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Genotoxicity of 4-Nonylphenol (4NP) on Oreochromus spilurs Fish

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Abstract : 4-Nonylphenol Compound is widely used as an element of detergents, paints, insecticides and many others products. It is known that the existence of this compound may lead to the emission of estrogenic responses in mammals, birds and fish. It is described as pollutant since it causes disorder of endocrine glands. In previous studies, it was proven that this compound exists in water and in the materials precipitated in Red Sea coast in Jeddah near the drains of processed drainage water and near the drainage site of the residuals of paper factories. Therefore, this study aimed to evaluate the cytogenetic aberrations caused by 4-nonylphenol through exposing Talapia Fishes to aquatic solution of the compound with 0, 15, 30 microgram/liter for one month. Samples of gills and liver were collected for micronuclei, nuclear abnormalities and measuring DNA and RNA amount in the treated fish. The results pointed out that there is a significant increase in the numbers of micronuclei in the fish exposed to the former concentrations as compared to the control group. Exposing fishes to 4-nonylphenol resulted in an increased amount of both DNA and RNA, compared to the control group. There is a positive correlation between the amount of the compound (i.e. dosage dependent effect) and the inspiring for cytogenetic effect on Talapia fishes in Jeddah. Therefore, micronucleus test, DNA and RNA contents can be considered as an index of cumulative exposure, which appear to be a sensitive model to evaluate genotoxic effects of 4-Nonylphenol compound on fish.

Keywords : genotoxic, 4-nonylphenol, micronuclei, fish, DNA, RNA
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