Assessment of genotoxicity of 2-[2-(acetylamino)-4-[bis(2-hydroxyethyl)amino]-5-methoxyphenyl]-5-amino-7-bromo-4-chloro-2H-benzotriazole (PBTA-6) in zebrafish (Danio rerio) using the comet assay and micronucleus test

Abstract

This study aimed to evaluate the genotoxicity of 2-[2-(acetylamino)-4-[bis(2-hydroxyethyl)amino]-5-methoxyphenyl]-5-amino-7-bromo-4-chloro-2H-benzotriazole (PBTA-6) in fish. Adult zebrafish (*Danio rerio*) were exposed to PBTA-6 solution of 0.3 to 10 mg/L for 96 hr. Genotoxicity was evaluated using alkaline single-cell gel electrophoresis (comet assay) and micronucleus (MN) tests on blood and gills. Although PBTA-6 showed no positive response to MN induction, it caused a concentration-dependent increase in DNA damage. Fish exposed to PBTA-6 (10 mg/L) for 96 hr followed by a 96 hr recovery period in tap water were also examined; DNA damage decreased to the level before treatment within 96 hr. To compare the cytochrome P450 (CYP) activity in different tissues, CYP1A (ethoxyresorufin-*O*-deethylase; EROD and methoxyresorufin-*O*-demethylase; MROD) and CYP2B (penthoxyresorufin-*O*-dependentylase; PROD and benzyloxyresorufin-*O*-debenzylase; BROD) activities were analyzed in liver and gill microsomes. The results showed that PBTA-6 markedly induced PROD activity in gills and caused DNA damage, but the results show that this damage could be reverted if the exposed fish are returned to tap water.