生态与农村环境学报
Journal of Ecology and Rural Environment
ISSN 1673-4831
CN 32-1766/X

生态与农村环境学报 » 2012, Vol. 28 » Issue (2) :203-208 DOI:

Cu^{2+}对羽摇蚊幼虫(*Chironomus plumosus*)口器致畸作用和抗氧化酶活性的影响

李浩, 王琴, 邓金钗, 覃剑晖, 马徐发

华中农业大学水产学院

Effect of Copper on Antioxidant Enzymes Activity and Mouthpart Deformity of *Chironomus plumosus*

LI Hao, WANG Qin, DENG Jin-Chai, QIN Jian-Hui, MA Xu-Fa

College of Fisheries,Huazhong Agricultural University

摘要 采用静水生物测试法研究Cu^{2+}对羽摇蚊幼虫的急性毒性效应。设定0.005、0.010和0.020 g · L^{-1} 3个Cu^{2+}浓度梯度进行急性暴露试验，分别于试验24、48、72和96h时测定摇蚊幼虫组织匀浆超氧化物歧化酶（SOD）、过氧化氢酶（CAT）和谷胱甘肽-S转移酶（GST）的活性。结果表明，Cu^{2+}对羽摇蚊幼虫体组织CAT和SOD有明显影响，表现出剂量-效应关系。GST活性在暴露72h后表现为受诱导作用（$P<0.05$），并在96h时达到最高值（$P<0.01$）。对经0.005、0.010和 0.020 g · L^{-1} 3个Cu^{2+}+浓度梯度刺激7d后摇蚊幼虫的口器致畸情况的研究结果表明，致畸率和Cu^{2+}暴露浓度之间呈显著正相关关系（$P<0.05$）。

关键词： Cu^2 羽摇蚊幼虫 抗氧化酶 口器 致畸

Abstract： Acute toxicity of copper to larvae of *Chironomus plumosus* was studied by using the static-test method in the laboratory.The experiment was deigned to have three leves of Cu^{2+} concentration,i.e. 0.005,0.010 and 0.020 g · L^{-1}. Superoxide dismutase(SOD),catalase(CAT)and glutathione S-transferase(GST)activities in the homogenate of tissues of the larvae were monitored after they were exposed to the substance for 24,48,72 and 96 h,separately.Results show that Cu^{2+}displayed significant effects on the activities of SOD and CAT,and such effects were significantly related to dosage of the substance.GST activity was induced after 72 h of ecposure,and peak after 96 h of exposure ($P<0.01$). The induction of mouthpart deformity and the developmental response with exposure to three concentrations(0.005,0.010 and 0.020 g · L^{-1})of copper for 7 days were investigated.It was found that teratogenesis of the larvae is significantly and positively related with Cu^{2+} concentration they are exposed to.

Keywords： Cu^{2+} *Chironomus plumosus* antioxidant enzyme mouthpart tertagenesis

Received 2011-10-22; published 2012-03-25

Fund:

国家水体污染控制与治理科技重大专项(2009ZX07527-005);国家自然科学基金(40801206)

Corresponding Authors: 马徐发 华中农业大学水产学院 Email: xufama@mail.hzau.edu.cn

About author: 李浩（1987-），男，河北沧州人，硕士生，主要研究方向为水生态毒理学。E-mail:lscarecrow_258@163.com

引用本文:

李浩. 王琴. 邓金钗. 覃剑晖. 马徐发.Cu^{2+}对羽摇蚊幼虫(*Chironomus plumosus*)口器致畸作用和抗氧化酶活性的影响[J] 生态与农村环境学报. 2012,V28(2): 203-208

LI Hao, WANG Qin, DENG Jin-Chai, QIN Jian-Hui, MA Xu-Fa.Effect of Copper on Antioxidant Enzymes Activity and Mouthpart Deformity of *Chironomus plumosus* [J] Journal of Ecology and Rural Environment, 2012,V28(2): 203-208