

SCREENING FOR LIPASE ACTIVITY IN
TRICHODERMA VIRIDE ISOLATED FROM
ACROSTICHUM AUREUM

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SCREENING FOR LIPASE ACTIVITY IN *TRICHODERMA VIRIDE*
ISOLATED FROM *ACROSTICHUM AUREUM*

By
Yee Wee Deon

A thesis submitted in partial fulfillment of
the requirements for the award of the degree of
Bachelor of Science (Biological Sciences)

DEPARTMENT OF BIOLOGICAL SCIENCES
FACULTY OF SCIENCE AND TECHNOLOGY
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*RESEARCH REPORT VERIFICATION***

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **SCREENING FOR LIPASE ACTIVITY IN *TRICHODERMA VIRIDE* ISOLATED FROM *ACROSTICHUM AUREUM*** oleh **YEE WEE DEON**, No. Matrik: **UK 11963** 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 *Trichoderma viride* Isolated from *Acrostichum aureum* is the result of my own research except as cited in the references.

Signature : 
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ABSTRACT

The usage of lipase for various industrial applications has become so important that it attracted interests from various researchers. Microbes have become the major source 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 the fungus, *Trichoderma viride* 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 ml showed the highest hydrolytic activity on olive oil as substrate, compared to 0.2 ml and 2.0 ml, for the fungus. 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 viride* was found highest at 24 hours, pH 5 and 20°C. The results indicated that the 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 *TRICODERMA VIRIDE* YANG DIASINGKAN DARIPADA *ACROSTICHUM AUREUM*

ABSTRAK

Penggunaan lipase dalam pelbagai applikasi industri telah menjadi sangat penting sehingga menarik perhatian dari para penyelidik. Kebelakangan ini, lipase daripada mikrob aquatik dan marin telah menjadi sumber alternatif kepada lipase yang dihasilkan oleh mikrob daratan. Dalam kajian ini, keupayaan *Trichoderma viride* yang dipencil daripada pokok bakau untuk menghasilkan lipase telah diselidik. Kulat ini dikultur dalam media tripton dan lipase yang ekstrasellular telah diasai untuk mengkaji aktiviti menggunakan cara kolorimetrik kuprum asetat-piridina. Dalam mengoptimalkan asai, kesan kuantiti enzim telah dikaji di mana 1.0ml menunjukkan aktiviti hidrolitik yang paling tinggi pada subtrak minyak zaitun. Untuk mengoptimalkan pengeluaran lipase, tiga parameter telah dikaji: masa inkubasi (24, 48 dan 72 jam), pH (5, 6 dan 7) dan suhu (15°C, 20°C and 25°C). Pengeluaran lipase bagi *Trichoderma viride* didapati paling tinggi apabila diinkubasi untuk 24 jam, pH5 dan pada 20°C. Keputusan yang diperolehi ini menunjukkan bahawa kulat marin boleh menghasilkan lipase dan boleh menjadi sumber alternatif kepada pemangkin kimia untuk memenuhi keperluan industri.