

EFFECT OF SYNTHETIC ANTIOXIDANTS ON STORAGE STABILITY OF CALOPHYLLUM INOPHYLLUM BIODIESEL

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Abstract: Biofuels especially biodiesel derived from renewable sources are becoming important increasingly due to environmental and energy concerns. Biodiesels are composed of long chain unsaturated fatty acid esters that are prone to oxidation. Non-edible high acid value calophyllum inophyllum oil based biodiesel (CIME) was produced by two stage esterification and one stage transesterification process. The oxidation stability of biodiesel treated with three prominent antioxidants namely Pyrogallol (PY), Propyl gallate (PG), and Tert-butylhydroxyquinone (TBHQ) was evaluated. The induction period of biodiesel with or without antioxidant was measured according to EN14112 standard using a Rancimat instrument. Antioxidants were added at 500 ppm, which in general improved the induction period. Samples were kept for 70 days and different properties that change during storage namely induction period, density and kinematic viscosity were monitored. For all samples oxidation stability decreased and kinematic viscosity increased due to formation of oxidation products. PY showed the best effect in retaining oxidation stability of calophyllum inophyllum biodiesel.