

## DAFTAR PUSTAKA

- Ak, İ., Oğuz, M., Benas, K., & Göksan, T. (2013). Cost-effective production of *Arthrospira* (*Spirulina*) *platensis*. *Journal of Food, Agriculture and Environment*, *11*, 1521–1525.
- Ali, S. K., & Saleh, A. M. (2012). *Spirulina* - An overview. *International Journal of Pharmacy and Pharmaceutical Sciences*, *4*(SUPPL.3), 9–15.  
<https://doi.org/10.1201/9780203025901.ch14>
- Bennett A., B. L. (1973). Complementary Chromatic adaptation in a filament blue - green alga. *J. Cell Biol*, *58*, 419–435.
- Blair, M. F., Kokabian, B., & Gude, V. G. (2014). Light and growth medium effect on *Chlorella vulgaris* biomass production. *Journal of Environmental Chemical Engineering*, *2*(1), 665–674. <https://doi.org/https://doi.org/10.1016/j.jece.2013.11.005>
- Cai, W., He, H., Zhu, S., & Wang, N. (2014). Biological effect of audible sound control on mung bean (*Vigna radiate*) sprout. *BioMed Research International*, *2014*. <https://doi.org/10.1155/2014/931740>
- Cai, Weiming, Dunford, N. T., Wang, N., Zhu, S., & He, H. (2016). Audible sound treatment of the microalgae *Picochlorum oklahomensis* for enhancing biomass productivity. *Bioresource Technology*, *202*, 226–230.  
<https://doi.org/https://doi.org/10.1016/j.biortech.2015.12.019>
- Chaiklahan, R., Chirasuwan, N., & Bunnag, B. (2012). Stability of phycocyanin extracted from *Spirulina* sp.: Influence of temperature, pH and preservatives.

*Process Biochemistry*, 47(4), 659–664. <https://doi.org/10.1016/j.procbio>.

2012.01.010

Chia, S. R., Chew, K. W., Leong, H. Y., Manickam, S., Show, P. L., & Nguyen, T. H. P. (2020). Sonoprocessing-assisted solvent extraction for the recovery of pigment-protein complex from *Spirulina platensis*. *Chemical Engineering Journal*, 398, 125613. <https://doi.org/https://doi.org/10.1016/j.cej.2020.125613>

125613

Christwardana, M, & Nur, M. M. A. (2013). *Spirulina platensis* : POTENSINYA SEBAGAI BAHAN PANGAN FUNGSIONAL. *Jurnal Aplikasi Teknologi Pangan*, 2(1), 1–4.

Christwardana, Marcelinus, & Hadiyanto, H. (2017). The Effects of Audible Sound for Enhancing the Growth Rate of Microalgae *Haematococcus pluvialis* in Vegetative Stage. *HAYATI Journal of Biosciences*, 24(3), 149–155. <https://doi.org/10.1016/j.hjb.2017.08.009>

Damayanti. (2016). *Pengaruh Pemberian Suara Garengpung (Dundubia manifera) dengan Intensitas Waktu Tertentu terhadap Pertumbuhan Tanaman Jahe Merah (Zingiber officinale)*. (Universitas Sanata Dharma Yogyakarta).

Di Zhu, Lijun Xu, Xin Su, Bing Hu, Tianyi Jia, L. M. (2024). Experimental study of the effect of mechanical vibration and water velocity on bubble management in PEM electrolysis cell. *International Journal of Hydrogen Energy*, 49, 390–403. <https://doi.org/https://doi.org/10.1016/j.ijhydene>.

2023.08.063.

Dwiningrum, R., Pisacha, I. M., & Nursoleha, E. (2023). Review: Analisis

- Kualitatif dan Kuantitatif Kandungan Protein Pada Olahan Bahan Pangan. *Journal Pharmacy Aisyah*, 2(2), 60–67.
- El-Ibiari, N. N. et al. (2015). Kinetic study for growth of phormedium sp. And chlorella vulgaris. *International Journal of ChemTech Research*, 8(9), 284–289.
- Farihah, S., Yulianto, B., & Yudiati, E. (2014). PENENTUAN KANDUNGAN PIGMEN FIKOBILIPROTEIN EKSTRAK Spirulina platensis DENGAN TEKNIK EKSTRAKSI BERBEDA DAN UJI TOKSISITAS METODE BSLT. *Journal Of Marine Research*, 140–146. <http://ejournal-s1.undip.ac.id/index.php/jmr140>
- Firdayani, F., & Winarni Agustini, T. (2015). Ekstraksi Senyawa BIOaktif sebagai Antioksidan Alami Spirulina Platensis Segar dengan Pelarut yang Berbeda. *Jurnal Pengolahan Hasil Perikanan Indonesia*, 18(1), 28–37. <https://doi.org/10.17844/jphpi.2015.18.1.28>
- Frongia, F., Forti, L., & Arru, L. (2020). Sound perception and its effects in plants and algae. *Plant Signaling and Behavior*, 15(12), 1–7. <https://doi.org/10.1080/15592324.2020.1828674>
- Gao, X., Sun, T., Pei, G., Chen, L., & Zhang, W. (2016). Cyanobacterial chassis engineering for enhancing production of biofuels and chemicals. *Applied Microbiology and Biotechnology*, 100(8), 3401–3413. <https://doi.org/10.1007/s00253-016-7374-2>
- Graves, J. D., & Krebs, E. G. (1999). Protein Phosphorylation and Signal Transduction. *Pharmacology & Therapeutics*, 82(2), 111–121.

[https://doi.org/https://doi.org/10.1016/S0163-7258\(98\)00056-4](https://doi.org/https://doi.org/10.1016/S0163-7258(98)00056-4)

Hamidi, M., Mohammadi, A., Mashhadi, H., & Mahmoudnia, F. (2023). Evaluation of effective environmental parameters on lipid, protein and beta-carotene production in *Spirulina platensis* microalga. *Results in Engineering*, 18, 101102. <https://doi.org/https://doi.org/10.1016/j.rineng.2023.101102>

Hassanien, R. H. E., Li, B. M., & Hou, T. Z. (2020). Dual effect of audible sound technology on the growth and endogenous hormones of strawberry. *Agricultural Engineering International: CIGR Journal*, 22(3), 262–273.

Hidayati, N., Agustini, N. W. S., Apriastini, M., & Margaretha, C. (2020). POTENSI PIGMEN FIKOBILIPROTEIN SEBAGAI AGEN ANTIOKSIDAN DAN TOKSISITAS HAYATI DARI SIANOBACTERIA *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>

Hirahashi, T., Matsumoto, M., Hazeki, K., Saeki, Y., Ui, M., & Seya, T. (2002). Activation of the human innate immune system by *Spirulina*: augmentation of interferon production and NK cytotoxicity by oral administration of hot water extract of *Spirulina platensis*. *International Immunopharmacology*, 2(4), 423–434. [https://doi.org/10.1016/s1567-5769\(01\)00166-7](https://doi.org/10.1016/s1567-5769(01)00166-7)

Hongbo, S., Biao, L., Bochu, W., Kun, T., & Yilong, L. (2008). A study on differentially expressed gene screening of *Chrysanthemum* plants under sound stress. *Comptes Rendus - Biologies*, 331(5), 329–333. <https://doi.org/10.1016/j.crv.2008.02.007>

- Jiang, M., Hong, K., Mao, Y., Ma, H., Chen, T., & Wang, Z. (2022). Natural 5-Aminolevulinic Acid: Sources, Biosynthesis, Detection and Applications. *Frontiers in Bioengineering and Biotechnology*, *10*(February), 1–17. <https://doi.org/10.3389/fbioe.2022.841443>
- Kawaroe, M., PrartonoP, T., SunuddinP, A., Wulan SariP, D., & AugustineP, D. (2009). Specific Growth Rate of *Chlorella* sp. And *Dunaliella* sp. According to Different Concentration of Nutrient and Photoperiod. *Jurnal Ilmu-Ilmu Perairan Dan Perikanan Indonesia*, *16*(1), 73–77.
- Keramati, A., Pajoum Shariati, F., Tavakoli, O., Akbari, Z., & Rezaei, M. (2021a). The effect of audible sound frequency on the growth and beta-carotene production of *Dunaliella salina*. *South African Journal of Botany*, *141*, 373–382. <https://doi.org/10.1016/j.sajb.2021.05.026>
- Keramati, A., Pajoum Shariati, F., Tavakoli, O., Akbari, Z., & Rezaei, M. (2021b). The effect of audible sound frequency on the growth and beta-carotene production of *Dunaliella salina*. *South African Journal of Botany*, *141*, 373–382. <https://doi.org/10.1016/j.sajb.2021.05.026>
- Kothari, V. (2017). Audible Sound in Form of Music Can Influence Microbial Growth, Metabolism and Antibiotic Susceptibility. *Journal of Applied Biotechnology & Bioengineering*, *2*(6), 212–219. <https://doi.org/10.15406/jabb.2017.02.00048>
- Kwak, D., Combriat, T., Wang, C., Scholz, H., Danielsen, A., & Jensenius, A. R. (2022). Music for Cells? A Systematic Review of Studies Investigating the Effects of Audible Sound Played Through Speaker-Based Systems on Cell

Cultures. *Music and Science*, 5, 1–15. [https://doi.org/10.1177/](https://doi.org/10.1177/20592043221080965)

20592043221080965

Larsen, P., & Gilbert, J. (2013). Microbial Bebop: Creating Music from Complex Dynamics in Microbial Ecology. *PLoS ONE*, 8(3), 1–4. <https://doi.org/10.1371/journal.pone.0058119>

Lehninger, L. A. (1982). *Dasar - dasar Biokimia*. PT. Gelora Aksara Pratama.

Lim, H. R., Khoo, K. S., Chew, K. W., Chang, C.-K., Munawaroh, H. S. H., Kumar, P. S., Huy, N. D., & Show, P. L. (2021). Perspective of Spirulina culture with wastewater into a sustainable circular bioeconomy. *Environmental Pollution*, 284, 117492. <https://doi.org/https://doi.org/10.1016/j.envpol.2021.117492>

Liu, X., Li, J., Zhang, L., Huang, X., Farooq, U., Pang, N., Zhou, W., Qi, L., Xu, L., Niu, L., & Meng, L. (2020). Cell lysis based on an oscillating microbubble array. *Micromachines*, 11(3). <https://doi.org/10.3390/mi11030288>

Liu Y, Liu X, Cui Y, Y. W. (2022). Ultrasound for microalgal cell disruption and product extraction: A review. *Ultrason Sonochem*. <https://doi.org/10.1016/j.ultsonch.2022.106054>

Ma, R., Wang, B., Chua, E. T., Zhao, X., Lu, K., Ho, S. H., Shi, X., Liu, L., Xie, Y., Lu, Y., & Chen, J. (2020). Comprehensive utilization of marine microalgae for enhanced co-production of multiple compounds. *Marine Drugs*, 18(9). <https://doi.org/10.3390/md18090467>

María P. Elizalde-González, Markus Hutfließ, K. H. (1996). Retention index system, adsorption characteristics, and structure correlations of polycyclic aromatic hydrocarbons in fuels. *Journal of Separation Science*, 19(6), 345–

352. <https://doi.org/https://doi.org/10.1002/jhrc.1240190608>

Marrez, D. A., Naguib, M. M., Sultan, Y., Daw, Z. Y., & Higazy, A. M. (2014).

Evaluation of chemical composition for *Spirulina platensis* in different culture media Research Journal of Pharmaceutical , Biological and Chemical Sciences

Evaluation of Chemical Composition for *Spirulina platensis* in Different Culture Media . *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 5(4), 1162–1171.

Nur, A., & Yamamoto, Z. (2022). Saliva sebagai sumber DNA genom manusia.

*Jurnal Kedokteran Syiah Kuala*, 22(2), 126–134. <https://doi.org/10.24815/jks.v22i2.23266>

Nur, M. M. . (2014). Potensi Mikroalga Sebagai Sumber Pangan Fungsional di

Indonesia (overview). *Jurnal Eksergi*, 11(2), 1–6.

Ortega, J. K. E. (2023). Theoretical Analyses of Turgor Pressure during Stress

Relaxation and Water Uptake, and after Changes in Expansive Growth Rate When Water Uptake Is Normal and Reduced. *Plants*, 12(9).

<https://doi.org/10.3390/plants12091891>

Palazzo, A. F. and Gregory, T. R. (2014). The Case for Junk DNA. *PLoS Genetics*,

10(5), 1–8. <https://doi.org/10.1371/journal.pgen.1004351>

Pez Jaeschke, D., Rocha Teixeira, I., Damasceno Ferreira Marczak, L., &

Domeneghini Mercali, G. (2021). Phycocyanin from *Spirulina*: A review of extraction methods and stability. *Food Research International*, 143(March).

<https://doi.org/10.1016/j.foodres.2021.110314>

Piñero Estrada, J. E., Bermejo Bescós, P., & Villar del Fresno, A. M. (2001).

- Antioxidant activity of different fractions of *Spirulina platensis* protean extract. *Farmaco (Societa Chimica Italiana: 1989)*, 56(5–7), 497–500.  
[https://doi.org/10.1016/s0014-827x\(01\)01084-9](https://doi.org/10.1016/s0014-827x(01)01084-9)
- Pirenantyo, P., & Limantara, L. (2008). Pigmen *Spirulina* sebagai Senyawa Antikanker. In *Indonesian Journal of Cancer* (Vol. 2, Issue 4).  
<https://doi.org/10.33371/ijoc.v2i4.61>
- Prasanna R., A. Sood, P. Jaiswal, S. Nayak, V. Gupta, V. Chaudhary, M. Joshi, & C. N. (2010). Rediscovering cyanobacteria as valuable sources of bioactive compounds. *Appl. Biochem Microbiol*, 46(2), 119–134.
- Purnamayati, L., Dewi, E. N., & Kurniasih, R. A. (2018). Phycocyanin stability in microcapsules processed by spray drying method using different inlet temperature. *IOP Conference Series: Earth and Environmental Science*, 116(1). <https://doi.org/10.1088/1755-1315/116/1/012076>
- Ragai K. Ibrahim, I. M. (2000). *Siroheme*.
- Renata Nunes Pereira, dkk. (2023). Impact of ultrasound and electric fields on microalgae growth: a comprehensive review. *Brazilian Journal of Chemical Engineering*, 40(3), 607–622. <https://doi.org/10.1007/s43153-022-00281-z>
- Riadi, M. (2016). Pertumbuhan Mikroorganisme. *Kaji Pustaka*, 1–47.
- Risna, Y. K., Sri-Harimurti, S.-H., Wihandoyo, W., & Widodo, W. (2022). Kurva Pertumbuhan Isolat Bakteri Asam Laktat dari Saluran Pencernaan Itik Lokal Asal Aceh. *Jurnal Peternakan Indonesia (Indonesian Journal of Animal Science)*, 24(1), 1. <https://doi.org/10.25077/jpi.24.1.1-7.2022>
- Romay C, Armesto J, Ramirez D, Gonzalez R, L. N. and G. I. (1998). Antioxidant

- and antiinflammatory properties of c-phycoyanin from blue-green algae. *Inflammatory Research*, 47(1), 36–41.
- Roy Choudhary, A., Karmakar, R., Kundu, K., & Dahake, V. R. (2011). “Algal” biodiesel: Future prospects and problems. *Water and Energy International*, 68(11), 44–51.
- Saleh, a. M., Dhar, D. W., & Singh, P. K. (2011). Comparative pigmente profiles of different Spirulina strains. *Research in Biotechnology*, 2 (2)(2), 67–74. [www.researchinbiotechnology.com](http://www.researchinbiotechnology.com)
- Sanchez A.M., B.J. Caltillo, C. Rozo, & I. R. (2003). Spirulina (Arthrospira) : AN edible microorganism. *A Rev. Universitas Scientiarum*, 8(1), 1–16.
- Sapala A, Runions A, Routier-Kierzkowska AL, Das Gupta M, Hong L, Hofhuis H, Verger S, Mosca G, Li CB, H. A. et al. (2018). *Why plants make puzzle cells, and how their shape emerges*. [https://doi.org/eLife 7: e32794](https://doi.org/eLife%207:e32794)
- Sarita, R., Fitriana, A., & Prabandari, R. (2021). Perbandingan Kadar Protein pada Kacang Hijau dan Sari Kacang Hijau yang Diperjualbelikan dengan Metode Spektrofotometri UV-Vis. *Seminar Nasional Penelitian Dan Pengabdian Kepada Masyarakat*, 238–245.
- Selvaraj, C., Dinesh, D. C., Rajaram, K., Sundaresan, S., & Singh, S. K. (2023). *Chapter 3 - Macromolecular chemistry: An introduction* (M. E. Thomas, J. Thomas, S. Thomas, & H. B. T.-I. silico A. to M. C. Kornweitz (eds.); pp. 71–128). Elsevier. [https://doi.org/https://doi.org/10.1016/B978-0-323-90995-2.00007-2](https://doi.org/10.1016/B978-0-323-90995-2.00007-2)
- Sengupta, S., & Bhowal, J. (2017). Optimization of ingredient and processing

parameter for the production of *Spirulina platensis* incorporated soy yogurt using response surface methodology. *Journal of Microbiology, Biotechnology and Food Sciences*, 6(4), 1081–1085. <https://doi.org/10.15414/jmbfs>.

2017.6.4.1081-1085

Shanthi, G., Premalatha, M., & Anantharaman, N. (2021). Potential utilization of fish waste for the sustainable production of microalgae rich in renewable protein and phycocyanin-*Arthrospira platensis*/Spirulina. *Journal of Cleaner Production*, 294, 126106. <https://doi.org/https://doi.org/10.1016/j.jclepro>.

2021.126106

Sharah, A., Karnila, R., & Desmelati. (2015). Pembuatan Kurva Pertumbuhan Bakteri Asam Laktat yang di Isolasi dari Ikan Peda Kembang (*Rastrelliger* sp.). *Jom*, 2(2), 1–8.

Silveira, S. T., Burkert, J., Costa, J. A., Burkert, C., & Kalil, S. J. (2007). Optimization of phycocyanin extraction from *Spirulina platensis* using factorial design. *Bioresource Technology*, 98, 1629–1634. <https://doi.org/10.1016/j.biortech.2006.05.050>

Slamet Sudarmadji, Bambang Haryono, S. (1984). *Prosedur Analisa Untuk Bahan Makanan dan Pertanian* (3rd ed.). Liberty Yogyakarta.

Stoilov, A., Muncan, J., Tsuchimoto, K., Teruyaki, N., Shigeoka, S., & Tsenkova, R. (2022). Pilot Aquaphotomic Study of the Effects of Audible Sound on Water Molecular Structure. *Molecules*, 27(19). <https://doi.org/10.3390/molecules27196332>

Supu, I., Akhiruddin, & Setyaningsih, I. (2013). STUDI FLUORESENS

FIKOSIANIN DARI MIKROALGA *Spirulina platensis* DAN FOTSENSITISASI NANOPARTIKEL TiO<sub>2</sub> ANATASE. *Jurnal Biofisika*, 9(1), 37–47.

Suroso, A.Y., A. P. K. (2003). *Ensiklopedia Sains dan Kehidupan*. CV Tarity Samudra Berlian : Jakarta.

Susanto, M. N., Al-Baarri, A. N., & Legowo, A. M. (2022). Deteksi Enzim Peroksidase dari Lobak Putih (*Raphanus sativus* L.) Berdasarkan Kadar Proteinnya. *Jurnal Teknologi Pangan*, 5(1), 32–37. <https://doi.org/10.14710/jtp.2021.20323>

Taiz, L., & Zeiger, E. (2002). *Plant Physiology*. Sunderland: Inc. Sinauer Associates., 3rd ed.

Wahyudi, D., & Nur, M. (2022). Efek Paparan Frekuensi Sumber Suara terhadap Pertumbuhan Mawar (*Rosa hybrida*) pada Berbagai Media Tanam The Effects of Sound Frequency Stimulation to the Growth of Rose (*Rosa hybrida*) at Different Plant Media. *Jurnal Agroteknologi Agribisnis Dan Akuakultur*, 2(2), 35–44.

Watson, J. D., Baker, T. A., Bell, S. P., Gann, A., Levine, M., & Losick, R. (2013). *Molecular Biology of the Gene*. Pearson Education. <https://books.google.co.id/books?id=aRUtAAAAQBAJ>

Winarno, G. (2004). Kimia Pangan dan Gizi. In *PT. Gramedia Pustaka*.

Yuan, D., Yao, M., Wang, L., Li, Y., Gong, Y., & Hu, Q. (2019). Effect of recycling the culture medium on biodiversity and population dynamics of bio-contaminants in *Spirulina platensis* mass culture systems. *Algal Research*, 44,

101718. <https://doi.org/https://doi.org/10.1016/j.algal.2019.101718>

Zheng, J., Inoguchi, T., Sasaki, S., Maeda, Y., Mccarty, M. F., Fujii, M., Ikeda, N., Kobayashi, K., Sonoda, N., & Takayanagi, R. (2013). Phycocyanin and phycocyanobilin from spirulina platensis protect against diabetic nephropathy by inhibiting oxidative stress. *American Journal of Physiology - Regulatory Integrative and Comparative Physiology*, 304(2).  
<https://doi.org/10.1152/ajpregu.00648.2011>

Zhou ZP, Liu LN, Chen XL, Wang JX, Chen M, Zhang YZ, et al. (2005). Factors that effect antioxidant activity of c-phycocyanins from spirulina platensis. *J Food Biochem*, 29(3), 13–22.