

Ecofuel from Waste Engine Oil

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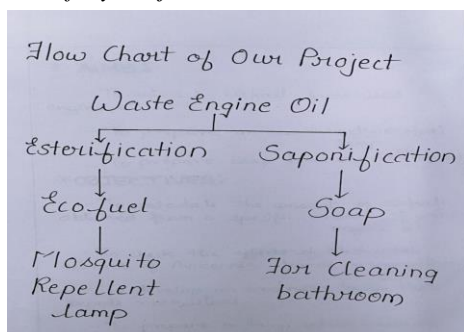
Abstract: The project is mainly about extraction of Eco fuel from waste engine oil and using the same for making aromatic lamp by adding methanolic extract of Camphor. Four 100ml conical flasks were taken. They were labeled as A,B,C and D. Flasks A and B included waste engine oil, dil. Noah as Catalyst and ethanol in a specific amount, flasks C and D included waste engine oil, yeast as Catalyst (only D with sugar) and ethanol in a fixed quantity. The flasks were kept stable overnight after processing. Next day flasks A and B had a little amount of Eco fuel but on the other hand, flasks C and D had a thick layer of Eco fuel. Also to make aromatic mosquito repellent lamp. An ecofriendly mosquito repellent lamp was prepared and used for slum dwellers. Also we observed that as a byproduct, fats molecules remained behind after Eco fuel production. So, we used those fats for Saponification. The soap that we made was used for cleaning bathrooms. The project was conducted with the authorized validation.

Keywords: Eco fuel, esterification, saponification, catalyst.

1. Introduction

Fossil fuels are limited. On the other hand, biofuels are fuels derived from organic biomass, natural or synthesized. Oil reserves are running out fast. Also there is concern over carbon emissions. We must not forget that solar, geothermal, tidal and wind energy have geographical limitations. Hence, new sustainable fuel sources are required. Stimulation of the rural economy is also important. Mosquito coils, incense sticks contain carcinogens. "Burning one Mosquito coil in a closed room amounts to smoking 100 cigarettes according to the experts", The Hindu. Also the disposal of waste engine oil is a big matter of question. This leads to environmental pollution.

A. Flow chart of my Project



2. Hypothesis

An Eco fuel mosquito repellent lamp may be more efficient

than a mosquito repellent coil.

Saponification may be possible, using fats obtained from Esterification of waste engine oil.

3. Methodology

It's a gradual process

- The first step is the collection of waste engine oil and process it for the extraction of Eco fuel. Four samples were taken and named as A, B, C and D where a specific amount of waste engine oil and methanol was added. The concentration and types of the Catalysts differ as per the samples. Samples A and B had Sodium hydroxide in different amounts as a Catalyst while Samples C and D had yeast in different amounts. In sample D, yeast and sugar was added. For all the four samples, Esterification process was carried out.
- All the samples are stirred or agitated constantly.
- From all the samples, Sample D yielded more Eco fuel.
- The Eco fuel extracted was used for making Aromatic mosquito repellent lamp. In includes, Eco fuel + methanolic extract of Camphor in a specific amount. This mixture was used for burning as a lamp. This lamp releases about only 0.05% of carbon dioxide.
- The fats that remains after Eco fuel production, was taken for Saponification process. This soap can be used for cleaning bathrooms and washbasin.
- All the tests done were validated from an authorized laboratory in Mumbai.

4. Data Analysis

Out of 800ml of waste engine oil, 480ml of Eco fuel was extract through the Sample D method. That results in 60% of Eco fuel production.

5. Conclusion

- For Aromatic mosquito repellent lamp- from samples C and D. Yeast can be used as one of the best organic Catalysts to produce Eco fuel.
- Mosquito repellent coil and Aromatic mosquito repellent lamp were compared in many terms like smoke emission, odor, irritation to eyes, provides light, cost, etc. Aromatic mosquito repellent lamp

proved to be better. It also provides light, so it can be used in rural areas as well. It was more ecofriendly than the coil.

- For bathroom surface cleansing soap was effective in reducing bacterial count.

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