

Article Abstract

Title:	Oxidation and thermal behavior of <i>Jatropha curcas</i> biodiesel influenced by antioxidants and metal contaminants
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Abstract:	According to European biodiesel standard EN-14214 the minimum requirement of oxidation stability in terms of induction period is 6 hr by the Rancimat method (EN-14112). The induction period of fresh <i>Jatropha curcas</i> biodiesel (JCB) is 3.27 hr. Also the thermal stability of JCB is very poor in terms of activation energy (E_a) and frequency factor (f). The thermal and oxidation behavior is also affected adversely by the container metal. The present paper is dealing with the study of oxidation and thermal behavior of JCB with respect to different metal contents. It was found that influence of metal was detrimental to thermal and oxidation stability. Even small concentrations of metal contaminants showed nearly same influence on oxidation stability as large amounts. Copper (Cu) showed strongest detrimental effect on both, oxidation and thermal stability. Relative effectiveness of different antioxidants were also checked and found that pyrogallol (PY) is the most effective one. The effect of PY is studied in metal contaminated JCB to see the oxidation and thermal stability.
Keywords:	<i>Jatropha curcas</i> biodiesel (JCB), thermal stability, rancimat, TGA, activation energy, methyl ester (ME), metal contaminate.