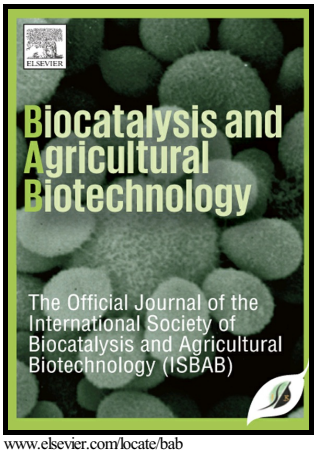
A comparative analysis of biodiesel production and its properties from *Leptolyngbya* sp. BI-107 and *Chlorella vulgaris* under heat shock stress

V. Ramesh kumar, G. Narendrakumar, R. Thyagarajan, G. Melchias



www.elsevier.com/locate/bab

PII: S1878-8181(18)30137-3
DOI: https://doi.org/10.1016/j.bcab.2018.09.007
Reference: BCAB864

To appear in: *Biocatalysis and Agricultural Biotechnology*

Received date: 11 March 2018
Revised date: 11 August 2018
Accepted date: 6 September 2018

Cite this article as: V. Ramesh kumar, G. Narendrakumar, R. Thyagarajan and G. Melchias, A comparative analysis of biodiesel production and its properties from *Leptolyngbya* sp. BI-107 and *Chlorella vulgaris* under heat shock stress, *Biocatalysis and Agricultural Biotechnology,* https://doi.org/10.1016/j.bcab.2018.09.007

A comparative analysis of biodiesel production and its properties from *Leptolyngbya* sp. BI-107 and *Chlorella vulgaris* under heat shock stress

Dr. V. Ramesh kumar[1*] Mr.G.Narendrakumar[1], Dr.R.Thyagarajan[1] and Dr. G. Melchias[2]

[1] Department of Biotechnology, Sathyabama University, Jeppiaar Nagar, Chennai

[2] Department of Botany, St.Joseph's college, Tiruchirappalli.

*Corresponding Author Email ID: rameshkumar.biotech@sathyabama.ac.in

Abstract

Reliance on fossil fuel energy resources has become economically costly and environmentally unsustainable. With the rapid depletion of fossil fuels due to increased demand, the need for alternative fuel from biological resources has gained importance. Although a wide range of alternative energy sources are being experimented, biodiesel from sustainable resources has gained widespread acceptance and importance. Third generation biofuels from microalgae are particularly promising in their yield and application. The present study aims at tapping the highly competent native microalgal species for biodiesel production. Microalgae from kitchen waste water was isolated and characterized as Leptolyngbya sp. by 16S rRNA sequencing. Chlorella vulgaris was taken as a standard for comparison of growth, biochemical and biodiesel producing ability. The microalgal cultures were grown under controlled conditions and their growth rate and lipid productivity were assessed. Temperature stress (heat shock stress) was induced to understand the effect of rising global temperature on microalgae. The biochemical parameters were analyzed under normal and stressed conditions for both the microalgae. Leptolyngbya sp. had better lipid productivity compared to Chlorella vulgaris. The lipids obtained from microalgae were chemically transesterified to biodiesel. Again it was Leptolyngbya sp. that had a higher