TOXICITY OF COPPER AND ZINC TO TILAPIA
(OREOCHROMIS MOSSICUS) SINGLY AND IN MIXTURES

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Toxicity of copper and zinc to tilapia (Oreochromis niloticus) singly and in mixtures / Nadiah Fatin Mohd Ikhsan.

TOXICITY OF COPPER AND ZINC TO TILAPIA (*Oreochromis niloticus*) SINGLY AND IN MIXTURES.

By

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

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ABSTRACT

Mixture toxicity experiments reflect environmental pollution in a more realistic manner since the environment is often contaminated with cocktails of pollutants. This study was aimed to determine the 96hr LC50 of copper and zinc as single metal and in mixture to Tilapia (*Oreochromis niloticus*) and the metal uptake of these two metals. The 96hr LC50 values for copper were 2.404 mgL^{-1} and 2.431 mgL^{-1} in replicates 1 and 2 respectively. While, the 96hr LC50 values for zinc were 13.327 mgL^{-1} and 11.479 mgL^{-1} in replicates 1 and 2 respectively. The mean 96hr value in mixture was 6.05 mgL^{-1}. Comparing the 96hr LC50 between single and metal mixture, it shows that the 96hr LC50 of the mixture was less toxic than copper singly but more toxic than zinc singly. Generally, Tilapia (*Oreochromis niloticus*) accumulated greater concentrations of zinc in its whole body as compared with copper in all concentrations of mixture. Further study should be done to investigate the 96hr LC50 of copper, zinc and its mixture as experiments employed in the lab is different from the natural waters.

ABSTRAK

Eksperimen yang melibatkan pencampuran dua toksik atau lebih, menggambarkan pencemaran akuatik kerana sungai dan laut tercemar dengan pelbagai unsur pencemaran. Objektif kajian ini adalah untuk menentukan kadar 96 jam LC50 bagi kuprum, zink dan campurannya (Cu+Zn) terhadap ikan Tilapia (*Oreochromis niloticus*). Kadar penggumpulan logam berat di dalam keseluruhan badan ikan juga dianalisis. Di dalam kuprum, nilai 96 jam LC50 bagi replikat 1 adalah 2.404 mgL^{-1} manakala replikat 2 adalah 2.431 mgL^{-1}. Bagi zink secara tunggal pula, nilainya adalah 13.327 mgL^{-1} dalam replikat 1 dan 11.479 mgL^{-1} bagi replikat 2.. Hasil kajian menunjukkan nilai purata 96 jam LC50 bagi campuran adalah 6.05 mgL^{-1} dan terletak antara nilai kuprum dan zink. Disimpulkan bahawa, merujuk kepada kuprum, campuran (Cu+Zn) adalah kurang toksik manakala merujuk kepada zink, campuran (Cu+Zn) adalah lebih toksik. Secara umum, kadar penggumpulan tertinggi logam dalam badan tilapia adalah zink. Penggumpulan zink ketara jika dibandingkan dengan kuprum secara tunggal dan dalam nilai campuran (Cu+Zn). Kajian selanjutnya perlu dilakukan ke atas tilapia (*Oreochromis niloticus*) untuk menyiasat nilai 96 jam LC50 kerana ujian yang dilakukan di makmal mungkin berbeza dari keadaan semulajadi.