

研究报告

镉胁迫对大弹涂鱼肝脏黄嘌呤氧化酶和抗氧化酶活性的影响

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摘要 研究了不同浓度镉离子对大弹涂鱼肝脏黄嘌呤氧化酶(XOD)、抗氧化酶(超氧化物歧化酶SOD、过氧化氢酶CAT)活性和丙二醛(MDA)含量的影响,以探讨其用于污染暴露的生物标记的可行性.结果表明,低浓度Cd²⁺(0.05 mg·L⁻¹)暴露使大弹涂鱼肝脏XOD和SOD活性随时间延长升高,第10天达到最大值,中高浓度暴露(0.5和5 mg·L⁻¹ Cd²⁺) XOD和SOD活性显著或极显著升高;低和高浓度镉胁迫处理的CAT活性在12 h显著降低,随时间的延长低浓度组CAT活性恢复正常,高浓度组在第7天降到最低值,并在恢复期的5 d中高浓度组CAT活性却极显著升高;低和中浓度镉胁迫处理的MDA含量12 h极显著升高,而高浓度却极显著下降,随时间延长低浓度恢复正常,中浓度先上升后下降并到第5天达到最大值,而中高浓度在恢复5 d后MDA含量都极显著降低.

关键词 镉 大弹涂鱼 肝脏 抗氧化酶 XOD SOD CAT MDA

分类号

Effects of cadmium stress on xanthine oxidase and antioxidant enzyme activities in *Boleophthalmus pectinirostris* liver

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Abstract

This paper approached the feasibility of using the xanthine oxidase (XOD), superoxide dismutase (SOD) and catalase (CAT) activities and malonyldialdehyde (MDA) content in *Boleophthalmus pectinirostris* liver as the indicators of Cd²⁺ toxic effects on this marine fish. Three concentrations of cadmium chloride (0.05, 0.5 and 5 mg Cd²⁺·L⁻¹) were enacted. The results showed that in treatment 0.05 mg Cd²⁺·L⁻¹, the XOD and SOD activities in *B. pectinirostris* liver increased with time and reached the maximum on the 10th day, while in treatments 0.5 and 5 mg Cd²⁺·L⁻¹, they increased significantly or extremely significantly, compared with the control. The CAT activity in treatments 0.05 and 5 mg Cd²⁺·L⁻¹ decreased significantly within 12 hours, but recovered then in treatment 0.05 mg Cd²⁺·L⁻¹. After moved into clean seawater for 5 days, the CAT activity increased extremely significantly in treatments 0.5 and 5 mg Cd²⁺·L⁻¹, but reversed in treatment 0.05 mg Cd²⁺·L⁻¹. As a product of antioxidation and oxidation, the content of MDA in treatments 0.5 and 5 mg Cd²⁺·L⁻¹ decreased extremely significantly after recovered for 5 days. It was suggested that the XOD and SOD activities in *B. pectinirostris* liver could be used as a biomarker of Cd²⁺ pollution, while the CAT activity and MDA content in this marine fish liver were not sensitive to Cd²⁺ stress.

Key words Cadmium *Boleophthalmus pectinirostris* Liver Antioxidant enzyme

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