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Experimental Investigations of Oxidation Stability of Biodiesel Produced from Manketti Seeds Oil (*Schinziophyton rautanenii*)

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Experimental Investigations of Oxidation Stability of Biodiesel Produced from Manketti Seeds Oil (*Schinziophyton rautanenii*)

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Abstract

In this study, biodiesel from Manketti seeds oil (*Schinziophyton rautanenii*) was investigated to determine its suitability for use as a petrodiesel substitute. The fuel-related properties of Manketti oil methyl ester (MOME) were determined and compared to global biodiesel standards. Most of the determined fuel properties of MOME fulfilled the minimum requirements of ASTM D6751 and EN 14214 biodiesel standards. However, MOME did not meet EN 14214 oxidation stability requirements (6 h). The stability of biodiesel is very critical, and biodiesel requires antioxidants to meet storage requirements and to ensure fuel quality at all points along the distribution chain. This study evaluated the effectiveness of three antioxidants: 1,2,3-trihydroxybenzene (pyrogallol, PY), 3,4,5-trihydroxybenzoic acid (propyl gallate, PG), and 2-tert-butyl-4-methoxyphenol (butylated hydroxyanisole, BHA) on the oxidation stability of MOME. The result showed that the effectiveness of these antioxidants was in the order of PY > PG > BHA. Overall, the biodiesel derived from Manketti seeds oil can be used as partial substitute for mineral diesel.