Toxicity of formaldehyde on african catfish (Clarias gariepinus) / Nurhidayah Katimon.

Lihat sebelah

TOXICITY OF FORMALDEHYDE ON AFRICAN CATFISH (*Clarias gariepinus*)

By

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PENGAKUAN DAN PENGESAHAN LAPORAN
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: Toxicity Test of Formaldehyde on African Catfish (*Clarias gariepinus*) oleh Nurhidayah Binti Katimon, No. Matrik: UK 9768 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Samudera sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains (Sains Samudera), Fakulti Pengajian Maritim Dan Sains Marin, Universiti Malaysia Terengganu.

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CONTENTS

LIST of TABLES

LIST of FIGURES

LIST of ABBREVIATONS

%	-	Percentage
^{0}C	-	Degree centigrade
APHA	-	American Public Health Association
DO	-	Dissolved oxygen
EC50	-	Median effect concentration
LC50	-	Median lethal concentration
Mg.L-1/mg/L	-	Milligram per liter
L	-	Liter
ppm	-	Part per million
pH	-	Potential of hydrogen

LIST of APPENDICES

ABSTRACT

The aquaculture activity is widely use formaldehyde (37% in formalin) to control ectoparasitic diseases. The African catfish (*Clarias gariepinus*) is one of commercial freshwater fish that been rear widely. Thus, a toxicity test was carried out to determine the safety level and other effect of formaldehyde on organism tissues and organs such as gills. The semi renewal toxicity test was used as formaldehyde has high evaporation rate. From the test that has been conducted, the 96-hours LC_{50} value for formaldehyde on African catfish (*Clarias gariepinus*) is 16.433ppm. Formaldehyde also capable in reduce DO level, and based on the readings DO level was decrease rapidly towards the increase of formaldehyde concentration. Other water parameter however did not shows significant relation. For the gills observation, it supposed to use SEM. However, due to technical problems the method was changed and the observation was only made through Motil Light Compound Microscope. Even thought the sample fixation method and sample condition not suitable for the microscope observation, still some changes on the gills can be observed where some part of the gills become decay when exposed to formaldehyde longer. Based on this study, the estimated safe concentration of formaldehyde is 0.1 of the LC_{50} value which is 1.6433ppm. However, more studies are needed to confirm it.

ABSTRAK

Formaldehyde (37% dalam formalin) telah digunakan secara meluas dalam aktiviti akuakultur untuk mengawal ektoparasit. Ikan Keli Afrika (*Clarias gariepinus*)pula merupakan salah satu spesis ikan air tawar komersil yang diternak secara meluas. Oleh itu, ujian ketoksikan telah dijalankan bagi mengetahui kepekatan formaldehyde yang selamat digunakan serta kesannya keatas tisu dan organ organisma seperti insang. Sistem yang digunakan adalah separa pembaharuan kerana tahap pemeluwapan formaldehyde yang tinggi. Daripada ujian yang telah dijalankan, nilai 96-jam LC_{50} terhadap Ikan Keli Afrika (*Clarias gariepinus*) ialah 16.433ppm. Selain daripada itu, formaldehyde juga berkeupayaan mengurangkan kadar oksigen terlarut (DO) dan berdasarkan data yang diperolehi kadar DO telah menurun secara mendadak selari dengan peningkatan kepekatan formaldehyde yang digunakan. Parameter air yang lain pula tidak menunjukkan sebarang perhubungan yang jelas dengan kepekatan formaldehyde. Bagi pemerhatian insang, oleh keran CPD tidak berfungsi maka kaedah analisa dengan SEM telah ditukar dengan pemerhatian menggunakan Motic Digital Compound Microscope. Walaupun kaedah pengawetan sampel tidak sesuai serta tahap pembesaran kanta yang terhad, sedikit perubahan insang masih dapat dilihat dimana ia menunjukkan tanda-tanda- mereput apabila semakin lama didedahkan sengan formaldehyde. Berdasarkan kajian ini, tahap formaldehyde yang selamat digunakan adalah 0.1 dari nilai 96-jam LC_{50} iaitu 1.6433ppm. Walaubagaimanapun, kajian lanjut perlu dilakukan untuk kepastian yang lebih.