World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:8, No:11, 2014

Assessment of Genotoxic Effects of a Fungicide (Propiconazole) in Freshwater Fish Gambusia Affinis Using Alkaline Single-Cell Gel Electrophoresis (Comet Essay)

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Abstract : ARTEA330EC is a fungicide used to inhibit the growth of many types of fungi on and cereals and rice, it is the single largest selling agrochemical that has been widely detected in surface waters in our area (Northeast Algerian). The studies on long-term genotoxic effects of fugicides in different tissues of fish using genotoxic biomarkers are limited. Therefore, in the present study DNA damage by propiconazole in freshwater fish Gambusia affinis by comet assays was investigated. The LC(50)-96 h of the fungicide was estimated for the fish in a semi-static system. On this basis of LC(50) value sublethal and nonlethal concentrations were determined (25; 50; 75; and 100 ppm). The DNA damage was measured in erythrocytes as the percentage of DNA in comet tails of fishes exposed to above concentrations the fungicide. In general,non significant effects for both the concentrations and time of exposure were observed in treated fish compared with the controls. However It was found that the highest DNA damage was observed at the highest concentration and the longest time of exposure (day 12). The study indicated comet assay to be sensitive and rapid method to detect genotoxicity of propiconasol and other pesticides in fishes.

Keywords : genotoxicity, fungicide, propiconazole, freshwater, Gambusia affinis, alkaline single-cell gel electrophoresis
Conference Title : ICBEESE 2014 : International Conference on Biological, Ecological and Environmental Sciences, and Engineering
Conference Location : Istanbul, Türkiye
Conference Dates : November 28-29, 2014

Open Science Index, Environmental and Ecological Engineering Vol:8, No:11, 2014 publications.waset.org/abstracts/13291.pdf