

Effects of high-speed homogeniser pre-treatment technique in lipid extraction on wet microalgae for biodiesel production

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Biodiesel is an environmentally friendly fuel source with similar combustion qualities comparable to regular diesel. Microalgal biodiesel has recently attracted global attention and interest for researchers because of the fact that they are sustainable, renewable and non-toxic. In this research, using microalgae *Chlorella vulgaris* & *Nannochloropsis oculata*, cell disruption was carried out using a high-speed homogeniser (HSH) pre-treatment technique, and lipid extraction was done using a mixture of deep eutectic solvents like methanol and hexane. Different operating input factors of HSH were examined on the microalgae to study their effective cell disruption rate and lipid efficiency. The result showed that an enhanced lipid yield of 18% was obtained from *C.Vulgaris* and 25% was obtained from *N.oculata*, and thus, this study attempted to imply that the cell wall of the microalgae was fully ruptured, permitting the solvents to diffuse and recover lipids. The significant components of biodiesel characterisation were discovered using gas chromatography analysis, which concluded that this could be employed as a feedstock in biodiesel production.

Biography

Amarnath Krishnamoorthy is doing his PhD in biomass conversion to energy at the School of Computing, Engineering & Physical Sciences, University of the West of Scotland (United Kingdom). His research explores the implementation of pre-treatment methods in microalgal species for cell disruption, and his research added value to the third generation of biofuels. His dissertation deploys recent studies of microalgal pre-treatment in biodiesel production and literature and leads questions about the upcoming phases of dewatering approaches and research exploration.