

Experimental Investigations of Fuel Properties of Biodiesel Derived from Tylosema Esculentum Kernel Oil

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Abstract

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The alternative fuels debate continues to attract the attention of researchers and scientists globally. This paper reports experimental results on selected properties of biodiesel derived from Tylosema Esculentum kernel oil and compares them with similar properties of petroleum diesel to assess its suitability for use as fuel in diesel engines. Results indicate an ester content of 90% for tylosema biodiesel fuel, while its viscosity profile meets requirements of American standards for biodiesel fuel (ASTM D 6751-02). The flash point and cold flow properties of tylosema biodiesel were found to be typical of a biodiesel fuel, while its acidity is within range of both American and European standards by 72.5%, and 56% respectively. It was also observed that biodiesel engine performance is marginally better than that of petroleum diesel, with lower concentrations of hydrocarbon emissions. Levels of carbon dioxide and carbon monoxide (CO) are largely comparable to those of petroleum diesel.

Keywords: Tylosema, Biodiesel, Fuel, Properties, Performance