

REFERENCES

- Aiba, S., Humphrey, A. and Millis, N.F. (1973). *Biochemical Engineering*. Academic Press, New York.
- American Public Health Association (APHA). (2012). *Method 2320: Standard Methods for the Examination of Water and Wastewater*. (22nd Edition). Washington, D.C.: American Public Health Association.
- Amornmongkol, M. (1996). *Optimization Strategy of Spirulina Production in Tubular Photobioreactor*. M.S. thesis in Biotechnology. School of Bioresources and Technology. King Mongkut's University of Technology Thonburi, Thailand.
- Baldia, S.F., Nishijima, T., Hata, Y., Fukami, K., (1991). Growth characteristics of a blue-green alga *Spirulina platensis* for nitrogen utilization. *Nippon Suisan Gakkaishi*. 57, 645–654.
- Becker, E.W., (1994). *Microalgae: Biotechnology and Microbiology*. Cambridge University Press, Cambridge.
- Bezerra, R.P., Matsudo, M.C., Converti, A., Sato, S., Carvalho, J.C.M. (2008). Influence of ammonium chloride feeding time and light intensity on the cultivation of *Spirulina (Arthrospira) platensis*. *Biotechnol Bioeng*. 100, 297–305.
- Binaghi, L., Del Borghi, A., Lodi, A., Converti, A., Del Borghi, M. (2003). Batch and fed-batch uptake of carbon dioxide by *Spirulina platensis*. *Process Biochem*. 38, 1341–1346.
- Bunsom, C. (1988). *The Secrets of Spirulina, Medical Discoveries of Japanese Doctors*. (Translated Book). Bangkok: National Research Council of Thailand.
- Carlozzi P and Pinzani E. (2005). Growth characteristics of *Arthrospira platensis* cultured inside a new closed-coil photobioreactor incorporating a mandrel to control culture temperature. *Biotechnol Bioeng*. 90, 675–684.

- Charoenrat, T. and Thochampa, W. (2010). Fermentation Technology Laboratory. Pathumthani: Thammasat University Printing (Rangsit Campus), 160.
- Chuchoet, S., Sinuansom, K., Phatthanakiatchiwin, S., Phromya, C., Monthianat, B. and Traichaiyaphon, S. (2006). Cultivation of *Spirulina platensis* in liquid fermentation medium of low cost diet. Journal of Fisheries Technology Research. 42(2), 26-33.
- Citerri, O. (1983). *Spirulina*, the edible microorganism. Microbiology Review. 47(4), 551-553.
- Converti, A., Lodi, A., Del Borghi, A., Solisio, C. (2006). Cultivation of *Spirulina platensis* in a combined airlift tubular reactor system. Biochemical Engineering Journal. 32,13–18.
- Converti, A., Scapazzoni, S., Lodi, A. and Carvalho, J. C. M. (2006). Ammonium and urea removal by *Spirulina platensis*. Journal of Industrial Microbiology and Biotechnology. 33, 8–16.
- Costa, J.A.V., Colla, L.M. and Filho, P.D. (2003). *Spirulina platensis* Growth in Open Raceway Ponds Using Fresh Water Supplemented with Carbon, Nitrogen and Metal Ions. Z. Naturforsch. 58c, 76-80.
- Costa, J.A.V., Cozza, K.L. Oliveira, L. and Magagnin, G. (2001). Different nitrogen sources and growth responses of *Spirulina platensis* in microenvironments. Journal of Microbiology & biotechnology. 17, 439-442.
- Danesi, E.D.G., Rangel-Yagui, C.O., Sato, S., Monteiro de Carvalho, J.C. (2011). Growth and Content of *Spirulina Platensis* Biomass chlorophyll Cultivated at Different Values of Light Intensity and Temperature Using Different Nitrogen Sources. Brazilian Journal of Microbiology. 42, 362-373.
- De Moraes, M.G., Costa, J.A.V. (2007). Biofixation of carbon dioxide by *Spirulina* sp. and *Scenedesmus obliquus* cultivated in a three-stage serial tubular photobioreactor. J. Biotechnol. 129, 439–445.
- El-Mansi, E.M.T., Bryce, C.F.A., Demain, A.L., and Allman, A.R. (2007). Fermentation Microbiology and Biotechnology, 2nd ed., Taylor & Francis, Broken Sound Parkway NW.
- Enfors, S.O. and Häggström, L. (2000). Bioprocess Technology: Fundamentals and Application. Royal Institute of technology, Stockholm.

- Ferreira, L. S., Rodrigues, M. S., Converti, A., Sato, S. and Carvalho, J. C. M. (2012). Kinetic and Growth Parameters of *Arthrospira (Spirulina) platensis* Cultivated in Tubular Photobioreactor Under Different Cell Circulation Systems. *Biotechnology and Bioengineering*. 109 (2), 444-450.
- Ferreira, L.S., Rodrigues, M.S., Converti, A., Sato, S., Carvalho, J.C.M. (2010). A new approach to ammonium sulphate feeding for fed-batch *Arthrospira (Spirulina) platensis* cultivation in tubular photobioreactor. *Biotechnol Progr.* 26,1271–1277.
- Filali, R., Lasseur, C., Dubertret, G. (1997), *Melissa*: nitrogen sources for growth of the cyanobacterium *Spirulina*. In: *Proceedings of the Sixth European Symposium on Space Environmental Control Systems*, Noordwijk, The Netherlands.
- Fiore, M.F., Moon, D.H., Tsai, S.M., Lee, H. and Trevors, J.T. (2000). Miniprep DNA isolation from unicellular and filamentous cyanobacteria. *Journal of Microbiological Methods*. 39, 159-169.
- Fogg, G.E., Stewart, W.D.P., Fay, P. and Walsby, A.E. (1973). *The Blue-Green Algae*. Academic Press, London.
- Habib, M.A.B. and Parvin, M. (2008). A review on culture, production and use of *Spirulina* as food for humans and feed for domestic animals and fish. *FAO Fisheries and Aquaculture Circular No.1034*. Rome : FAO.
- Heierli, U. (2007). *Sustainable Approaches to Combat Malnutrition: Small-scale production and marketing of Spirulina*. Swiss Agency for Development and Cooperation (SDC), India.
- Henrikson, R. (2009). *Earth Food Spirulina*. (Sixth Edition). United States : Ronore Enterprises, Inc.
- Jourdan, J. P. (2011). *Grow your own Spirulina*. *Cultivez votre spiruline, manuel de culture artisanale*, 36.
- Laorawat, S. (1995). *Effects of Environmental Factors on Photosynthesis and Productivity of Spirulina platensis in Outdoor Cultures*. M.S. thesis in *Biotechnology*. School of Bioresources and Technology. King Mongkut's University of Technology Thonburi, Thailand.
- Lee, J.M. (1992). *Biochemical Engineering*. Prentice Hall, New Jersey.

- Madkour, F.F., Kamil, A.E.W., Nasr, H.F. (2012). Production and nutritive value of *Spirulina platensis* in reduced cost media. Egyptian Journal of Aquatic Research. 38(1), 51-57.
- Marker, A. F. H., Crowther, C. A. and Gunn, R. J. M. (1980). Methanol and acetone as solvents for estimating chlorophyll a and phaeopigments by spectrophotometry. Archives of Hydrobiology Bulletin (Ergebnisse der Limnologie). 14, 52-69.
- McNeil, B. and Harvey, L.M. (1990). Fermentation: A Practical Approach. IRL Press, New York.
- Meeks, J. C. and R. W. Castenholz. (1971). Growth and photosynthesis in an extreme thermophile, *Synechococcus lividus* (Cyanophyta). Arch. Mikrobiol. 78, 25-41.
- Molina, E., Fernánde z, J., Acie´n, F.G. and Chisti, Y. (2001). Tubular photobioreactor design for algal cultures. J. Biotechnol. 92, 113–131.
- Monod, J. (1949). The Growth of Bacterial Cultures. Annual Review of Microbiology. 3, 371-394.
- Morris, I. (1974). Nitrogen Assimilation and Protein Synthesis. In: Algal Physiology and Biochemistry. University of California Press, Berkeley, 583-609.
- Mostert, E.S., Grobbelaar, J.U., 1987. The influence of nitrogen and phosphorus on algal growth and quality in outdoor mass algal cultures. Biomass. 13, 219–233.
- Murray, S., Elaine Groom, R., Hanna, J.A. and Watson, C. (2013). Downstream processing technology review. Northern Ireland: Queen's University Belfast.
- Musikgearanant, R. (1996). Cultivation of *Spirulina* under outdoor condition for Gamma linolenic acid and Phycocyanin. M.S. thesis in Biotechnology. School of Bioresources and Technology. King Mongkut’s University of Technology Thonburi, Thailand.
- Oncel, S., Sukan, F.V. (2008). Comparison of two different pneumatically mixed column photobioreactors for the cultivation of *Arthrospira platensis* (*Spirulina platensis*). Bioresource Technol. 99, 4755–4760.

- Peerapornpisarn, Yuvadee. (2003). *Spirulina*. (Second Edition). Chaingmai : Science and Technology Research Institute.
- Phetmani, T. (2003). *Spirulina* cultivation for sufficiency economy. Songkhla: National institute of coastal aquaculture.
- Phromya, C. and Saetan, K. (2005). *Spirulina* Cultivation for Health. Maejo university: Faculty of agricultural production.
- Piccolo A. (2012). *Spirulina – A Livelihood and a Business Venture*. Implementation of a Regional Fisheries Strategy for the Eastern-Southern Africa and Indian Ocean Region. Smart Fish Report/Rapport: SF/2011/16.
- Pirt, S. J. (1994). *Principles of Microbe and Cell Cultivation*. Blackwell Scientific Publications. London.
- Pirt, S.J., Lee, Y.K., Walach, M.R., Pirt, M.W., Balyuzi, H.H.M. and Bazin, M.J. (1983). A tubular bioreactor for photosynthetic production of biomass from carbon dioxide: Design and performance. *Journal of Chemical Technology and Biotechnology*. 33(1), 35-58.
- Pirt, S.J., Lee, Y.K., Walach, M.R., Pirt, M.W., Balyuzi, H.H.M., Bazin, M.J. (1983). A tubular bioreactor for photosynthetic production of biomass from carbon dioxide: Design and performance. *J Chem Biotechnol*. 33, 35–58.
- Raof, B., Kaushik, B.D., Prasanna, R. (2006). Formulation of a low cost medium for mass production of *Spirulina*. *Biomass and Bioenergy*. 30 (6), 537–542.
- Rhee, G., Lederman, T.C., 1983. Effects of nitrogen sources on Plimited growth of *Anabena flos-aquae*. *Journal of Phycology*. 19, 179–185.
- Richmond, A. (1986). *Microalgal culture*. CRC Critical Reviews in Biotechnology. 4 (4), 369-438.
- Richmond, A., (1990). *Handbook of Microalgal Mass Culture*. CRC Press, Boca Raton.
- Ripley, D. F. (1996). *Spirulina*, Production & Potential. France : Edisud.
- Rodrigues, M.S., Ferreira, L.S., Converti, A., Sato, S. and Carvalho, J.C.M. (2010). Fedbatch cultivation of *Arthrospira (Spirulina) platensis*: Potassium nitrate and ammonium chloride as simultaneous nitrogen sources. *Bioresourse Technol*. 101:4491–4498.

- Santillan, C. (1982). Mass production of *Spirulina*. *Experientia*. 38, 40-43.
- Scragg, A. H. (1991). *Bioreactors in Biotechnology: A Practical Approach*. Ellis Horwood, London.
- Sinuansom, K. (2006). *Practical guide for algae cultivation*. Maejo University: Faculty of Fisheries and Aquatic Resources.
- Snoeyink V. and Jenkins. D. (1980). *Water Chemistry*. JOHN WILEY & SONS, New York.
- Soletto D., Binaghi, L., Ferrari, L., Lodi, A., Carvalho, J.C.M., Zilli, M. and Converti, A. (2008). Effects of carbon dioxide feeding rate and light intensity on the fed-batch pulse-feeding cultivation of *Spirulina platensis* in helical photobioreactor. *Biochem Eng J*. 39, 369–375.
- So-nutritious. (2014). *Spirulina Farm Development* [cited January 13, 2014]. Available from: <http://www.so-nutritious.com.kh/so-projects/spirulina-development/>
- Stanbury, P.F. and Whitaker, A. (1984). *Principle of Fermentation Technology*. Pergamon Press, Oxford.
- Subun, P. (2003). *Development and select cheapen media to produce Spirulina in tablet form*. Office of Academic Resources and Information Technology: Ratchaphatubonratchathani University.
- Tanticharoen, M. (2012). *Algae cultivation technology: Development research for production of energy*. *The TRF Forum* .2 (7).
- Thonglek, S. (1999). *Improving productivity of Spirulina production by adjusting light exposure frequency*. M.S. thesis in Biotechnology. School of Bioresources and Technology. King Mongkut's University of Technology Thonburi, Thailand.
- Tomaselli, L., Giovannetti, L., Sacchi, A. and Bocci, F. (1988). Effects of temperature on growth and biochemical composition in *Spirulina platensis* strain M2. *Algal Biotechnology*. New York: Elsevier Applied Science, 305-314.
- Torzillo, G., Sacchi, A. and Materassi, R. (1991). Temperature as an important factor affecting productivity and night biomass loss in *Spirulina platensis* grown outdoors in tubular photobioreactors. *Bioresources Technology*. 38(2-3), 95-100.

- Travieso, L., Hall, D.O., Rao, K.K., Benctez, F., Sacnchez, E., Borja, R. (2001). A helical tubular photobioreactor producing *Spirulina* in a semicontinuous mode. *International Biodeterioration & Biodegradation*. 47, 151–155.
- Tri-Panji and Suharyanto. (2001). Optimization media from low-cost nutrient sources for growing *Spirulina platensis* and carotenoid production. *Jurnal Menara Perkebunan*. 69(1), 18-28.
- U.S. Environmental Protection Agency (EPA). (2001). Method 1687: Total Kjeldahl Nitrogen in Water and Biosolids by Automated Colorimetry with Preliminary Distillation/Digestion. Washington, D.C.: Environmental Protection Agency.
- Venkataraman, L.V. (1983). Blue green Alga : *Spirulina*. Central Food Technology Research Institute, Mysore, India.
- Venkataraman, L.V. and Becker, E.W. (1985). Biotechnology and Utilization of algae. Department of Science and Technology, New Delhi: Indian Experience.
- Vonshak, A. (1987). Biological limitation in developing the biotechnology for algal mass cultivation. *Sciences de l'Eau*. 6, 99-103.
- Vonshak, A. (1990). Recent Advances in Microalgal Biotechnology. *Biotechnology Advances*. 8, 709-727.
- Vonshak, A. and Richmond, A. (1988). Mass production of the Blue green Alga *Spirulina*. *An Overview Biomass*. 15, 233-247.
- Wichitchinda, W. (1988). The Development of Photobioreactor for cultivation of Photosynthetic Bacteria. M.S. thesis in Biotechnology. School of Bioresources and Technology. King Mongkut's University of Technology Thonburi, Thailand.
- Zhu, C.J. and Lee, Y.K. (1997). Determination of biomass dry weight of marine microalgae. *Jornal of Applied Phycology*. 9. 189-194.