

**Detection of Genotoxic Effects in Peripheral Erythrocytes of Nile Tilapia
(*Oreochromis niloticus*) Following Exposure to Selected Industrial Effluents using
Alkaline Comet Assay and Micronucleus Test**

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With intense urbanization and industrialization, inland surface waters in Sri Lanka are increasingly being polluted with complex mixtures of chemicals which may cause adverse effects on the environment and human health. Hence, it is important to establish strategies for identification of damage arising from aquatic pollution. The alkaline comet assay (single cell gel electrophoresis) and the micronucleus test can be used together in evaluating the genotoxic potential of environmental pollutants because they can reveal different aspects of DNA damage. In the present study, genotoxicity of two treated effluents originating from multiple industrial zones were screened by these two methods using Nile tilapia (*Oreochromis niloticus*) as the vertebrate model. Nile tilapia were exposed to aged tap water and two types of undiluted and diluted (1:8) effluents for five days under laboratory conditions and peripheral blood samples were processed for genotoxicity evaluations using standard procedures. Significant increase in total comet score in relation to damaged DNA (2-4 folds), induction of micronuclei (3-10 folds) and nuclear buds (2-10 folds) were found in the erythrocytes of the fish exposed to the effluents in comparison to those of fish exposed to aged tap water. Based on the results, genotoxic potential of the tested samples could be categorized according to the decreasing order : Effluent 1 > Effluent 2 = Diluted Effluent 1 (1:8) = Diluted Effluent 2 (1:8) > aged tap water. Both comet assay and micronucleus test detected differences in the genotoxic capacity of the tested effluents.

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