Rubber seed oil as a potential source for biodiesel production in Bangladesh

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ABSTRACT

In the present paper, rubber seed oil (RSO) has been investigated as a potential source for biodiesel production in Bangladesh. Rubber seed oil has been extracted from the rubber seeds collected from the local garden. Different methods have been applied for the oil extraction, such as mechanical press with and without solvent and cold percolation. Maximum oil content of 49% has been found by mechanical press with periodic addition of solvent. The physico-chemical properties of the oil have been investigated. Effect of seed storage time on free fatty acid (FFA) content of the oil is studied an it is found that the FFA content increases from 2 wt.% (fresh seed) to 45 wt.% after 2 months of storage at room temperature. Biodiesel has been prepared using a three-step method comprises with saponification of oil, acidification of the soap and esterification of FFA. Overall yield of FFA from RSO is found to be around 86%. The final step is esterification that produces fatty acid methyl ester (FAME). The effect of methanol to oil ratio and catalyst content has been investigated for esterification reaction. ^{1}H NMR spectrum of the RSO and biodiesel samples are analyzed which confirms the conversion of RSO to biodiesel. The biodiesel properties have been investigated and are found to be comparable with diesel.

KEYWORDS:

Rubber seed oil; Biodiesel; Esterification; Saponification

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