



Arsenic-induced genotoxicity in Nile tilapia (*Oreochromis niloticus*); the role of *Spirulina platensis* extract

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Abstract:

Arsenic (As) is one of the most relevant environmental global single substance toxicants that have long been regarded as a carcinogenic and genotoxic potential. In this respect, we evaluated the cytogenetic effect of arsenic exposure in Nile tilapia (*Oreochromis niloticus*), in terms of erythrocyte alteration, apoptosis, and induction of micronuclei. *Spirulina platensis* (SP) is a filamentous cyanobacterium microalgae with potent dietary phytoantioxidant, anti-inflammatory, and anticancerous properties supplementation. The protective role of *Spirulina* as supplementary feeds was studied in Nile tilapia (*O. niloticus*) against arsenic-induced cytogenotoxicity. Four groups were assigned as control group (no SP or As), As group (exposed to water-born As in the form of NaAsO₂ at 7 ppm), SP1 (SP at 7.5%+ As at the same level of exposure), and SP2 (SP at 10%+ As at the same level of exposure). As-treated group had a significant increase in all cytogenetic analyses including erythrocyte alteration, apoptosis, and induction of micronuclei after 2 weeks with continuous increase in response after 3 weeks. The combined treatment of *Spirulina* at two different concentrations of 7.5 and 10 % had significantly declined the induction of erythrocyte alteration, apoptosis, and micronuclei formation induced by arsenic intoxication.

Keywords:

Sodium arsenite . Nile tilapia . RBC abnormalities . Micronucleus frequency. *Spirulina platensis* extract . Detoxification

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