

论著

苯并(a)芘对褐菖鲉肝脏DNA损伤与抗氧活性的影响

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摘要 背景与目的: 研究苯并(a)芘BaP对褐菖鲉的毒性效应。 材料与方法: 将褐菖鲉分别暴露于不同浓度(10、100、1 000 ng/L)的苯并(a)芘, 0、7、25 和50 d以及恢复期7、20 d取鱼肝脏, 测定超氧化物歧化酶(SOD)、谷胱甘肽硫转移酶(GST)活性, 还原型谷胱甘肽(GSH)含量和DNA单链断裂指标。 实验同设溶剂对照组。 结果: 总 SOD 活性在BaP暴露 7 d后被抑制, 25 d后, 10 ng/L和100 ng/L BaP组SOD活性升高(P<0.05); 50 d时, 1 000 ng/L组SOD活性显著升高(P<0.05)。 10 ng/L BaP暴露7 d以及100 ng/L和1 000 ng/L BaP暴露50 d时, GSH含量显著增加(P<0.05)。 而GST活性在100 ng/L和1 000 ng/L BaP分别暴露25 d、50 d时显著增加, 随着暴露时间的延长和暴露浓度的增加, 各BaP浓度组DNA 损伤呈加重趋势。 结论: 褐菖鲉肝脏SOD、GST酶活性与GSH含量结合使用以及DNA单链断裂损伤可以作为监测海洋环境中多环芳烃(PAHs)污染的潜在生物标志物。

关键词 [苯并\(a\)芘](#) [褐菖鲉](#) [抗氧化活性](#) [DNA损伤](#)

Impact of Benzo(a)pyrene on DNA Damage and Antioxidative Activities in Liver of Sebastiscus Marmoratus

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Abstract BACKGROUND AND AIM: This study was designed to investigate antioxidative activities and DNA damage to determine toxicological effects of benzo(a)pyrene (BaP) on liver of Sebastiscus marmoratus. MATERIALS AND METHODS: Sebastiscus marmoratus were exposed through a water column to BaP (10; 100; 1 000 ng/L) and sampled at 0 d; 7 d; 25 d; 50 d after exposure and 7 d; 20 d after recovery. Activities of superoxide dismutase(SOD); glutathione S-transferase(GST); reduced glutathione(GSH) content and DNA single strand breaks were detected. RESULTS: Total SOD activity was inhibited after 7 d of exposure; while it was induced after 25 d and 50 d of exposure. GSH content and GST activity were mainly induced. DNA damage was accentuated by longer exposure period and higher exposure concentration. CONCLUSION: Combination of SOD; GST activities and GSH content or detection of DNA single strand breaks in liver of Sebastiscus marmoratus can serve as potential biomarkers to monitor marine pollution of polycyclic aromatic hydrocarbons(PAHs).

Keywords [benzo\(a\)pyrene](#) [sebastiscus marmoratus](#) [antioxidative activities](#) [DNA damage](#)

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