

SCREENING FOR LIPASE ACTIVITY IN
TRICHODERMA SP. ISOLATED FROM
DUMNITZERA RACEMOSA

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**SCREENING FOR LIPASE ACTIVITY IN *TRICHODERMA* SP. ISOLATED
FROM *LUMNITZERA RACEMOSA***

By
Goh Kwong Yuen

A thesis submitted in partial fulfillment of
the requirements of the award of the degree of
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Department of Biological Sciences
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JABATAN SAINS BIOLOGI
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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 *TRICHODERMA* SP. ISOLATED FROM *LUMNITZERA RACEMOSA*** oleh **GOH KWONG YUEN**, No. Matrik: **UK11122** telah diperiksa dan semua pembedaan 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 *Trichoderma* sp. Isolated from *Lumnitzera racemosa* is the result of my own research except as cited in the references.

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ABSTRACT

Microbes are the major sources of lipases where of late, marine and aquatic microbes have become alternative sources to their terrestrial counterparts. In this study, the ability to produce lipase by *Trichoderma* sp. which was previously isolated from mangroves was investigated. The fungal culture was grown in tryptone broth and extracellular lipase was assayed for its activity using the cupric acetate-pyridine colorimetric method. In the optimization of the assay, the effect of amount of enzyme was investigated where 1.0 mg showed the highest hydrolytic activity on olive oil as substrate, compared to 0.2 mg and 2.0 mg. In order to optimize the production of lipase, three growth parameters were studied: incubation time (24, 48 and 72 hours), pH (5, 6 and 7) and temperature (15°C, 20°C and 25°C). Lipase production for *Trichoderma* sp. was highest at 24 hours, pH 5 and 20°C. The results indicated that this marine fungus was able to produce lipase and can be a major alternative to chemical catalysts to meet the demand of industries.

SARINGAN AKTIVITI LIPASE DARIPADA *TRICHODERMA* SP. YANG DIASINGKAN DARI POKOK *LUMNITZERA RACEMOSA*

ABSTRAK

Mikroorganisma adalah satu sumber utama bagi lipase, di mana kebelakangan ini mikroorganisma marin dan akuatik menjadi sumber alternatif kepada mikroorganisma darat. Dalam kajian ini, keupayaan *Trichoderma* sp. yang dipencil dari pokok bakau, untuk menghasilkan lipase telah di kaji. Kulat ini dikulturkan di dalam media kaldu tripton dan aktiviti lipase di ukur menggunakan kaedah kolometrik kuprik acetat-piridina. Dalam mengoptimumkan pengukuran aktiviti, kesan kuantiti enzim dikaji dan 1.0 mg lipase menunjukkan aktiviti yang tertinggi ke atas minyak zaitun sebagai substrat berbanding 0.2 mg dan 2.0 mg. Untuk mengoptimumkan penghasilan lipase, tiga parameter berbeza digunakan iaitu: tempoh pengeraman (24, 48 dan 72 jam), pH (5, 6 dan 7) dan suhu (15°C, 20°C dan 25°C). Lipase yang dihasilkan oleh *Trichoderma* sp. menunjukkan penghasilan tertinggi pada 24 jam, pH 5 dan 20°C. Hasil ujikaji ini menunjukkan kulat marin boleh menghasilkan lipase dan mampu dijadikan alternatif kepada pemangkin kimia untuk memenuhi keperluan industri-industri.