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Content of heavy metals cadmium (Cc),copper (Cu),Zinc (Zn),manganese (Mn) and lead (pb) in oysters (Crassoatrea iredalei) from oyster culture area in Setiu Lagoon / Siti Maria

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Special for.....

Prof Noor Azhar Muhammad Shazili
And all the lecturers.....

Ayah, Ummi, Along and all siblings.....

Also to all my beloved friends.....

CONTENT OF HEAVY METALS CADMIUM (Cd), COPPER (Cu), ZINC (Zn), MANGANESE (Mn) AND LEAD (Pb) IN OYSTERS (*Crassostrea iredalei*) FROM OYSTER CULTURE AREA IN SETIU LAGOON.

By

Siti Maria Harun

Research report is submitted in partial fulfillment of the requirement of degree of Bachelor of Science (Marine Science)

Department Of Marine Science
Faculty Of Science And Technology
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ABSTRACT

Oysters are recognized as pollution bioindicators as they have the ability to accumulate pollutants in their tissues at elevated levels in relation to pollutants in the marine environment. The objectives of this study were to measure the levels of some heavy metals (Cd, Cu, Mn, Zn and Pb) in different oyster (*Crassostrea iridalei*) sizes from Setiu Lagoon, Terengganu. It is also to use oyster as biological indicator in monitoring heavy metals pollution in the studied area. Three different sizes of oyster were collected in August and October 2005 from cultured rafts. *Crassostrea iredalei* (dry weight) had the highest concentration of Zn (221.40 ± 25.57 μg/g), followed by Cu (31.65 ± 6.34 μg/g), Mn (17.89 ± 3.36 μg/g), and Cd (6.65 ± 0.44 μg/g). Pb (7.12 ± 2.25 μg/g) showed the lowest concentration compared to other metals. The ability of oyster to concentrate Cu and Zn is higher in large oyster compared to small oysters, with metal levels increasing with sizes. However, Cd, Mn and Pb content are not influenced by size. Concentrations of Zn, Cd, and Pb in the oysters were high, with Cd exceeding the permissible limit set by Malaysian Food Act 1983 and Pb near the limit. As concentration of Cd is high in oyster, the potential risk of consuming oysters is relatively higher than other seafood.

ABSTRAK

Tiram telah dikenali diseluruh dunia sebagai penunjuk biologi bagi mengesan pencemaran kerana ia mempunyai keupayaan untuk mengumpul bahan pencemar di dalam tisu pada paras tertinggi dari persekitaran marin. Kajian ini, menggunakan *Crassostrea iredalei* sebagai penunjuk biologi bagi pencemaran logam berat dikawasan penternakan tiram di Setiu Lagun, Terengganu. Tiram dari tiga saiz berbeza dikumpulkan pada bulan Ogos dan juga Oktober 2005 bagi penganalisaan logam berat. Daripada keputusan yang diperolehi, *C.iredalei* (berat kering) menunjukkan pengunpulan tertinggi bagi zink (221.40 ± 25.57 μg/g) dan diikuti oleh kuprum (31.65 ± 6.34 μg/g), mangan (17.89 ± 3.36 μg/g), dan kadmium (6.65 ± 0.44 μg/g). Plumbum (7.12 ± 2.25 μg/g) merupakan logam terendah yang dikumpulkan oleh tiram berbanding logam lain. Keputusan yang diperolehi menunjukkan, keupayaan tiram untuk mengumpul logam Cu dan Zn lebih tinggi berbanding tiram bersaiz kecil. Bagaimanapun, Pb, Cd dan Mn menunjukkan kepekatan yang hampir setara bagi ketiga-tiga saiz. Oleh kerana kepekatan Cd adalah tinggi didalam tiram berbanding tahap yang dibenarkan dalam Akta Makanan Malaysia 1983, maka potensi terhadap risiko memakan tiram ini adalah lebih tinggi berbanding makanan laut lain.