

HEAVY METAL CONTENT (Cd, Mn, Cu, Zn, Pb) IN OYSTER (*Crassostrea
iredalei*) FROM SETIU LAGOON, TERENGGANU

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2008

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1100061847

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LP 26 FMSM 1 2008



1100061847

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iredalei*) from Setiu Lagoon, Terengganu / Mohd Azlisham Abd
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iredalei*) FROM SETIU LAGOON, TERENGGANU**

By

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**Research Report submitted in partial fulfillment of
the requirements for the degree of
Bachelor of Science (Marine Biology)**

**Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITI MALAYSIA TERENGGANU
2008**

Lampiran 8 (Borang Pengakuan dan Pengesahan Laporan Akhir Projek Penyelidikan)



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PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

HEAVY METAL CONTENT (Cd, Mn, Cu, Zn, Pb) IN OYSTER (*Crassostrea iredalei*) FROM SETIU LAGOON TERENGGANU.

Oleh **Mohd Azlisham bin Abd Rahman**, No.Matrik **uk12062** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperoleh **Ijazah Sarjana Muda Sains (Biologi Marin)**, Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.

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ACKNOWLEDGEMENT

First of all, thanks to Allah swt for giving me strength, patience, courage, determination and confidence to complete my thesis in time. Without His blessing, I would not have been successful in this endeavor.

Special thanks to Prof Dr Noor Azhar bin Mohamed Shazili for believing me and trusting me in handling my project. Indeed without his ideas and knowledge, correcting my grammar and continues support, I would never be able to complete my research properly. To Mr Joseph from INOS science officer, thank you very much for your encouragement, advice, and support throughout my research work.

Special thanks to Prof Noor master students especially to Adiana, Naz and Zurina for their guidance, and helping throughout my studies. Not forgetting as well all my friends who helped and supported me in term of enthusiasms to complete my research. My beloved family especially my parent that always prayed for my success and showed concern for me throughout my studies at the university. May God will bless them.

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LIST OF ABBREVIATION

SYMBOLS	MEANING
g	Gram
°C	Degree Celcius
%	Percentage
L	Litre
Mg	Miligram
ml	Mililitre
Cd	Cadmium
Mn	Manganese
Cu	Copper
Zn	Zinc
Pb	Lead
µg/g	Microgram per gram
ppm	Part per million
ppt	Part per thousand
>	More than
<	Less than
HNO ₃	Nitrite acid
HCL	Hydrochloric acid

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ABSTRACT

Heavy metals pollution in aquatic environments known as a major problem contributed to human health risks. The studies on this pollutant through bioindicators organisms such oyster from species *Crassostrea iredalei* is important to control their sources and to manipulate the pollutants. The concentrations of Cd, Mn, Cu, Zn and Pb in tissue of *Crassostrea iredalei*, sediment and surrounding water was measured and the data was analysed using one way ANOVA and correlation test to detect the relationship between sampling periods and between oyster tissue , sediment and water. The highest concentration of metals in oyster tissue was Zn ($940.65 \pm 531.4 \mu\text{g/g}$), followed by Cu ($40.08 \pm 24.35 \mu\text{g/g}$), Mn ($22.56 \pm 42.72\mu\text{g/g}$), Cd ($2.42 \pm 1.46 \mu\text{g/g}$) and Pb ($1.15 \pm 2.97 \mu\text{g/g}$). Concentrations of Cd, Cu and Zn were exceeded the maximum level allowed according to Food Act 1983. Metals in sediment were dominated by Mn ($381.78 \pm 237.56 \mu\text{g/g}$) and Zn ($41.04 \pm 17.24\mu\text{g/g}$), others were Pb ($20.66 \pm 8.95 \mu\text{g/g}$), Cu ($7.02 \pm 2.49 \mu\text{g/g}$) and Cd ($0.41 \pm 0.12 \mu\text{g/g}$). Concentrations of heavy metals in surrounding water were Zn ($300.96 \pm 492.08 \mu\text{g/L}$), Pb ($14.49 \pm 19.75\mu\text{g/L}$), Cu ($6.97 \pm 8.61\mu\text{g/L}$), Mn ($5.43 \pm 5.94\mu\text{g/L}$), Cd ($1.96 \pm 2.44 \mu\text{g/L}$). There was no correlation between metal concentration in oyster tissue and in sediment for all five metals. Otherwise only Zn represented strong positive ($r = 0.650$) ($p < 0.05$) relationship in oyster tissue and surrounding water.

KAJIAN KANDUNGAN LOGAN BERAT (Cd, Mn, Cu, Zn, Pb) DALAM TISU
LEMBUT TIRAM (*Crassostrea iredalei*) DI KAWASAN SETIU LAGUN,
TERENGGANU

ABSTRAK

Pencemaran logam berat di persekitaran akuatik merupakan masalah utama yang boleh menyumbang kepada risiko kesihatan manusia. Kajian terhadap bahan pencemar ini melalui organisma penunjuk seperti tiram dari spesies *Crassostrea iredalei* adalah penting untuk mengawal puncanya dan menguruskannya dengan berkesan. Kepekatan logam Cd, Mn, Cu, Zn dan Pb dalam tisu *Crassostrea iredalei*, endapan dan air diukur dan data dianalisis menggunakan ANOVA sehala dan ujian kolerasi untuk mengesan perhubungan diantara tempoh persempelan dan diantara tisu tiram, endapan dan air. Kepekatan logam Zn ($940.65 \pm 531.4 \mu\text{g/g}$) adalah paling tinggi dalam tisu tiram, diikuti dengan Cu ($40.08 \pm 24.35 \mu\text{g/g}$), Mn ($22.56 \pm 42.72 \mu\text{g/g}$), Cd ($2.42 \pm 1.46 \mu\text{g/g}$) dan Pb ($1.15 \pm 2.97 \mu\text{g/g}$). Kepekatan logam dalam endapan didominasi oleh Mn ($381.78 \pm 237.56 \mu\text{g/g}$) diikuti dengan Zn ($41.04 \pm 17.24 \mu\text{g/g}$), Pb ($20.66 \pm 8.95 \mu\text{g/g}$), Cu ($7.02 \pm 2.49 \mu\text{g/g}$) dan Cd ($0.41 \pm 0.12 \mu\text{g/g}$). Manakala kepekatan logam didalam air seperti berikut; Zn ($300.96 \pm 492.08 \mu\text{g/L}$), Pb ($14.49 \pm 19.75 \mu\text{g/L}$), Cu ($6.97 \pm 8.61 \mu\text{g/L}$), Mn ($5.43 \pm 5.94 \mu\text{g/L}$), Cd ($1.96 \pm 2.44 \mu\text{g/L}$). Ujian korelasi menunjukkan tiada perhubungan diantara kandungan logam dalam tisu tiram dan dalam endapan. Manakala hanya Zn menunjukkan korelasi positif yang kuat ($r = 0.650$) ($p < 0.05$) didalam tisu tiram dan air.