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“Transesterification of Pongamia Oil using Solid Based Catalyst”

Submitted to
Karnataka State Biofuel Development Board (KSBDB) and
Karnataka State Council for Science and Technology (KSCST)

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ABSTRACT

Biodiesel is an attractive alternative fuel for diesel engines. The feedstock for biodiesel production is usually vegetable oil, pure oil or waste cooking oil, or animal fats. The use of feedstock which are potential food sources such as soybean, corn oil can lead to the food v/s fuel conflict. Hence it is necessary to find the feed stock which are non-edible, easily grown and possess good oil content. Pongamia is one source which satisfies all the requirements. The present study concentrates on using Pongamia oil to produce biodiesel using solid based catalysts.

Transesterification reaction was carried out using CaO and MgO solid catalysts. Biodiesel obtained was tested for viscosity, density and flashpoint. The various reaction parameters such as effect of temperature, catalyst loading and oil to methanol ratio on biodiesel yield were studied.

For the different temperatures tested, the biodiesel yield increased with increase in temperature till it approached the boiling point of methanol. The highest yield was obtained at a temperature range of 55-60°C. Same observation was made with the catalyst loading, where, the yield increased with the catalyst loading and then it remained constant. But optimum catalyst loading was found to be at 4%. Especially for solid catalysis, the yield increased significantly for increased methanol to oil ratio. Lastly, CaO catalyst gave better yield of biodiesel compared to MgO catalyst.

Key words: *Biodiesel, transesterification, MgO, CaO, solid catalyst.*