COMPARATIVE STUDY OF HAEMATOLOGY AND HISTOPATHOLOGY OF CYPRINID, *Ctenopharyngodon idella* L., AND CICHLID, *Oreochromis niloticus* (CHITLATA STRAIN) FOLLOWING BATH EXPOSURE OF FORMALIN

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BY

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Dedicated for the advancement of fish health management scientific research and aquaculture industry ..... and human dignity.

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ABSTRACT

A comparative study of haematology and histopathology of cyprinid, *Ctenopharyngodon idella* L., and *Oreochromis niloticus* (chitlata strain) is described. The sublethal formalin bath concentrations; upper and lower for short and long term bath exposure were established using a 96-hours static renewal bioassay. Effects of upper and lower sublethal concentrations in the long and short term exposure, respectively, to erythrocyte and leucocyte count, haematocrit values, total haemoglobin and blood glucose were studied. A Short term bath treatment of 80 ppm formalin produced statistically significant ($P < 0.05$) increases in mean haematocrit and total haemoglobin values of *O. niloticus* (c.s). There was no significant differences in the mentioned plasma parameters during the long term bath treatments in both species. The results of haematological study are correlated with histopathological changes in gills, skin, kidney, liver, spleen and heart of both species, this however showed no correlation. Observed behavioral response were excessive mucous secretions and discolouration of the body in both species. There was severe degenerative histopathological changes of the gills, resulting from a long term bath treatment on both species. Marginal histopathological changes of kidney, spleen and liver were also observed.

ABSTRAK

Satu kajian perbandingan hematologi dan histopatologi ke atas cyprinid, *Ctenopharyngodon idella* L. dan *Oreochromis niloticus* (Strain Chitlata) dikemukakan. Paras kepekatan formalin pada tahap sublethal tinggi dan rendah untuk ujian pendedahan jangka panjang dan pendek ditentukan dengan ujian bioassai statik 96-jam dengan pembaharuan kepekatan larutan formalin. Formalin pada kepekatan sublethal tinggi dan rendah untuk pendedahan jangka pendek dan panjang masing-masing dikaji akan kesannya terhadap jumlah bilangan eritrosit, leukosit, nilai hematokrit, jumlah kepekatan hemoglobin dan glukosa darah ikan. Ujian pendedahan jangka pendek pada 80 ppm formalin menghasilkan perubahan yang bererti ($P < 0.05$) ke atas nilai hematokrit dan jumlah hemoglobin di dalam *O. niloticus* (s.c.). Tidak ada perbezaan bererti di dalam parameter darah ditunjukkan di dalam pendedahan formalin secara jangka masa panjang. Keputusan kajian hematologi turut dikaitkan dengan perubahan histopatologi pada insang, kulit, ginjal, hati , limpa dan jantung. Namum, kajian hematologi dan histopatologi tidak menampakkan perkaitan. Antara perubahan perilaku yang diperhatikan ialah perembesan mukos berlebihan dan pennyah-warnaan badan ikan. Terdapat perubahan histopatologi yang serius di dalam rawatan pendedahan formalin jangka panjang ke atas kedua-dua spesies. Perubahan histopatologi keamatan rendah turut diperhatikan di dalam ginjal, limpa dan hati.