
Production of biodiesel from rubber seed oil and effect of Hydroquinone on its storage stability

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Biodiesel is a possible alternative for petrodiesel and normally produced by transesterification of vegetable oils. It is a mixture of alkyl esters of fatty acids and the production cost is high. Objective of this work was to develop a method to reduce the production cost of biodiesel by using rubber seed oil which is having no commercial value and by using a cheap catalyst. Acid esterification was used to convert free fatty acids in the oil to their methyl esters by treating the oil (45°C) with methanol (6:1 methanol:oil molar ratio) and conc. Sulphuric acid (0.5 wt% of oil) and then by heterogeneous transesterification using methanol (12:1 methanol:oil molar ratio) in the presence of calcium glyceroxide (0.5 wt% of oil), and Na₂CO₃ (5 wt% of oil). During storage, gel/flakes were formed in biodiesel. It was inhibited by using quinhydrone as the antioxidant. Density, freezing point, iodine value, calorific value, sodium level and calcium level of biodiesel were 874 kg m⁻³, 16.8°C, 51.9 g I₂/100g, 39.95 MJ kg⁻¹, 2.93 ppm and 3.39 ppm respectively and agree with the recommended values by ASTM. Density of biodiesel after storing for four months was 880 kg m⁻³. Major fatty acid methyl esters present were palmitic (13.12 %), stearic (13.67 %), oleic (10.92 %) and linoleic (54.92 %) acids. The method developed is a promising low-cost way to produce biodiesel and, hydroquinone can be used to increase the storage stability.

Key words: Antioxidants, biodiesel, rubber seed oil, transesterification

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