

SCREENING FOR URASE ACTIVITY IN
FUMICOZIA ALOPALLONELLA ISOLATED
FROM *AVICENNIA ALBA*

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**SCREENING FOR LIPASE ACTIVITY IN
HUMICOLA ALOPALLONELLA
ISOLATED FROM
*AVICENNIA ALBA***

By
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A thesis submitted in partial fulfillment of
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PENGAKUAN DAN PENGESAHAN LAPORAN PITA I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **SCREENING FOR LIPASE ACTIVITY IN *Humicola alopallonella* ISOLATED FROM *Avicennia alba*** oleh **CHIN WEI SHIUNG**, No. Matrik: **UK11194** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah **SARJANA MUDA SAINS (SAINS BIOLOGI)**, Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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DECLARATION

I hereby declare that this thesis entitled Screening for Lipase Activity in *Humicola alopallonella* Isolated from *Avicennia alba* is the result of my own research except as cited in the references.

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ABSTRACT

Recently, lipase enzyme has received overwhelming attention from many researchers due to its ability to catalyze the hydrolysis of triacylglycerol into free fatty acids and glycerol. Besides, lipase also significantly transforms lipase's residues into useful products for industrial usage. However, there are few studies reported on marine fungi which can produce lipase enzyme. In this study, the ability to produce lipase by *Humicola alopallonella* previously isolated from *Avicennia alba* was investigated. The fungal culture was grown in tryptone broth and extracellular lipase was assayed for its activity using cupric acetate-pyridine colometric method. In the optimization of the assay, the effect of amount of enzyme was investigated where 1.0 ml showed the highest hydrolytic activity on olive oil as substrate, compared to 0.2 ml and 2.0 ml. In order to optimize the production of lipase, three growth parameters were studied: incubation time (24, 48 and 72 hours), pH (5.0, 6.0 and 7.0) and temperature (15°C, 20°C and 25°C). Lipase production for *H. alopallonella* was highest at 24 hours, pH 5.0 and 20°C. The results indicated that *H. alopallonella* was able to produce lipase and can be a major alternative to chemical catalysts to meet the demand of industries.

**SARINGAN AKTIVITI ENZIM LIPASE DARIPADA *HUMICOLA*
ALOPALLONELLA YANG DIASINGKAN DARIPADA
AVICENNIA ALBA.**

ABSTRAK

Kebelakangan ini, enzim lipase telah menerima banyak perhatian daripada para penyelidik disebabkan kemampuannya menghidrolisiskan triasilgliserol kepada asid lemak dan gliserol. Selain itu, enzim lipase juga mampu menukar baki lipase kepada produk yang berguna dalam industri. Dalam kajian ini, kebolehan *Humicola allopallonella* dipencilkan daripada *Avicennia alba* untuk menghasilkan lipase telah dikaji. Fungi telah dikulturkan di dalam kaldu tripton dan enzim lipase yang dihasilkan diukur secara kolometrik kuprikasetat-piridina. Untuk menentukan parameter yang optima bagi enzim lipase, kesan amoun enzim lipase telah diuji dan 1.0 ml menunjukkan aktiviti lipase yang paling tinggi berbanding dengan 0.2 ml dan 2.0 ml. Untuk menentukan keadaan optima bagi pengeluaran lipase, tiga jenis parameter telah diuji, iaitu masa pengeraman (24, 48 dan 72 jam), pH (5.0, 6.0 dan 7.0) dan suhu (15°C, 20°C dan 25°C). Penghasilan enzim lipase daripada *H. allopallonella* adalah paling tinggi pada 24 jam, pH 5.0 dan 20°C. Keputusan menunjukkan *H. allopallonella* boleh menghasilkan enzim lipase dan boleh dijadikan sebagai alternatif kepada pemangkin kimia untuk memenuhi permintaan industri.