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BIODIESEL PRODUCTION FROM NEEM SEED (AZADIRACHTA INDICA) USING TWO STEPS TRANSESTERIFICATION PROCESS.

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ABSTRACT

Petroleum diesel poses a lot of health hazard due to harmful gas emission. Biodiesel is a renewable substitute for petroleum diesel. Different types of low cost feedstock has been investigated by various researchers for the production of biodiesel. In this work, two step trans-esterification process was employed for the production of biodiesel using neem seed. Oil extraction was carried out using soxhlet extractor and the percentage oil yield was 45.47 %. Physicochemical analysis of the oil shows that it contains 3.4% moisture, specific gravity of 0.935, viscosity of 34.39, acid value of 15.71 mg KOH/g, iodine value 7.85 mg/g and saponification value of 200.6 mgKOH/g. The maximum biodiesel yields was 85.50 % at 60 °C and 70 mins and at 6:1 oil to methanol molar ratio. Physicochemical properties of the biodiesel shows a specific gravity of 0.890, flash point of 150 °C pour point of -1°C, kinematic viscosity of 5.2 and cloud point of 11 °C. The values were quite consistent with those of the American Society for Testing and Materials (ASTM) and European Nation standards (EN) for diesel fuel. This result shows that biodiesel produced from neem seed can be used in a conventional diesel engine without modification.

Keywords: Neem seed, biodiesel, transesterification, physicochemical