., Dufosse, L., & Sutthiwong, N. (2014). Filamentous Fungi are Large-Scale Producers of Pigments and Colorants for the Food Industry, 56–61.
- Gantar, M., & Simovi, D. (2012). Isolation, Characterization and Antioxidative Activity of C-phycocyanin from *Limnothrix* sp. Strain 37-2-1. *Biotechnology*, 159, 21–26.

- Ghosh, P. K. (2006). Antioxidant Potential of C-phycocyanin Isolated from Cyanobacterial Species. *Biochemistry and Biophysics*, 43, 25–31.
- Goldman, J. C., Hole, W., & Hole, W. (1979). Outdoor Algal Mass Cultures- II. Photosynthetic Yield Limitations, 13.
- Hayashi T, Hayashi K, Maeda M, and K. I. (1996a). Calcium Spirulan, an Inhibitor of Enveloped Virus Replication, from a Blue-Green, 83–87.
- Hayashi, K., Hayashi, T., & Kojima, I. (1996b). A Natural Sulfated Polysaccharide , Calcium Spirulan , Isolated from *Spirulina platensis*: In Vitro and ex Vivo Evaluation of Anti-Herpes Simplex Virus and Anti-Human Immunodeficiency Virus Activities Sulfated, 12(15), 1463–1471.
- Hendayana, Sumar dkk., (1994). KIMIA ANALITIK INSTRUMEN. Semarang: IKIP Semarang.
- Henrikson, R. (2009). *Earth Food Spirulina*. USA: Ronore Enterprises, Inc. PO Box 909, Hana, Maui, Hawaii 96718 USA.
- Hong, Z. H. U., Jingzao, X. U., Shiqiang, L. I., Xiaoyu, S. U. N., Side, Y. A. O., & Shilong, W. (2008). Effects of High-Energy-Pulse-Electron Beam Radiation on Biomacromolecules. *Chemistry*, 51(06), 86–91.
- Jaime, L., Mendiola, J. A., Herrero, M., Rivas, C., Santoyo, S., Senorans, F. J., Cifuentes, A., & Ibanez, E. (2005). Separation and Characterization of Antioxidant from *Spirulina platensis* Microalgae Combining Pressurized Liquid Extraction, TLC and HPLC-DAD. *J.Sep. Sci.* 28, 2111-2119.
- Jerley, A. A., & Prabu, D. M. (2015). Purification, Characterization and Antioxidant Properties of C-Phycocyanin from *Spirulina platensis*. *Agriculture, Plant Biotechnology and Bio Products*, 2(1).
- Kabinawa, I Nyoman K. (2006). Spirulina Ganggang Pengempur Aneka Penyakit Depok.: PT Agro Media Pustaka
- 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. *Applied Pharmaceutical Science*, 3(08), 149–153.
- Karanikopoulos, G., Gerakis, A., Papadopoulou, K., & Mastrantoni, I. (2015). Determination of Synthetic Food Colorants in fish Products by an HPLC-

- DAD method. *FOOD CHEMISTRY*, 177, 197–203.
- Kim, Y., Choi, S., Park, H., & Lee, J. (2013). Electron Beam-Induced Mutants of Microalgae *Arthrospira platensis* Increased Antioxidant Activity. *Industrial and Engineering Chemistry*.
- Koswara, S. (2009). Pewarna Alami: Produksi dan Penggunaannya, 1–36. Retrieved from eBookPangan.com
- Kumar, D., Dhar, D. W., Pabbi, S., Kumar, N., & Walia, S. (2014). Extraction and Purification of C-phycocyanin from *Spirulina platensis* (CCC540). *Indian Plant Physiology*, 19(2), 184–188.
- Kumar, M., Sharma, M. K., & Kumar, A. (2005). *Spirulina fusiformis*: A Food Supplement against Mercury Induced Hepatic Toxicity. *Health Science*, 51(4), 424–430.
- Kurniawan, M., Izzati, M., & Nurchayati, Y. (2010). Kandungan Klorofil, Karotenoid, dan Vitamin C pada Beberapa Spesies Tumbuhan Akuatik, XVIII(1).
- Lanfer-marquez, U. M., Barros, R. M. C., & Sinnecker, P. (2005). Antioxidant Activity of Chlorophylls and Their Derivatives. *Food Research International*, 38, 885–891.
- Leeuwe, M. A. Van, Villerius, L. A., Roggeveld, J., Visser, R. J. W., & Stefels, J. (2006). An Optimized Method for Automated Analysis of Algal Pigments by HPLC, 102, 267–275.
- Liu, S., Zhao, Y., Jiang, W., Wu, M., & Ma, F. (2014). Inactivation of *Microcystis aeruginosa* by Electron Beam Irradiation. *Water Air Soil Pollut*, 225, 2093.
- MacColl, R. (1998). Cyanobacterial Phycobilisomes. *Journal of Structural Biology*, 334, 311–334.
- Madhyastha, H. K., Radha, K. S., Sugiki, M., Omura, S., & Maruyama, M. A. (2006). Purification of C -phycocyanin from *Spirulina fusiformis* and Its Effect on the Induction of Urokinase-Type Plasminogen Activator from Calf Pulmonary Endothelial Cells, 13, 564–569.
- Madina, Nur. (2012). Aktivitas Antihiperglikemik dari Biomasa dan Fikosianin Spirulina fusiformis dengan Tes Toleransi Glukosa Oral Pada Tikus Sprague Dawley. [Skripsi]. Bogor: Departemen Teknologi Hasil Perairan Fakultas

Perikanan Dan Ilmu Kelautan IPB.

- Mapari, S. A. S., Nielsen, K. F., Larsen, T. O., Frisvad, J. C., Meyer, A. S., & Thrane, U. (2005). Exploring Fungal Biodiversity for The Production of Water-Soluble Pigments as Potential Natural Food Colorants, 231–238.
- Mari, A. R. Æ. F. R., & Soler-rivas, Æ. C. (2008). Effect of Domestic Processing on Bioactive Compounds, 345–384.
- Mathew, B., & Sankaranarayanan, R. (1995). Evaluation of Chemoprevention of Oral Cancer with *Spirulina fusiformis*, 37–41.
- McCarty, M. F. (2007). “ Iatrogenic Gilbert syndrome ”– A Strategy for Reducing Vascular and Cancer Risk by Increasing Plasma Unconjugated Bilirubin, 974–994.
- Minko, K. M., Tcherno, A. A., Tchorbadjie, M. I., & Fournadjie, S. T. (2003). Purification of C-phycocyanin from *Spirulina (Arthrosphaera) fusiformis*, 102, 55–59.
- Mitra, S., Siddiqui, W. A., & Khandelwal, S. (2015). C-Phycocyanin Protects Against Acute Tributyltin Chloride Neurotoxicity by Modulating Glial Cell Activity along with Its Anti-Oxidant and Anti-Inflammatory Property: A Comparative Efficacy Evaluation with N-acetyl Cysteine in Adult Rat Brain. *Chemico-Biological Interactions*, 238, 138–150.
- Mittal, A., Kumar, P. V. S., Banerjee, S., Rao, A. R., & Kumar, A. (1999). Modulatory Potential of *Spirulina fusiformis* on Carcinogen Metabolizing Enzymes in Swiss Albino Mice, 114, 111–114.
- Munier, M., Jubeau, S., Wijaya, A., Morancais, M., Dumay, J., Marchal, L., Jaouen, P., & Fleurence, J. (2014). Physicochemical Factors Affecting The Stability of Two Pigments: R-phycoerythrin of *Grateloupia turuturu* and B-phycoerythrin of *Porphyridium cruentum*. *Food Chemistry*, 150, 400–407.
- Padyana, A. K., Bhat, V. B., Madayastha, K. M., Rajashankar, K. R., & Ramakumar, S. (2001). Crystal Structure of a Light-Harvesting Protein C-phycocyanin from *Spirulina platensis*. *Biochemical and Biophysical Research Communications*, 282(4), 893–8.
- Patel, A., Mishra, S., Pawar, R., & Ghosh, P. K. (2005). Purification and Characterization of C-Phycocyanin from Cyanobacterial Species of Marine

- and Freshwater Habitat, 40, 248–255.
- Piñero Estrada, J. (2001). Antioxidant Activity of Different Fractions of *Spirulina platensis* Protean Extract. *Il Farmaco*, 56(5-7), 497–500.
- Prasanna, R., Sood, A., Jaiswal, P., Nayak, S., Gupta, V., Chaudhary, V., Joshi, M., Natarajan, C. (2010). Rediscovering Cyanobacteria as Valuable Sources of Bioactive Compounds (Review) 1, 46(2), 119–134.
- Praveen, C., Jesudhasan, P. R., Reimers, R. S., & Pillai, S. D. (2013). Bioresource Technology Electron Beam Inactivation of Selected Microbial Pathogens and Indicator Organisms in Aerobically and Anaerobically Digested Sewage Sludge. *Bioresource Technology*, 144, 652–657.
- Priyadarshani, I., & Rath, B. (2012). Commercial and Industrial Applications of Microalgae – A review, 3(4), 89–100.
- Promya, J., Traichaiyaporn, S., & Deming, R. (2008). Phytoremediation of Kitchen Wastewater by *Spirulina platensis* (Nordstedt) Geiteler: Pigment Content, Production Variable Cost and Nutritional Value. *Science and Technoogy*, 2(3), 159–171.
- Qureshi, M. A., Garlich, J. D., & Kidd, M. T. (1996). Dietary *Spirulina platensis* Enhances Humoral and Cell-Mediated Immune Function in Chicken. 18(3), 465–476.
- Rahmani, A. L. I., Kvalheim, M., & Brereton, G. (1994). Investigation of The Allomerization Reaction of Chlorophyll a : Use of Diode Array HPLC , Mass Spectrometry and Chemometric Factor Analysis for The Detection of Early Products, 59(I).
- Rastogi, R. P., Sinha, R. P., Moh, S. H., Lee, T. K., Kottuparambil, S., Kim, Y. J., Rhee, J. S., Choi, E. M., Brown, M. T., Hader, D. P., Han, P. (2014). Ultraviolet Radiation and Cyanobacteria. *Journal of Photochemistry and Photobiology B: Biology*, 141, 154-169.
- Reddy, C. M., Bhat, V. B., Kiranmai, G., Reddy, M. N., Reddanna, P., & Madayastha, K. M. (2000). Selective Inhibition of Cyclooxygenase-2 by C-Phycocyanin, a Biliprotein from *Spirulina platensis*, 603, 599–603.
- Rodrigues, E., Mariutti, L. R. B., Chisté, R. C., & Mercadante, A. Z. (2012). Development of a Novel Micro-assay for Evaluation of Peroxyl Radical

- Scavenger Capacity: Application to Carotenoids and Structure – Activity Relationship. *Food Chemistry*, 135(3), 2103–2111.
- Rodrigues, D. B., Flores, É. M. M., Barin, J. S., Mercadante, A. Z., Jacob-lopes, E., & Zepka, L. Q. (2014). Production of Carotenoids from Microalgae Cultivated using Agroindustrial Wastes. *Food Research International*, 65, 144–148.
- Rodrigues, D. B., Menezes, C. R., Mercadante, A. Z., Jacob-lopes, E., & Zepka, L. Q. (2015). Bioactive Pigments from Microalgae *Phormidium autumnale*. *Food Research International*.
- Romay, C., González, R., Ledón, N., Remirez, D., & Rimbau, V. (2003). C-phycocyanin: a Biliprotein with Antioxidant, Anti-Inflammatory and Neuroprotective Effects. *Current Protein & Peptide Science*, 4(3), 207–216.
- Sánchez, M., Bernal-Castillo, J., Rozo, C., & Rodríguez, I. (2003). *Spirulina (arthrospira)*: an Edible Microorganism: a Review. Universitas Scientiarum, 8(1), 7–24.
- Schumann, R., Ha, N., Klausch, S., & Å, U. K. (2005). Chlorophyll Extraction Methods for The Quantification of Green Microalgae Colonizing Building Facades, 55, 213–222.
- Setyaningsih, I., Bintang, M., & Madina, N. (2015). Potentially Antihyperglycemic from Biomass and Phycocyanin of *Spirulina fusiformis* Voronikhin by in Vivo Test. *Procedia Chemistry*, 14, 211–215.
- Setyaningsih, I., & Saputra, A. T. (2011). Chemical Composition and Pigment Content of *Spirulina fusiformis* on the Different Harvesting Age in Fertilized Media, XIV, 63–69.
- Sharma, M. K. (2007). *Spirulina fusiformis* Provides Protection Against Mercuric Chloride Induced Oxidative Stress in Swiss albino mice, 45, 2412–2419.
- Spolaore, P., Joannis-cassan, C., Duran, E., Isambert, A., Génie, L. De, & Paris, E. C. (2006). Commercial Applications of Microalgae, 101(2), 87–96.
- Stahl, W., & Sies, H. (2003). Antioxidant activity of carotenoids. *Molecular Aspects of Medicine*, 24, 345–351.
- Stocker, R., Glazert, A. N., & Ames, B. N. (1987). Antioxidant activity of albumin-bound bilirubin. *Medical Science*, 84, 5918–5922.

- Terao, J. (1989). Antioxidant Activity of β -Carotene-Related Carotenoids in Solution, 24(7), 659–661.
- Thangam, R., Suresh, V., Asenath Princy, W., Rajkumar, M., Senthilkumar, N., Gunasekaran, P., Rengasamy, R., Anbazhagan, C., Kaveri, K., & Kannan, S. (2013). C-Phycocyanin from *Oscillatoria tenuis* Exhibited an Antioxidant and in vitro Antiproliferative Activity Through Induction of Apoptosis and G 0/G1 Cell Cycle Arrest. *Food Chemistry*, 140(1-2), 262–272.
- Troxler, R. F., Lin, S., & Offner, G. D. (1989). Heme Regulates Expression of Phycobiliprotein Photogenes in the Unicellular *Rhodophyte*, *Cyanidium caldarium*. *Biological Chemistry*, 264(34), 20596–20601.
- Usuki, R., Suzuki, T., Endo, Y., & Kaneda, T. (1984). Residual Amounts of Chlorophylls and Pheophytins in Refined Edible Oils. *JAOCS*, 61(4), 785–786.
- Vonshak, A., & Richmond, A. (1988). Mass Production of the Blue-Green Algae *Spirulina*: An Overview, 15(30), 233–247.
- Wellburn, A. R. (1994). The Spectral Determination of Chlorophylls a and b, as Well as Total Carotenoids, Using Various Solvents with Spectrophotometers of Different Resolution. *Plant Physiology*, 144(3), 307–313.
- Young, A. J., & Lowe, G. M. (2001). Minireview Antioxidant and Prooxidant Properties of Carotenoids, 385(1), 20–27.