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Evaluation of Emission Characteristics of Diesel Engine Fueled with Blends of Biodiesel Obtained from Waste Sesame Oil and Its Blends with Pure Menthe Oil



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Abstract Air pollution produced from the combustion of diesel fuel is a very serious problem especially in India; therefore, it is necessary to develop an alternative fuel which must be environmental friendly. Emissions of hydrocarbon, carbon dioxide, carbon mono oxide, nitrogen oxides, and particulate matter from exhaust of diesel engine are very important as per as air pollution is concern. As the cost of diesel fuel is also increasing day by day at the same time it is polluting the environment too. The biodiesel derived from pure vegetable oil and waste vegetable oil has become an alternating fuel up to some extent as per emissions concern for compression ignition engine. This alternating fuel can be used without any further modification in diesel engine. In present research work, biodiesel has derived from waste sesame oil and various blends of it with menthe oil have been prepared. The blends (B20, B40, B60, B80, and B100) have been used to find out the emission characteristics at various loads like 0%, 25%, 50%, 75%, and 100%. As per the testing and result analysis, it is found that emissions of hydrocarbon, carbon dioxide, carbon mono oxide, nitrogen oxides, and particulate matter for blend B20 are very close to the diesel fuel. It is also observed that except B20, other blends shows higher rate of emissions. The results also show that blend B20 is very much suitable fuel, which gives better result in concern with the emission and environment friendly. Also, the cost of the derived biodiesel is reasonable in comparison with the diesel.

Keywords Waste vegetable oil • Biodiesel • Diesel engine • Sesame oil • Menthe oil • Fuel

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