



Potential Utilization of *Microcystis* sp. for Biodiesel Production

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Abstract

There is a growing concern on usage of alternative sustainable energy source to overcome the energy crisis. Hence, biodiesel from cyanobacteria have drawn the attention of the scientific community. The present study was carried out to find potential utilization of *Microcystis* bloom for biodiesel production. *Microcystis* bloom samples were collected from Beira Lake and Soxhlet extraction method with Isopropanol: n-hexane (3:2) solvent system was followed to extract lipids from *Microcystis* biomass. During the study several biodiesel blends were prepared and only B6 blend was studied in detail. B6 biodiesel blend was compared with ASTM D 7467 standards for confirmation of the fuel properties and specifications of no: 02 grade auto diesel (given by Ceylon Petroleum Corporation – Sri Lanka), to assess the usability for compression-ignition (CI) engines without modifications. Biodiesel B6 blend was subjected to determination of fuel properties and density at 15°C (ASTM D 1298/ 4052), Viscosity Kinematic at 60°C (ASTM D 445), Calorific value (Gross) (ASTM D240), Cloud point (ASTM D 2500), Lubricity (HFRR wear scar dia at 60°C) (ASTM D 6079), Sulphur content (ASTM D 4294) and Cold flow properties (CFPP – cold filter plugging point) (ASTM D 6371) were 831 kg/m³, 2.83 cSt., 11180 kcal/kg, 6°C, 405µm, 2310 ppm and 4°C. The results revealed that biodiesel B6 blend complied with ASTM standards for lubricity, kinematic viscosity and sulfur content (S5000). The fuel properties of kinematic viscosity, density, sulfur content and CFPP value complied with the Ceypetco auto diesel specifications and the energy content of the blend was higher than Ceypetco auto diesel specifications. The results of the study revealed that the *Microcystis* bloom can be utilized as an alternative biofuel for future energy crisis.

Keywords: *Microcystis* bloom, Fatty acid methyl esters, Biodiesel B6 blend, Energy crisis