

COMPARATIVE STUDY OF TRACE METAL COMPOSITION
IN CORAL SKELETONS, SEDIMENTS AND WATER COLUMNS
BETWEEN EAST AND WEST COAST
OF PENINSULAR MALAYSIA

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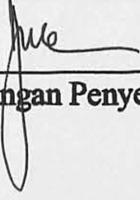
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BORANG PENGESAHAN DAN KELULUSAN LAPORAN AKHIR PROJEK

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Dengan ini disahkan bahawa saya telah menyemak laporan akhir projek ini dan,

- (i) Semua pembetulan yang disarankan oleh pemeriksa-pemeriksa telah dibuat, dan
- (ii) Laporan ini telah mengikut format yang diberikan dalam Panduan PSF 499 - Projek dan Seminar, 1993, Fakulti Perikanan Dan Sains Samudera, Universiti Pertanian Malaysia.


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TERENGGANU

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I would like to thank Dr. Ridzwan Abu Bakar for his writing assistance and advice in order to turn this report into qualified project paper. I would also like to thank my second supervisor, Dr. Abd. Khalik Wood for giving me insight into nuclear theories and practices. Other names worth mentioning here were Cik Jantilah, Miss Irene and Sharashikin of UPM, and my roommates; Khalid, Nasran and Saifi. Thank you very much, to all of you. And especially everyone close to my heart.....

By:

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This paper is part of the requirement in order to obtain the degree in Bachelor Science of Fisheries

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ACKNOWLEDGEMENT

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Results indicate a significant increase concentration of Sr, K, Cr, Ni, Mn and Cd in the corals of Pulau Redang than in Port Dickson. Sediment samples of Pulau Redang records a significantly higher concentration of Sr, K, and Cr ($p < 0.05$) than sediment samples of Port Dickson. Concentration of Pb and Cd in water samples of Port Dickson record a significant difference ($p < 0.05$) when compared to the water samples of Pulau Redang. Concentration of trace element in the layers of coral indicate severe degradation in water quality, especially in the waters of Port Dickson. Results indicate higher level of pollution in Port Dickson compared to Pulau Redang. The fact that corals can be used as pollution-environmental indicators of water quality are reinforced in this study.

ABSTRACT

Coral samples from Pulau Redang and Port Dickson were collected and were examined for Sr, I, Br, Mn, Cl, K, Al, V, Na, Ca, Ba and Ti using Neutron Activation Analysis (NAA), and NBS 1646 Estuarine Sediment Standard Reference Material as standard. Water samples were also taken and examined for Zn, Pb and Cd using Graphite Furnace Atomic Absorption Spectrophotometer (GFAAS).

Graphite Furnace Atomic Absorption Spectrophotometer (GFAAS)

Results indicate a significantly higher concentration ($p<0.05$) of Sr, I, K, Ca, Na, Mn and Cl in the corals of Pulau Redang than in Port Dickson. Sediment samples of Pulau Redang records a significantly higher concentration of Sr, K, and Ca ($p<0.05$) than sediment samples of Port Dickson. Concentration of Pb and Cd in water samples of Port Dickson record a significant difference ($p<0.05$) when compared to the water samples of Pulau Redang. Concentration of trace element in the layers of coral indicate some degradation in water quality, especially in the waters of Port Dickson. Result indicate higher level of pollution in Port Dickson compared to Pulau Redang. The fact that corals can be used as palaeo-environmental indicator of water quality are reinforced in this study.

ABSTRAK

Sampel batu karang dari Pulau Redang dan Port Dickson telah dikutip dan dikaji untuk mengesan elemen-elemen Sr, I, Br, Mn, Cl, K, Al, V, Na, Ca, Ba dan Ti menggunakan Analisa Pengaktifan Neutron (NAA) yang menggunakan 'NBS 1646 Estuarine Sediment Standard Reference Material' sebagai piawai. Sampel air juga telah diambil dan dianalisa untuk elemen-elemen Zn, Pb dan Cd menggunakan 'Graphite Furnace Atomic Absorption Spectrophotometer' (GFAAS).

Keputusan menunjukkan kadar kepekatan yang lebih tinggi dan bererti ($p<0.05$) bagi kandungan Sr, I, K, Ca, Na, Mn dan Cl di antara sampel batu karang dari Pulau Redang dengan Port Dickson. Sampel sedimen Pulau Redang juga mencatatkan nilai yang lebih tinggi bagi Sr, K dan Ca dengan perbezaan yang nyata ($p<0.05$) bila dibandingkan dengan sampel sedimen Port Dickson. Kepekatan Pb dan Cd di dalam sampel air dari Port Dickson pula mencatatkan perbezaan nyata ($p<0.05$) bila dibandingkan dengan sampel air dari Pulau Redang. Kepekatan unsur-unsur surih di dalam lapisan-lapisan batu karang menunjukkan penurunan mutu air, terutamanya di perairan Port Dickson. Hasil keputusan menunjukkan bahawa terdapat kadar pencemaran yang lebih tinggi di Port Dickson berbanding dengan Pulau Redang. Hakikat bahawa batu karang boleh digunakan sebagai petunjuk 'palaeo-environment' telah diperkuuhkan lagi melalui kajian ini.