Biodiesel Production from Waste Palm Cooking Oil Using Immobilized *Candida rugosa* Lipase

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Abstract Biodiesel production from Waste Palm Cooking Oil (WPCO) is of interest to substitute fossil derived diesel fuel, due to its renewable nature, cleaner emissions and non-toxic properties. Thus, in this study, biodiesel production through transesterification process was optimized using immobilized lipase from Candida rugosa and WPCO collected from the faculty's cafeteria as a feedstock. Interaction between five operating factors: molar ratio of ethanol to oil, water content, lipase loading, reaction temperature and time on the biodiesel yield were investigated. It was observed that, with the optimal conditions of 10:1 molar ratio of ethanol to oil, 1 g water, temperature 40 degrees C, 0.8 g immobilized lipase and 32 h reaction time, a yield of 85.72% of biodiesel could be achieved. Thus, this study shows that WPCO, an environmental waste, can be utilized as a promising feedstock for biodiesel production using environmentally friendly biocatalysts such as immobilized lipase.

Keywords **Author Keywords:** biodiesel; transesterification; immobilization; waste palm cooking oil; lipase

Keywords Plus: PROCESS OPTIMIZATION; JATROPHA-CURCAS; FRYING OIL; SEED OIL; TRANSESTERIFICATION; METHANOLYSIS; CATALYST; DESIGN; WATER; NEAT

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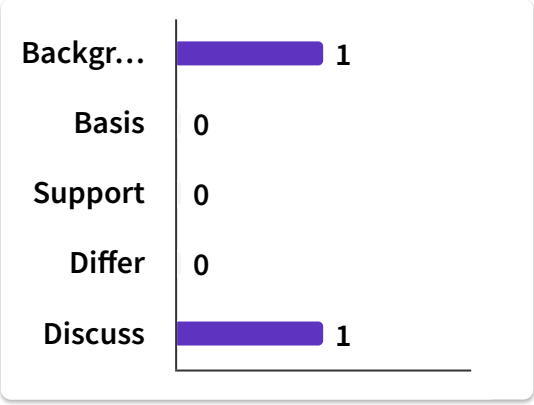

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