THE EFFECTS OF SUBLETHAL CONCENTRATIONS OF LEAD ON DELTA-AMINOLEVULINIC ACID DEHYDRATASE ACTIVITY AND HAEMATOLOGICAL PARAMETERS IN THE JAVANESE CARP, *Puntius gonionotus* (Bleeker).

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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

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THE EFFECTS OF SUBLETHAL CONCENTRATIONS OF LEAD ON DELTA - AMINOLEVULINIC ACID DEHYDRATASE ACTIVITY AND HAEMATOLOGICAL PARAMETERS IN THE JAVANESE CARP, *Puntius gonionotus* (Bleeker).

BY

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A project report submitted in partial fulfilment to the Faculty of Fisheries and Marine Science of the requirement for the Degree of Bacelor of Science (Fisheries).

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ABSTRACT

The activity of the erythrocyte delta-aminolevulinic acid dehydratase (ALA-D) of carp, *Puntius gonionotus* was measured under a variety of lead exposure conditions. A four-week exposure of carp to lead concentrations of 10ppb - 300ppb strongly inhibited their ALA-D activities with increasing lead concentrations. When carp were exposed to lead concentration of 300 ppb, depressed activity of ALA-D became visible after only 2 days, and this activity became less with increasing exposure periods. The ALA-D inhibition seemed to persist in the lead-exposed fish even after a recovery period of seven weeks (55 days) in lead-free water. Therefore, these characteristics indicate that this enzyme can be useful as a short-term indicator of lead pollution. Results for the haematological studies; when the fish is exposed for 30 days to the highest lead concentration (300 ppb), it suffered from anemia, where the content and hematocrit value decrease. There is no significant ($P>0.05$) interaction between lead concentration with lactate level and blood glucose.

ABSTRAK

Aktiviti delta asid aminolevulinik dehidratase (ALA-D) dalam eritrosit ikan lampan jawa, *Puntius gonionotus* ditentukan setelah ikan didedahkan pada kepekatan plumbum (Pb) yang berbeza. Pendedahan selama 4 minggu pada kepekatan 10, 75 dan 300 ppb telah merencatkan aktiviti ALA-D dengan bertambahnya kepekatan. Ikan yang didedahkan pada kepekatan yang tertinggi (300 ppb) telah mengalami perencetan aktiviti ALA-D yang nyata walaupun hanya terdedah selama 2 hari dan aktiviti ini menjadi semakin berkurangan dengan bertingkatnya masa pendedahan. Didapati perencatan aktiviti ALA - D berlanjutan walaupun ikan diletakkan dalam air yang bebas daripada pencemaran plumbum selama 7 minggu (55 hari). Oleh itu, ciri sedemikian membolehkan enzim ini dijadikan sebagai penunjuk untuk jangka masa yang singkat bagi pencemaran plumbum. Keputusan daripada kajian hematologi yang dilakukan pada ikan yang terdedah pada kepakatan tertinggi (300 ppb) selama 30 hari juga menunjukkan ikan mengalami anemia, dimana kandungan hemoglobin serta nilai hematokrit menurun. Walau bagaimana pun, tiada perbezaan bererti, ($P > 0.05$) diperolehi diantara perkaitan kepekatan plumbum dengan paras laktik serta glukos darah.