

目录

Cu²⁺、Cd²⁺和Se⁴⁺对大型溞的单一及联合毒性效应

董晓晓¹, 刘腾腾¹, 孔强¹, 陆江², 付荣恕^{1*}

1.山东师范大学生命科学学院, 山东 济南 250014; 2.济南军区空军后勤部, 山东 济南 250002

摘要:

以静水生物测试法研究了Cu²⁺、Cd²⁺和Se⁴⁺对大型溞(Daphnia magna)的单一及联合毒性效应, 并采用水生毒理联合毒性相加指数法对其联合毒性效应进行了评价。单一毒性实验结果表明, Cu²⁺、Cd²⁺和Se⁴⁺对大型溞的毒性大小为: Cu²⁺>Cd²⁺>Se⁴⁺。联合毒性实验结果表明, Cu²⁺、Cd²⁺和Se⁴⁺对大型溞的联合毒性比较复杂, 在两两共存或三者共存时, 随着浓度配比方式的不同, 联合毒性效应发生变化, 显示出一定的复杂性。值得注意的是, Cu²⁺+Cd²⁺在毒性1: 1配比时, 联合毒性效应随暴露时间的延长由拮抗作用转变为协同作用, 与其他几种联合方式相比, 表现出一定的特殊性。

关键词: Cu²⁺ Cd²⁺ Se⁴⁺ 大型溞 联合毒性

Individual and combined toxicity of Cu²⁺, Cd²⁺ and Se⁴⁺ to Daphnia magna

DONG Xiao-Xiao¹, LIU Teng-Teng¹, KONG Qiang¹, LU Jiang², FU Rong-Shu^{1*}

1.School of Life Sciences, Shandong Normal University, Jinan 250014, China; 2.Department of Air Force Logistics, Jinan Military Region, Jinan 250002, China

Abstract:

We addressed the individual and combined toxicity of Cu²⁺, Cd²⁺ and Se⁴⁺ to Daphnia magna with a static test method. We also employed additive index method to evaluate their combined toxicity. Individual toxicity experiment shows that the toxicity of Cu²⁺, Cd²⁺ and Se⁴⁺ is degressive. Combined toxicity experiment shows that complex toxicity effect exhibits for different concentration ratios of Cu²⁺, Cd²⁺ and Se⁴⁺. Especially, the combined toxicity effect changed from antagonistic response to synergistic response with the increase of exposure time for equal concentration ratio of Cu²⁺ and Cd²⁺.

Keywords: Cu²⁺ Cd²⁺ Se⁴⁺ Daphnia magna combined toxicity

收稿日期 2011-11-29 修回日期 网络版发布日期

DOI: 10.3976/j.issn.1002-4026.2012.02.009

基金项目:

国家水体污染控制与治理科技重大专项(2008ZX07209 006)

通讯作者:

作者简介: 董晓晓(1986-), 女, 硕士研究生, 研究方向为生态毒理学。

作者Email: fursh@126.com

参考文献:

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(1065KB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ Cu²⁺
- ▶ Cd²⁺
- ▶ Se⁴⁺
- ▶ 大型溞
- ▶ 联合毒性

本文作者相关文章

- ▶ e?& ??????
- ▶ ???e??e??
- ▶ ?-???o
- ▶ e????±?
- ▶ ???è?& ???

PubMed

- ▶ Article by Dong, X. X.
- ▶ Article by Liu, T. T.
- ▶ Article by Kong, Q.
- ▶ Article by Lu, J.
- ▶ Article by Fu, R. S.

