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Abstract

The fatty acid methyl esters (FAME)produced from vegetable oils, animal fats, or waste oils known as biodiesel has attracted attention as possible replacement of fossil fuels. The fuel properties of biodiesel are similar to that of conventional petro-diesel and it is more environmentally friendly. This study investigated in detail the fuel properties of biodiesel from less common edible oil produced from Manketti seeds (Schinziophyton rautanenii). Manketti Oil Methyl Ester (MOME) was produced by transesterification process using an alcohol in the presence of a catalyst. The fuel related properties of MOME were determined and compared with the global biodiesel standards such as ASTM 6751 and EN 14214. Also, the effects of different antioxidants; 1, 2, 3 tri-hydroxy benzene (Pyrogallol, PY), 3,4,5-tri hydroxy benzoic acid (Propyl Gallate, PG) and 2-tert butyl-4-methoxy phenol (Butylated Hydroxyanisole, BHA) were investigated on oxidation stability, kinematic viscosity and cetane number (CN) of MOME. The results showed that, most of the determined fuel properties fulfilled the minimum requirement of global biodiesel standards. Among antioxidants used in this study, PY and PG were more effective compared to BHA on oxidation stability. Also, addition of antioxidants on MOME showed positive results on CN which was increased and kinematic viscosity was decreased. In summary, biodiesel produced from manketti seeds oil indigenous to Southern Africa can be used as partial substitute of mineral diesel.

Keywords

Manketti oil, Fatty acid methyl ester, Fuel properties, Oxidation stability, Antioxidants