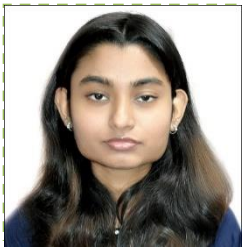
National Webinar
Recent Trends in Algae and their Utility of Pharmaceutics -2021; 27th July 2021

Bio-prospection of an indigenous *Scenedesmus spp.* strain from Powai Lake, Mumbai



Bhakti Jadhav [a], Rachna Prasad [a], Arpi Bhavsar [a] and Amit Jethwa*[a]

[a] Department of Biotechnology, K.J. Somaiya College of Science and Commerce, Mumbai- 400077, Maharashtra, India

*corresponding author (Email: amit.jethwa@somaiya.edu)

Abstract The current pace of population explosion and lifestyle changes demands sustainable and wholesome nutraceutical alternatives to conventional dietary supplements. Pertaining to their abundance in metabolites such as lipids, pigments, alkaloids and many others; microalgae are subject to high expectations from the scientific community. Present study adopted a two-stage cultivation strategy; involving the enhancement of biomass production of the freshwater microalga *Scenedesmus spp.* isolated from Powai lake, Mumbai by bicarbonate supplementation; followed by exposure to Sulphur limitation. Supplementation with 0.5 g/L Sodium bicarbonate to Bold's Basal Media yielded 1.905g/L of dry biomass, significantly higher than the control (0.405g/L). Maximum carotenoids were present in biomass subjected to BBM with Sulphur reduced to quarter concentration (0.597g%), whereas the total lipid accumulation was highest on exposure to Sulphur reduction to half (55g%). Preliminary screening for the presence of alkaloids gave negative results and no antimicrobial activity was exhibited against *Escherichia coli* and *Staphylococcus aureus*. In conclusion, cultivation under specific conditions renders the indigenous *Scenedesmus spp.* strain as a potent source of lipids and carotenoids.

Keywords: *Scenedesmus spp.*, bicarbonate supplementation, two-stage cultivation, yield, microalgal metabolites

References:

1. Stein, J. R. (1973). Hand book of phycological methods culture methods and growth measurements. Stein, Janet R. Handbook Of Phycological Methods. Culture Methods And Growth Measurements. Xii 448p. Illus. Cambridge University Press.
2. Sun, X.-M., Ren, L.-J., Zhao, Q.-Y., Ji, X.-J., & Huang, H. (2018). Microalgae for the production of lipid and carotenoids: A review with focus on stress regulation and adaptation. Biotechnology for Biofuels, 11(1), 272.
3. Mokashi, K., Shetty, V., George, S. A., & Sibi, G. (2016). Sodium Bicarbonate as Inorganic Carbon Source for Higher Biomass and Lipid Production Integrated Carbon Capture in Chlorella vulgaris. Achievements in the Life Sciences, 10(1), 111–117.
4. Lichtenthaler, H. K., & Buschmann, C. (2001). Chlorophylls and Carotenoids: Measurement and Characterization by UV-VIS Spectroscopy. Current Protocols in Food Analytical Chemistry, 1(1), F4.3.1-F4.3.8.
5. Bligh, E. G., & Dyer, W. J. (1959). A rapid method of total lipid extraction and purification. Canadian Journal of Biochemistry and Physiology, 37(8), 911–917.

Acknowledgements: The authors are thankful to the K.J. Somaiya College of Science and Commerce (autonomous college), Mumbai for the facilities.