

# 고정화 리파아제를 이용한 바이오디젤의 생산

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## Biodiesel production using immobilized lipase

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**Abstract** : Biodiesel is an alternative fuel, and is receiving much attention because of its benefits, i.e., it is non-toxic, biodegradable, and renewable. Generally, the synthesis of biodiesel is accomplished by chemical transesterification using alkaline catalysts. The chemical process causes environmental problems and often results in undesirable by-products. However, enzymatic process for biodiesel production using lipase does not generate any waste materials and can increase the yield of biodiesel by reducing by-products. In this study, lipase was produced using the strain of *Rhizopus oryzae* and immobilized on silica gel using cross-linking method. Each step in the immobilization procedure was optimized to improve immobilization efficiency. Furthermore, long-term stability of immobilized lipase was investigated. Biodiesel was produced from soybean oil and some waste oils using the immobilized lipase. Reaction conditions such as temperature, agitation speed, ratio of substrates and the number of stepwise addition of methanol were optimized. The immobilized lipase was separated after the batch reaction and reused for next batch. The reuse stability of immobilized lipase for biodiesel production was also investigated.

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