

(54) Title of the invention : The Transesterification of Crude Mahua oil in two stages with different materials to produce maximum biodiesel

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## (57) Abstract :

The edible and non-edible are the most important feedstocks is to produce biodiesel. Expressions regarding first generation and second generation of biodiesel are in popular usage. Among both the generations, the second generation is having a very good scope in the future. In this present article, the crude Mahua raw oil has 21% of free fatty acids (FFA). To minimize the FFA to less than 1%, Mahua methyl ester (MME) was produced with an open container as the reactor by two-step of esterification and transesterification methods. The first step was done by the acid catalyzed process by using 0.35 v/v i.e. 175ml of methanol and 1% v/v i.e. 5ml of concentrated H<sub>2</sub>SO<sub>4</sub> mixed together and poured in 500ml of warmed preheated Mahua raw oil. The second step was done by alkaline catalyst process by using 0.25 v/v i.e. 125ml of methanol and 0.7% w/v i.e. 3.5gm KOH as catalyst are added in a product produced from the reaction of acid esterification. After two-step process, the crude biodiesel was washed with distilled water over again and later it was added with anhydrous CaCl<sub>2</sub> (Calcium chloride) and heated gently at 50°C. The biodiesel with anhydrous CaCl<sub>2</sub> was shaken vigorously and later separated from the biodiesel to obtain a clean MME biodiesel. These experimental method processes obtained a yield of 85% MME. The high FFA level for crude raw oil was improved to less than 1%.

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