# CULTIVATION TRIALS OF A SELECTED BENTHIC DINOFLAGELLATE

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FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
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2008

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# CULTIVATION TRIALS OF A SELECTED BENTHIC DINOFLAGELLATE

By
Chew Eng How

Research Report submitted in partial fulfillment of
the requirements for the degree of
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Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITY MALAYSIA TERENGGANU
2008

# PERCUBAAN UNTUK MENGKULTUR DINOFLAGELAT BENTIK TERPILIH

Oleh

Chew Eng How

Laporan Penyelidikan ini diserahkan untuk memenuhi
Sebahagian keperluan bagi
Ijazah Sarjana Muda Sains (Biologi Marin)

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## PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

**Cultivation Trials of a Selected Benthic Dinoflagellate**

oleh **Chew Eng How**, No.Matrik **UK 12143** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains (Biologi Marin), Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.

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## ABSTRACT

The study on benthic dinoflagellates is still new in phycology. Benthic dinoflagellates can be found attached to seaweeds, rocks and sediment with the flagella modified for attaching to hard surfaces. Some of them are known to produce toxins and they can affect the seaweed culture industry. This study was an attempt to culture a selected benthic dinoflagellate in laboratory conditions by using different media and to compare their growth in all the culture media tested. The number of cells was recorded everyday and the growth rate was determined by using the graph of number of cell per 10μL versus culture age (day). Establishing the culture of benthic dinoflagellates is important for further detailed studies such as biomolecular aspects, phycotoxin, taxonomy and anatomy. Three culture media used in this study were ES-DK, f/2 medium and Soil Extract + 90% seawater. These media were chosen as ES-DK is the culture medium used to maintain the benthic dinoflagellate culture in University Kebangsaan Malaysia (UKM), f/2 medium is the culture medium that had shown good results in culturing a wide variety of microalgae and Soil Extract + 90% Seawater was chosen because it is the benthic dinoflagellates' natural habitat. Thus soil extract may provide the nutrients needed for their growth. Result shows that f/2 medium can maintain the culture until it reached 1033 cells while ES-DK reached 150 cells, while soil extract + 90% Seawater can only keep the cells alive without replication. Thus, f/2 medium is suitable for mass culture and for maintaining

mass culture stock while ES-DK is suitable to be used to study their morphology and growth phases. Soil Extract + 90% Seawater is suitable to be used in maintaining the newly-collected field samples while transferring them from the sampling site to the laboratory.

PERCUBAAN UNTUK MENGKULTUR DINOGLAGELAT BENTIK TERPILIH

## ABSTRAK

Kajian tentang dinoflagelat bentik masih baru dalam bidang fikology. dinoflagelat bentik boleh dijumpai melekat pada rumpai laut, batu dan sedimen dengan menggunakan flagela yang diubahsuaikan untuk tujuan melekat. Sesetengah spesies dikenal pasti boleh menghasilkan toxin dan boleh merencatkan industri menanam rumpai laut. Kajian ini adalah untuk mencuba mengkultur satu dinoflagelat bentik terpilih dengan menggunakan tiga media kultur yang berlainan untuk membandingkan pertumbuhannya dalam media kultur yang diuji. Bilangan sel dikira dan direkod setiap hari dan kadar pertumbuhan dikenalpasti dengan melukis graf bilangan sel dalam 10μL lawan dengan hari. Penghasilan kultur stok amat penting untuk kajian lain seperti kajian tentang aspek biomolekular, fikotoxin, taksonomi dan anatomi dinoflagelat bentik. Tiga media kultur yang digunakan dalam kajian ini adalah ES-DK, f/2 medium dan Ekstrak Tanah + 90% Air Laut. ES-DK dipilih kerana media kultur ini merupakan media kultur yang digunakan di Univeristy Kebangsaan Malaysia untuk mengekalkan stock kultur manakala f/2 dipilih kerana ia menunjukkan keputusan yang baik dalam mengkultur banyak jenis mikroalga. Ekstrak Tanah + 90% Air Laut dipilih disebabkan habitat semulajadi dinoflagelat bentik adalah di sedimen. Oleh itu, Ekstrak Tanah mungkin mampu memberi nutrient yang diperlukan dalam pertumbuhan dinoflagelat bentik itu. Keputusan kajian menunjukkan

f/2 medium mampu mengekalkan kultur itu sehingga ia mencapai 1033 sel manakala ES-DK pula mencapai 150 sel dan Ekstrak Tanah + 90% Air Laut hanya boleh menjamin sel itu hidup tanpa pembahagian berlaku. Oleh sebab itu, f/2 sesuai digunakan untuk mengekalkan stock kultur dan membuat kultur dalam skala yang besar manakala ES-DK lebih susuai digunakan bagi pengkulturan yang bertujuan untuk membuat kajian tentang fasa hidup dan morfologi benthic dinoflagellate itu. Ekstrak Tanah + 90% Air Laut sesuai digunakan untuk tujuan mengekalkan sampel yang baru diambil sementara menghantarnya balik dari tapak penyempelan ke makmal.