BIO DIESEL PRODUCTION FROM TALLOW

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By

GAMARALALAGE SAMEERA DILHAN GAMLATH

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Uva Wellassa University, Sri Lanka

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ABSTRACT

Biodiesel has become an alternative fuel recently because of its environmental benefits and the fact that is made from renewable resources. The cost of biodiesel is the main hurdle to commercialization of the product. The waste tallow which was removed during leather production was used as raw material. This new way for using waste tallow reduced the cost of production of biodiesel and the problem related to the disposal of waste tallow in leather industry. Alkali catalyzed transesterification was used to produce biodiesel from tallow. The transesterification reaction was affected by methanol to tallow molar ratio, reaction temperature, reaction time and the amount of catalyst. The yield of the biodiesel reached 91.2 %, when 1.2 wt.% of potassium hydroxide, reaction temperature of 65 °C, 4 hours of reaction time and 6:1 methanol to tallow molar ratio with continuous stirring. Properties of the biodiesel were compared with the properties of petroleum diesel and ASTM standards. Analysis of biodiesel confirmed that the biodiesel from tallow was quit suitable as an alternative to petroleum diesel with recommended fuel properties as per ASTM standards. The process was possible, but the economic viability must be improved by recovering methanol and glycerin.

Key words: biodiesel, tallow, transesterification, ASTM standards, alkali catalyst