

## DAFTAR PUSTAKA

- de Boer, K., Moheimani, N.R., Borowitzka, M.A., and Bahri, P.A., 2012, Extraction and Conversion Pathways for Microalgae to Biodiesel: A Review Focused on Energy Consumption, *J. Appl. Phycol.*, 24(6), 1681-1698.
- de Castro, M.D.L. and García-Ayuso, L.E., 1998, Soxhlet Extraction of Solid Materials: An Outdated Technique with a Promising Innovative Future, *Anal. Chim. Acta*, 369(1), 1-10.
- e Silva, A.d., Moreira, L.M., de Magalhães, W.T., Farias, W.R.L., Rocha, M.V.P., and Bastos, A.K.P., 2017, Extraction of Biomolecules from *Spirulina platensis* Using Non-conventional Processes and Harmless Solvents, *J. Environ. Chem. Eng.*, 5(3), 2101-2106.
- e Silva, A.d., de Magalhães, W.T., Moreira, L.M., Rocha, M.V.P., and Bastos, A.K.P., 2018, Microwave-assisted Extraction of Polysaccharides from *Arthrospira (Spirulina) platensis* Using the Concept of Green Chemistry, *Algal Res.*, 35(1), 178-184.
- İlter, I., Akyıl, S., Demirel, Z., Koç, M., Conk-Dalay, M., and Kaymak-Ertekin, F., 2018, Optimization of Phycocyanin Extraction from *Spirulina platensis* Using Different Techniques, *J. Food Compos. Anal.*, 70(1), 78-88.
- Aftari, R.V., Rezaei, K., Banandi, A.R., and Mortazavi, A., 2017, Antioxiandt Activity Optimization of *Spirulina platensis* C-phycocyanin Obtained by Freeze-thaw, Microwave-assisted, and Ultrasound-assisted Extraction Methods, *Qual. Assur. Saf. Crop.*, 9(1), 1-9.
- Aftari, R.V., Rezaei, K., Mortazavi, A., and Banandi, A.R., 2015, The Optimized Concentration and Purity of *Spirulina platensis* C-phycocyanin: A Comparative Study on Microwave-assisted and Ultrasound-assisted Extraction Methods, *J. Food Process. Preserv.*, 39(6), 3080-3091.
- Ali, S.K. and Saleh, A.M., 2012, Spirulina - An Overview, *Int. J. Pharm. Pharm. Sci.*, 4(3), 9-15.
- Anastassiades, J.D., Perea, E., Poezevara, A., and Kaminsky, D., 1992, *Solid-state Microwave Generation*, Chapman and Hall (Springer), London.
- Anonim, 2012, *Penduduk Indonesia Menurut Provinsi (1971, 1980, 1990, 1995, 2000, dan 2010)*, [www.bps.go.id](http://www.bps.go.id), diakses tanggal 20 Februari 2019.
- Anonim, 2016, *GRAS Determination of DHA Algal Oil for Use in Infant Formula*, U.S. Food and Drug Administration, Maryland.

- Anonim, 2017, *Volume Ekspor dan Impor Migas (1996-2017)*, [www.bps.go.id](http://www.bps.go.id), diakses tanggal 4 Maret 2019.
- Baumgartner, T.R.d., Burak, M., Augusto, J., Baumgartner, D., Zanin, G.M., and Arroyo, P.A., 2013, Biomass Production and Ester Synthesis by *In Situ* Transesterification/Esterification Using the Microalgae *Spirulina platensis*, *Int. H. Chem. Eng.*, 1(1), 1-7.
- Bhattacharya, M. and Basak, T., 2016, A Review on the Susceptor Assisted Microwave Processing of Materials, *Energy*, 97(1), 306-338.
- Bilecka, I. and Niederberger, M., 2010, Microwave Chemistry for Inorganic Nanomaterials Synthesis, *Nanoscale*, 2(8), 1358-1374.
- Biller, P., Riley, R., and Ross, A.B., 2011, Catalytic Hydrothermal Processing of Microalgae: Decomposition and Upgrading of Lipids, *Bioresour. Technol.*, 102(7), 4841-4848.
- Biller, P. and Ross, A.B., 2011, Potential Yields and Properties of Oil from the Hydrothermal Liquefaction of Microalgae with Different Biochemical Content, *Bioresour. Technol.*, 102(1), 215-225.
- Björklund, E. and Nilsson, T., 2000, Pressurized Liquid Extraction of Persistent Organic Pollutants in Environmental Analysis, *Trends Anal. Chem.*, 19(7), 434-445.
- Brandt, A., Gräsvik, J., Hallett, J.P., and Welton, T., 2013, Deconstruction of Lignocellulosic Biomass with Ionic Liquids, *Green Chem.*, 15(3), 550-583.
- Brennan, L. and Owende, P., 2009, Biofuels from Microalgae - A Review of Technologies for Production, Processing, and Extractions of Biofuels and Co-products, *Renew. Sustain. Energy Rev.*, 14(2), 557-577.
- Bucy, H.B., Baumgardner, M.E., and Marchese, A.J., 2012, Chemical and Physical Properties of Algal Methyl Ester Biodiesel Containing Varying Levels of Methyl Eicosapentaenoate and Methyl Docosahexaenoate, *Algal Res.*, 1(1), 57-69.
- Budarin, V.L., Shuttleworth, P.S., M., Farmer, T.J., Gronnow, M.J., Pfaltzgraff, L., Macquarrie, D.J., and Clark, J.H., 2014, The Potential of Microwave Technology for the Recovery, Synthesis, and Manufacturing of Chemicals from Bio-wastes, *Catal. Today*, 239(1), 80-89.
- Burkert, R., Helberg, H.W., and Von Schütz, J.U., 1993, Longitudinal and Transverse Conductivity in (2,5-Me<sub>2</sub>-DCNOI)<sub>2</sub> Cu Fibers, *Synth. Met.*, 56(1), 2519-2524.
- Burt, S., 2004, Essential Oils: Their Antibacterial Properties and Potential Applications in Foods - A Review, *Int. J. Food Microbiol.*, 94(3), 223-253.

- Cardozo, K.H.M., Guaratini, T., Barros, M.P., Falcão, V.R., Tonon, A.P., Lopes, N.P., Campos, S., Torres, M.A., Souza, A.O., Colepicolo, P., and Pinto, E., 2007, Metabolites from Algae with Economical Impact, *Comp. Biochem. Physiol. C*, 146(1), 60-78.
- Chaiklahan, R., Chirasuwan, N., Loha, V., and Bunnag, B., 2008, Lipid and Fatty Acids Extraction from the *Cyanobacterium Spirulina*, *Sci. Asia*, 34(1), 299-305.
- Chandra, R., Arora, S., Rohit, M.V, and Mohan, S.V., 2015, Lipid Metabolism in Response to Individual Short Chain Fatty Acids During Mixotrophic Mode of Microalgal Cultivation: Influence on Biodiesel Saturation and Protein Profile, *Bioresour. Technol.*, 188(1), 169-176.
- Chemat, F., Lucchesi, M.E., Smadja, J., Favretto, L., Colnaghi, G., and Visinoni, F., 2006, Microwave Accelerated Steam Distillation of Essential Oil from Lavender: A Rapid, Clean, and Environmentally Friendly Approach, *Anal. Chim. Acta*, 555(1), 157-160.
- Chemat, F., Vian, M.A., and Cravotto, G., 2012, Green Extraction of Natural Products: Concept and Principles, *Int. J. Mol.*, 13(7), 8615-8627.
- Chen, L., Song, D., Tian, Y., Ding, L., Yu, A., and Zhang, H., 2008, Application of On-line Microwave Sample-preparation Techniques, *Trends Anal. Chem.*, 27(2), 151-159.
- Cheng, J., Huang, R., Yu, T., Li, T., Zhou, J., and Cen, K., 2014, Biodiesel Production from Lipids in Wet Microalgae with Microwave Irradiation and Bio-crude Production from Algal Residue through Hydrothermal Liquefaction, *Bioresour. Technol.*, 151(1), 415-418.
- Choi, S., Oh, Y., Jeong, M., Kim, S.W., Lee, J., and Park, J., 2014, Effects of Ionic Liquid Mixtures on Lipid Extraction from *Chlorella vulgaris*, *Renew. Energy*, 65(1), 169-174.
- Ciesla, Ł. and Moaddel, R., 2016, Comparison of Analytical Techniques for the Identification of Bioactive Compounds from Natural Products, *Nat. Prod. Rep.*, 33(10), 1131-1145.
- Concas, A., Pisu, M., and Cao, G., 2015, Disruption of Microalgal Cells for Lipid Extraction through Fenton Reaction: Modeling of Experiments and Remarks on its Effect on Lipids Composition, *Chem. Eng. J.*, 263(1), 392-401.
- Cuéllar-Bermúdez, S.P., Aguilar-Hernández, I., Cárdenas-Chavez, D.L., Ornelas-Soto, N., Romero-Ogawa, M.A., and Parra-Saldívar, R., 2014a, Extraction and Purification of High-value Metabolites from Microalgae: Essential Lipids, Astaxanthin, and Phycobiliproteins, *Microb. Biotechnol.*, 8(2), 190-209.

- Cuéllar-Bermúdez, S.P., García-Pérez, J.S., Rittmann, B.E., and Parra-Saldívar, R., 2014b, Photosynthetic Bioenergy Utilizing CO<sub>2</sub>: An Approach on Flue Gases Utilization for Third Generation Biofuels, *J. Clean. Prod.*, 98(1), 53-65.
- Dean, J.R., Fitzpatrick, L., and Heslop, C., 1999. Dalam Handley, A.J., *Extraction Methods in Organic Analysis*, Sheffield Academic Press (Wiley-Blackwell), Sheffield.
- Deka, D.C. and Basumatary, S., 2011, High Quality Biodiesel from Yellow Oleander (*Thevetia peruviana*) Seed Oil, *Biomass Bioenerg.*, 35(5), 1797-1803.
- Demirbas, A. and Demirbas, M.F., 2011, Importance of Algae Oil as a Source of Biodiesel, *Energy Convers. Manag.*, 52(1), 163-170.
- Deniz, I., Ozen, M.O., and Yesil-Celiktas, O., 2015, Supercritical Fluid Extraction of Phycocyanin and Investigation of Cytotoxicity on Human Lung Cancer Cells, *J. Supercrit. Fluids*, 108(1), 13-18.
- Dixit, R.B. and Suseela, M.R., 2013, *Cyanobacteria*: Potential Candidates for Drug Discovery, *Antonie Leeuwenhoek*, 103(5), 947-961.
- Duangsee, R., Phoopat, N., and Ningsanond, S., 2009, Phycocyanin Extraction from *Spirulina platensis* and Extract Stability Under Various pH and Temperature, *A. J. Food Ag-Ind.*, 2(4), 819-826.
- Dunn, O.R. and Knothe, G., Alternative Diesel Fuels from Vegetable Oils and Animal Fats, *J. Oleo Sci.*, 5(50), 415-426.
- Encinar, J.M., González, J.F., and Rodríguez-Reinares, A., 2007, Ethanolysis of Used Frying Oil: Biodiesel Preparation and Characterization, *Fuel Process. Technol.*, 88(5), 513-522.
- Eskilsson, C.S. and Björklund, E., 2000, Analytical-scale Microwave-assisted Extraction, *J. Chromatogr. A*, 902(1), 227-250.
- Esquivel-Hernández, D.A., López, V.H., Rodríguez-Rodríguez, J., Alemán-Nava, G.S., Cuéllar-Bermúdez, S.P., Rostro-Alanis, M., and Parra-Saldívar, R., 2016, Supercritical Carbon Dioxide and Microwave-assisted Extraction of Functional Lipophilic Compounds from *Arthrospira platensis*, *Int. J. Mol. Sci.*, 17(658), 1-11.
- Esquivel-Hernández, D.A., Rodríguez-Rodríguez, J., Rostro-Alanis, M., Cuéllar-Bermúdez, S.P., Mancera-Andrade, E.I., Núñez-Echevarría, J.E., García-Pérez, J.S., Chandra, R., and Parra-Saldívar, R., 2017, Advancement of Green Process through Microwave-assisted Extraction of Bioactive Metabolites from *Arthrospira platensis* and Bioactivity Evaluation, *Bioresour. Technol.*, 224(1), 618-629.

- Fujita, K., Kobayashi, D., Nakamura, N., and Ohno, H., 2013, Enzyme and Microbial Technology Direct Dissolution of Wet and Saliferous Marine Microalgae by Polar Ionic Liquids without Heating, *Enzyme Microb. Technol.*, 52(3), 199-202.
- Guldhe, A., Singh, B., Rawat, I., Ramluckan, K., and Bux, F., 2014, Efficacy of Drying and Cell Disruption Techniques on Lipid Recovery from Microalgae for Biodiesel Production, *Fuel*, 128(1), 46-52.
- Halim, R., Gladman, B., Andquah, M.K., and Webley, P.A., 2011, Oil Extraction from Microalgae for Biodiesel Production, *Bioresour. Technol.*, 102(1), 178-185.
- Halim, R., Rupasinghe, T.W.T., Tull, D.L., and Webley, P.A., 2013, Mechanical Cell Disruption for Lipid Extraction from Microalgal Biomass, *Bioresour. Technol.*, 140(1), 53-63.
- Haruna, I., Fatima, M., and Ndam, V., 2015, Effect of High Free Fatty Acid Feedstock on Methyl Esters Yield Using Bulk Calcium Oxide Catalyst, *Int. J. Sci. Technol. Res.*, 4(3), 186-189.
- Hingu, S.M., Gogate, P.R., and Rathod, V.K., 2010, Synthesis of Biodiesel from Waste Cooking Oil Using Sonochemical Reactors, *Ultrason. Sonochemistry*, 17(5), 827-832.
- Hoekman, S.K., Broch, A., Robbins, C., Cenicerros, E., and Natarajan, M., 2012, Review of Biodiesel Composition, Properties, and Specifications, *Renew. Sustain. Energy Rev.*, 16(1), 143-169.
- Hoseini, S.M., Khosravi-Darani, K., and Mozafari, M.R., 2013, Nutritional and Medical Applications of Spirulina Microalgae, *Mini-Rev. Med. Chem.*, 13(8), 1231-1237.
- Huie, C.W., 2002, A Review of Modern Sample-preparation Techniques for the Extraction and Analysis of Medicinal Plants, *Anal. Bioanal. Chem.*, 373(1), 23-30.
- Ibañez, E., Herrero, M., Mendiola, J.A., and Castro-Puyana, M., 2012, Extraction and Characterization of Bioactive Compounds with Health Benefits from Marine Resources: Macro and Micro Algae, *Cyanobacteria*, and Invertebrates, *Marine Bioact. Compd.*, 1(1), 55-98.
- Iqbal, J. and Theegala, C., 2013, Microwave Assisted Lipid Extraction from Microalgae Using Biodiesel as Co-solvent. *Algal Res.*, 2(1), 34-42.
- Jassie, L., Revesz, R., Kierstead, T., Hasty, E., and Metz, S., 1997, *Sample Preparation and Applications*. Dalam Kingston, H.M. and Haswell, S.J., *Microwave-enhanced Chemistry*, 569, American Chemical Society, Washington.
- Jeyakodi, S., Krishnakumar, A., and Chellappan, D.K., 2018, Beta Carotene -

Therapeutic Potential and Strategies to Enhance its Bioavailability, *Nutri. Food Sci. Int. J.*, 7(4), 1-7.

Jitputti, J., Kitiyanan, B., Rangsunvigit, P., Bunyakiat, K., Attanatho, L., and Jenvanitpanjakul, P., 2006, Transesterification of Crude Palm Kernel Oil and Crude Coconut Oil by Different Solid Catalysts, *Chem. Eng. J.*, 116(1), 61-66.

Jonker, J.G.G. and Faaij, A.P.C., 2013, Techno-economic Assessment of Microalgae as Feedstock for Renewable Bio-energy Production, *Appl. Energy*, 102(1), 461-475.

Kerem, Z., German-Shashoua, H., and Yarden, O., 2005, Microwave-assisted Extraction of Bioactive Saponins from Chickpea (*Cicer arietinum L.*), *J. Sci. Food Agric.*, 85(3), 406-412.

Kingston, H.M. and Jassie, L.B., 1988, *Introduction to Microwave Sample Preparation*, American Chemical Society, Washington.

Kumari, D.J, Babitha, B., Jaffar, S.K., Prasad, M.G., Ibrahim, M.D., and Khan, M.D.S.A., 2011, Potential Health Benefits of *Spirulina platensis*, *Int. J. Adv. Pharm. Sci.*, (2)2, 417-422.

Laskar, I.B., Rajkumari, K., Gupta, R., Chatterjee, S., Paul, B., and Rokhum, L., 2018, Waste Snail Shell Derived Heterogeneous Catalyst for Biodiesel Production by the Transesterification of Soybean Oil, *RSC Adv.*, 8(36), 20131-20142.

Lee, A.K., Lewis, D.M., and Ashman, P.J., 2012, Disruption of Microalgal Cells for the Extraction of Lipids for Biofuels: Processes and Specific Energy Requirements, *Biomass Bioenerg.*, 46(1), 89-101.

Lee, J., Yoo, C., Jun, S., Ahn, C., and Oh, H., 2010, Comparison of Several Methods for Effective Lipid Extraction from Microalgae, *Bioresour. Technol.*, 101(1), S75-S77.

Leema, J.T.M., Kirubakaran, R., Vinithkumar, N. V., Dheenan, P.S., and Karthikayulu, S., 2010, High Value Pigment Production from *Arthrospira (Spirulina) platensis* Cultured in Seawater, *Bioresour. Technol.*, 101(23), 9221-9227.

Leung, D.Y.C. and Guo, Y., 2006, Transesterification of Neat and Used Frying Oil: Optimization for Biodiesel Production, *Fuel Process. Technol.*, 87(10), 883-890.

Li, Z., Guo, S., and Li, L., 2003, Bioeffects of Selenite on the Growth of *Spirulina platensis* and its Biotransformation, *Bioresour. Technol.*, 89(2), 171-176.

Lucchesi, M.E., Smadja, J., Bradshaw, S., Louw, W., and Chemat, F., 2007, Solvent Free Microwave Extraction of *Elletaria cardamomum L.*: A Multivariate Study of a New Technique for the Extraction of Essential Oil, *J. Food Eng.*, 79(3), 1079-1086.

- Luque-García, J.L. and de Castro, M.D.L., 2003, Where is Microwave-based Analytical Equipment for Solid Sample Pre-treatment Going?, *Trends Anal. Chem.*, 2(22), 90-98.
- Luque-García, J.L. and de Castro, M.D.L., 2004, Focused Microwave-assisted Soxhlet Extraction: Devices and Applications, *Talanta*, 64(3), 571-577.
- Luque, R., 2010, Algal Biofuels: The Eternal Promise?, *Energy Environ. Sci.*, 3(3), 254-257.
- Ma, D. and Milford, A.H., 1999, Biodiesel Production: A Review, *Bioresour. Technol.*, 70(1), 1-15.
- Martínez-Palou, R., 2010, Microwave-assisted Synthesis Using Ionic Liquids, *Mol. Divers.*, 14(1), 3-25.
- Martínez, J.M., Luengo, E., Saldaña, G., Álvarez, I., and Raso, J., 2016, C-phycoyanin Extraction Assisted by Pulsed Electric Field from *Arthrospira platensis*, *Food Res. Int.*, 99(1), 1042-1047.
- Mata, T.M., Martins, A.A., and Caetano, N.S., 2010, Microalgae for Biodiesel Production and Other Applications: A Review, *Renew. Sustain. Energy Rev.*, 1(14), 217-232.
- McQuarrie, D.A. and Simon, J.D., 1997, *Physical Chemistry: A Molecular Approach*, University Science Books, California.
- Mohan, S.V., Rohit, M.V, Chiranjeevi, P., Chandra, R., and Navaneeth, B., 2014, Heterotrophic Microalgae Cultivation to Synergize Biodiesel Production with Waste Remediation: Progress and Perspectives, *Bioresour. Technol.*, 184(1), 169-178.
- Naik, S.N., Goud, V.V, Rout, P.K., and Dalai, A.K., 2010, Production of First and Second Generation Biofuels: A Comprehensive Review, *Renew. Sustain. Energy Rev.*, 14(2), 578-597.
- Nautiyal, P., Subramanian, K.A., and Dastidar, M.G., 2014, Production and Characterization of Biodiesel from Algae, *Fuel Process. Technol.*, 120(1), 79-88.
- Nuhu, A.A., 2013, Spirulina (Arthrospira): An Important Source of Nutritional and Medicinal Compounds, *J. Mar. Biol.*, 1(1), 1-8.
- Oktavitri, N.I., Pratiwi, W.B., Purnamasari, I., Hayati, M., Fitrianingtyas, M.R., and Hadinnata, S., 2019, Anaerobic Digestion of Slaughterhouse Wastewater: CO<sub>2</sub> Capture of Biogas Using *Chlorella vulgaris*, *Indones. J. Chem.*, 19(1), 1-8.

- Osborn, H.T. and Akoh, C.C., 2002, Structured Lipids - Novel Fats with Medical, Nutraceutical, and Food Applications, *Compr. Rev. Food Sci. Food Saf.*, 1(3), 110-120.
- Ouanji, F., Kacimi, M., Ziyad, M., Puleo, F., and Liotta, L.F., 2016, Production of Biodiesel at Small-scale (10 L) for Local Power Generation, *Int. J. Hydrogen Energy*, 42(13), 8914-8921.
- Pérez-García, O., Escalante, F.M.E., de Bashan, L.E., and Bashan, Y., 2011, Heterotrophic Cultures of Microalgae: Metabolism and Potential Products, *Water Res.*, 45(1), 11-36.
- Pan, J., Muppaneni, T., Sun, Y., Reddy, H.K., Fu, J., Lu, X., and Deng, S., 2016, Microwave-assisted Extraction of Lipids from Microalgae Using an Ionic Liquid Solvent [BMIM][HSO<sub>4</sub>], *Fuel*, 178(1), 49-55.
- Passos, C.P. and Coimbra, M.A., 2013, Microwave Superheated Water Extraction of Polysaccharides from Spent Coffee Grounds, *Carbohydr. Polym.*, 94(1), 626-633.
- Pasquet, V., Chérouvrier, J., Farhat, F., Thiéry, V., Piot, J., Bérard, J., Kaas, R., Serive, B., Patrice, T., Cadoret, J., and Picot, L., 2011, Study on the Microalgal Pigments Extraction Process: Performance of Microwave Assisted Extraction, *Process Biochem.*, 46(1), 59-67.
- Pohndorf, R.S., Camara, Á.S., Larrosa, A.P.Q., Pinheiro, C.P., Strieder, M.M., and Pinto, L.A.A., 2016, Production of Lipids from Microalgae *Spirulina sp.*: Influence of Drying, Cell Disruption, and Extraction Methods, *Biomass Bioenerg.*, 93(1), 25-32.
- Poole, C.F. and Poole, S.K., 1996, Trends in Extraction of Semivolatile Compounds from Solids for Environmental Analysis, *Anal. Commun.*, 33(7), 11H-14H.
- Prabakaran, P. and Ravindran, A.D., 2011, A Comparative Study on Effective Cell Disruption Methods for Lipid Extraction from Microalgae, *Lett. Appl. Microbiol.*, 53(2), 150-154.
- Ramadhas, A.S., Jayaraj, S., and Muraleedharan, C., 2004a, Biodiesel Production from High FFA Rubber Seed Oil, *Fuel*, 84(4), 335-340.
- Ramadhas, A.S., Jayaraj, S., and Muraleedharan, C., 2004b, Use of Vegetable Oils as I.C. Engine Fuels - A Review, *Renew. Energy*, 29(5), 727-742.
- Raner, K.D., Strauss, C.R., Vyskoc, F., and Mokbel, L., 1993, A Comparison of Reaction Kinetics Observed under Microwave Irradiation and Conventional Heating, *J. Org. Chem.*, 58(4), 950-953.
- Reddy, H.K., Muppaneni, T., Patil, P.D., Ponnusamy, S., Cooke, P., Schaub, T., and

- Deng, S., 2014, Direct Conversion of Wet Algae to Crude Biodiesel under Supercritical Ethanol Conditions, *Fuel*, 115(1), 720-726.
- Rodrigues, R.D.P., de Castro, F.C., de Santiago-Aguiar, R.S., and Rocha, M.V.P., 2018, Ultrasound-assisted Extraction of Phycobiliproteins from *Spirulina (Arthrospira) platensis* Using Protic Ionic Liquids as Solvent, *Algal Res.*, 31(1), 454-462.
- Routray, W. and Orsat, V., 2012, Microwave-assisted Extraction of Flavonoids: A Review, *Food Bioprocess Technol.*, 5(20), 409-424.
- Sanghi, R. and Kannamkumarath, S.S., 2004, Comparison of Extraction Methods by Soxhlet, Sonicator, and Microwave in the Screening of Pesticide Residues from Solid Matrices, *J. Anal. Chem.*, 11(59), 1032-1036.
- Schenk, P.M., Thomas-Hall, S.R., Stephens, E., Marx, U.C., Mussnug, J.H., Posten, C., Kruse, O., and Hankamer, B., 2008, Second Generation Biofuels: High-efficiency Microalgae for Biodiesel Production, *Bioenerg. Res.*, 1(1), 20-43.
- Shabana, E.F., Gabr, M.A., Moussa, H.R., El-Shaer, E.A., and Ismaiel, M.M.S., 2017, Biochemical Composition and Antioxidant Activities of *Arthrospira (Spirulina) platensis* in Response to Gamma Irradiation, *Food Chem.*, 214(1), 550-555.
- Shimamoto, G.G., Favaro, M.M.A., and Tubino, M., 2015, Simple Methods via Mid-IR or <sup>1</sup>H-NMR Spectroscopy for the Determination of the Iodine Value of Vegetable Oils, *J. Braz. Chem. Soc.*, 26(7), 1431-1437.
- Simpore, J., Kabore, F., Zongo, F., Andsou, D., Bere, A., Pignatelli, S., Biondi, D.M., Ruberto, G., and Musumeci, S., 2006, Nutrition Rehabilitation of Undernourished Children Utilizing Spiruline and Misola, *Nutr. J.*, 5(3), 1-7.
- Singh, J. and Gu, S., 2010, Commercialization Potential of Microalgae for Biofuels Production, *Renew. Sustain. Energy Rev.*, 14(9), 2596-2610.
- Stammers, S., 2013, *Spirulina Cyanobacteria, Light Micrograph*, [www.fineartamerica.com](http://www.fineartamerica.com), diakses tanggal 10 Maret 2019.
- Suratno, 2015, Ekstraksi Lipid dan Transesterifikasi Menggunakan Gelombang Ultrasonik dari Biomassa Mikroalga *Spirulina platensis* dan *Tetraselmis chuii*, *Tesis*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Tatke, P. and Jaiswal, Y., 2011, An Overview of Microwave Assisted Extraction and Its Applications in Herbal Drug Research, *Res. J. Med. Plant*, 5(1), 21-31.
- Teo, C.L., Jamaluddin, H., Zain, N.A.M., and Idris, A., 2014, Biodiesel Production via Lipase Catalysed Transesterification of Microalgae Lipids from *Tetraselmis sp.*, *Renew. Energ.*, 68(1), 1-5.

- Thirugnanasambandham, K., Sivakumar, V., and Maran, J.P., 2014, Microwave-assisted Extraction of Polysaccharides from Mulberry Leaves, *Int. J. Biol. Macromol.*, 72(1), 1-5.
- Tocher, D.R. and Gleencross, B.D., 2015, *Lipids and Fatty Acids*. Dalam Cheng-Sheng, L., Chhorn, L., Delbert-M, G.I., and Webster, C.D., *Dietary Nutrients, Additives, and Fish Health*, John Wiley & Sons, Hoboken.
- Wahidin, S., Idris, A., and Shaleh, S.R.M., 2014, Rapid Biodiesel Production Using Wet Microalgae via Microwave Irradiation, *Energy Convers. Manag.*, 84(1), 227-233.
- Wan, H.B. and Wong, M.K., 1996, Minimization of Solvent Consumption in Pesticide Residue Analysis, *J. Chromatogr. A*, 754(1), 43-47.
- Wicaksono, S.H., Sintesis Surfaktan Dietanolamida Terkatalisis  $K_2CO_3$ /Zeolit dari Minyak Goreng Bekas, *Skripsi*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Widayanti, W.D., 2016, Penggunaan Gelombang Mikro pada Transesterifikasi Minyak Jarak (*Ricinus communis*) Terkatalisis  $ZrO_2/K_2O$ , *Skripsi*, Departemen Kimia, FMIPA UGM, Yogyakarta.
- Zhang, X., Rajagopalan, K., Lei, H., Ruan, R., and Sharma, B.K., 2017, An Overview of a Novel Concept in Biomass Pyrolysis: Microwave Irradiation, *Sustain. Energy Fuels*, 1(8), 1664-1699.
- Zuloaga, O., Etxebarria, N., Fernández, L.A., and Madariaga, J.M., 1999, Optimization and Comparison of Microwave-assisted Extraction and Soxhlet Extraction for the Determination of Polychlorinated Biphenyls in Soil Samples Using an Experimental Design Approach, *Talanta*, 50(2), 345-357.