Assessment of Genotoxic Effects of Pollutants in Moragoda Ela Cross drains, Galle Using Erythrocytes Nuclear Abnormality (ENA) Biomarker of Tilapia (*Oreochromis niloticus*)

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Biomarkers measured in fish have been proposed as sensitive or "early warning" tools for assessing the quality of aquatic environments. Moragoda Ela is an open canal connected with three cross drains serves as a major canal of Galle municipal Area Drainage System. The canal plays an important role in conveying surface drainage and flood waters. However, there are numerous illegal discharge points of wasted water from residences, commercial establishments (vehicle service stations, fuel filling stations) and warehouses located adjoining the canal subjected to contaminate water with polycyclic aromatic hydrocarbons (PAHs). In this study, Erythrocytes nuclear abnormality (ENA) biomarker, one of the promising tests of environmental genotoxicity, was used to assess genotoxic damage of fish due to contamination of aquatic water bodies with PAHs. The central aim was to observe the presence of any ENA type to undergo an advance biomarker assessment in future. Sample collection of resident fish Tilapia (*Oreochromis niloticus*) was carried out in 3 selected sites (site 1; Beligaha bridge (n=13), site 2 Kanampitiya bridge (n=14), site 3 Kahaduwattha bridge (n=11)) that receive the discharge from commercial establishments and warehouses along the canal over one month of period. Several water samples were checked each day in all sites for presence of oil droplets. Length and weight of the fish were measured. Peripheral blood smears of fish stained with Methylene blue (4 smears per fish) were preapared and different ENA's type (micronuclei (MN) , nuclear buds (NB), bi-nucleated (BN), fragmented-apoptotic cells (FA) and altered nuclei (AN)) were enumerated while counting up to a total of 10000 RBCs (per fish). Site 1 was observed as the most polluted water column of the Moragoda canal with PAHs. AN was the prominent observed ENA type in all sites with significant amount in site 1 (Kruskal Wallis test, p= 0.001). There were no correlations of ENA types with length or weight of fish (P > 0.05). NB and FA were only observed in site 1. Percentage occurrence of abnormalities in all sites was 57.89%. Hence, the tested biomarker can be used in genotoxicity

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