

研究报告

四氯乙烯和镉对草鱼的单一与联合毒性效应

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摘要 以静水生物测试法研究了四氯乙烯和重金属镉对草鱼的单一与联合毒性, 同时采用Marking相加指数法对二者的联合毒性进行了评价. 单一毒性试验表明: 四氯乙烯对草鱼24、48、72和96 h的半数致死浓度(LC₅₀)分别为49.12、41.68、36.37和34.30 mg·L⁻¹; 镉对草鱼24、48、72和96h的LC₅₀分别为45.58、34.81、28.63和24.05mg·L⁻¹; 二者对草鱼均有毒性, 而且为高毒, 镉的毒性大于四氯乙烯. 联合毒性试验表明: 二者毒性比为1:1, 暴露时间为24、48、72和96 h时四氯乙烯和镉的LC₅₀分别为24.63、12.54、9.88和7.08 mg·L⁻¹以及17.11、8.71、6.87和4.92 mg·L⁻¹, 相加指数AI (additive index) 分别为0.14、0.81、0.95和1.43, 联合作用结果为协同效应, 并且随着时间的增加, 协同作用增强; 二者浓度比为1:1, 暴露时间为24、48、72和96 h时四氯乙烯和镉的LC₅₀分别为17.00、11.18、10.61和9.19 mg·L⁻¹, AI分别为0.39、0.70、0.51和0.54, 联合作用为协同作用.

关键词 [四氯乙烯](#) [镉](#) [草鱼](#) [单一毒性](#) [联合毒性](#) [半数致死浓度\(LC₅₀\)](#) [协同作用](#)

分类号

Single and joint toxicity of perchloroethylene and cadmium on *Ctenopharyngodon idellus*.

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Abstract

In this paper, the single and joint toxicity of perchloroethylene (PCE) and cadmium (Cd) on grass carp (*Ctenopharyngodon idellus*) was observed by static test method, and the joint toxicity was evaluated by additive index method. The results showed that the LC₅₀ of PCE and Cd in 24, 48, 72 and 96 h was 49.12, 41.68, 36.37 and 34.30 mg·L⁻¹, and 45.58, 34.81, 28.63 and 24.05mg·L⁻¹, respectively. Both the two test chemicals had high toxicity on *C. idellus*, and Cd had higher single toxicity than PCE. When the toxicity ratio was 1: 1 and exposure time was 24, 48, 72 and 96 h, the LC₅₀ of PCE and Cd was 24.63, 12.54, 9.88 and 7.08 mg·L⁻¹, and 17.11, 8.71, 6.87, 4.92 mg·L⁻¹, and the additive index (AI) was 0.14, 0.81, 0.95 and 1.43, respectively, indicating that the joint toxicity of PCE and Cd was synergistic, and increased with time. At the concentration ratio of 1: 1, the LC₅₀ of PCE and Cd in 24, 48, 72 and 96 h was 17.00, 11.81, 10.61 and 9.19 mg·L⁻¹, and 17.00, 11.81, 10.61 and 9.19 mg·L⁻¹, and the AI was 0.39, 0.70, 0.51 and 0.54, respectively, and the joint toxicity was also synergistic.

Key words [perchloroethylene](#) [cadmium](#) [Ctenopharyngodon idellus](#) [single toxicity](#) [joint toxicity](#) [median lethal concentration](#) [synergistic effect](#)

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