High performance enzymatic biodiesel synthesis of soybean oil using immobilized lipase (Novozym 435) with adsorption of methanol and glycerol by silica gel

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It has been known that enzymatic transesterification using methanol can proceed only when the relative amount of the alcohol is low, probably due to inhibitory effects of methanol and glycerol on enzyme. In this study, silica gel was used as an adsorbent for methanol and glycerol during the transesterification of soybean oil by immobilized lipase (Novozym 435 from *Candida antarctica*) to prevent the enzyme inhibition. The optimum amount of silica gel was 4.8g/0.01 mol of oil. When the adsorbent was used, conversion of the oil increased by 60 folds, showing that this method can be used to improve the lifetime of the biocatalyst during enzymatic biodiesel production.