

Kinerja lipase whole cell lipase ekstraseluler dan lipase komersial sebagai biokatalis untuk sintesis biodiesel rute non alkohol =
Performance of whole cell lipase extracellular lipase and commercial lipase as biocatalyst for non alcohol route of biodiesel synthesis

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Abstrak

Lipase sebagai biokatalis untuk sintesis biodiesel dapat digunakan dalam bentuk lipase intraseluler (whole-cell) dan ekstraseluler. Pada penelitian ini, whole-cell dari *Rhizopus oryzae* dikultivasi melalui metode single step dan two step. Lipase ekstraseluler yang berupa ekstrak kasar diperoleh dari *Aspergillus niger*, *Aspergillus oryzae*, dan *Aspergillus awamori*. Kinerja biokatalis lipase diuji melalui reaksi interesterifikasi dengan rasio minyak dan metil asetat sebesar 1:12, biokatalis 10% wt pada suhu 35oC selama 48 jam. Hasil biodiesel terbaik diperoleh saat whole-cel free dikultivasi metode one step dengan yield 41%, dan yield lipase ekstraseluler dari *Aspergillus awamori* sebesar 19%. Kinerja lipase komersial ditinjau sebagai pembandingan pada penelitian.

.....Lipase as biocatalyst for biodiesel synthesis can be used in the form of intracellular (whole-cell) and extracellular lipase. In this study, whole-cell from *Rhizopus oryzae* cultivated with single-step and two-step methods. Extracellular lipase in the form of crude extract obtained from *Aspergillus niger*, *Aspergillus oryzae*, and *Aspergillus awamori*. Performance lipase biocatalyst was tested by interesterification reaction with oil and methyl acetate ratio of 1:12, biocatalyst 10 wt% at a temperature of 35oC for 48 hours. Biodiesel best results are obtained when whole-cell free cultivated single step method with a yield 41% and yield the extracellular lipase from *Aspergillus awamori* by 19%. Commercial lipases were also reviewed as a comparator in study.