



Cytogenetic toxicity and gonadal effects of 17- α -methyltestosterone in *Astyanax bimaculatus* (Characidae) and *Oreochromis niloticus* (Cichlidae)

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ABSTRACT. The synthetic hormone, 17- α -methyltestosterone (MT), is used in fish hatcheries to induce male monosex. Androgenic effects on various fish species have been reported; however, few studies have assessed possible genotoxic effects, although there are concerns about such effects in target and non-target species. We evaluated genotoxic and gonadal effects of MT in adult tilapia (*Oreochromis niloticus*) and *Astyanax bimaculatus* (a common native non-target fish in Brazil). Fish were fed for 28 days with ration containing MT (60 mg/L), a normal dose used in fish farming. Evaluation of MT genotoxicity was carried out through micronucleus test, nuclear abnormality, and comet assay analyses on peripheral erythrocyte cells collected by cardiac puncture. There were no significant differences in micronucleus frequencies and DNA damage in both species; however, MT caused cytogenetic toxicity in the non-target species, *A. bimaculatus*, with significantly increased erythrocyte nuclear abnormalities. Histopathological analyses of the female gonads of *O. niloticus* revealed that MT significantly inhibited the development of mature oocytes, while in *A. bimaculatus* it provoked

significant inhibition of spermatozoa production. We concluded that discharge of fish-hatcheries water onto the surface of aquatic ecosystems should be avoided due to risks to reproduction of native species.

Key words: 17- α -Methyltestosterone; Endocrine disruptor; Fish micronucleus; Comet assay; Histopathology