



Lipase catalysed biodiesel production by transesterification of oil extracted from seeds of *Madhuca indica*

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Abstract : In this study, extracted seed oil of *Madhuca indica* was used for production of biodiesel through the process of lipase catalysed transesterification. The lipase enzyme was extracted from the fungal source *Rhizopus spp.* The use of lipase in the biodiesel production proved an efficient method for increasing its yield and in providing environment friendly "Green reaction". The fuel produced by the seed oil showed similarities to the petrodiesel as the density and viscosity of biodiesel was found to be 872 kg/l and 4.39 l/s respectively which was almost similar to petrodiesel. This fuel produced is non toxic, renewable and biodegradable. The yield of biodiesel was influenced by the concentration of methanol added to oil.

From the study, it was clear that the properties of biodiesel produced from oil of *Madhuca indica*, can be effective alternative to diesel fuels and other such depleting fossil fuels.

Keywords: Biodiesel, Lipase, *Madhuca indica*, Transesterification.

Introduction :

Lipase catalysed transesterification of *Madhuca indica* oil has been considered as one of the most promising techniques for providing biodiesel. *Madhuca indica* of family Sapotaceae is native to North-eastern regions of India like Bihar, Madhya Pradesh, Uttar Pradesh, Jharkhand etc. Due to its large population and phenomenal growth rate it is easily available in all regions and thus further can be used for oil extraction and its biodiesel formation. *Madhuca indica* oil seeds also contain free fatty acid content upto 18% and are considered as a good source of biodiesel (Rajendran et al 2016). Biodiesel is non-petroleum based diesel fuel consisting of mixture of fatty acid alkyl ester. The process of transesterification transform the the higher chain of fatty acid into simpler one. Since, conventional method adopts

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