

## Use of erythrocytic nuclear abnormalities of feral fish species as biomarkers for assessing potential genotoxic impacts in Kelani River

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Nuclear abnormalities in the peripheral erythrocytes of fishes inhabiting contaminant waters are useful biomarkers for assessing genotoxic potential of surface waters impacted by anthropogenic contaminants. Kelani river which receives a wide variety of contaminants from multiple sources including industrial effluents and domestic waste, is ranked as the most polluted river in Sri Lanka. However, scientifically based evidences on biological impacts of Kelani river pollution on its resident fauna are meagre. In the present study, frequencies of erythrocytic nuclear abnormalities in the two fish species inhabiting Kelani river viz. *Etroplus suratensis* and *Dawkinsia singhala* were evaluated in order to assess the potential genotoxic impacts. *E. suratensis* were sampled from Ruwanwella (upstream) and Mattakkuliya (seaward site) sites, whereas *D. singhala* were sampled from the sites located in Ruwanwella and Kaduwela (between upstream and seaward site) during the years 2013-2015 covering dry and wet periods. Erythrocytic nuclear abnormalities in the blood of sampled fishes were evaluated using standard procedures. In addition, surface waters of the fish sampling sites were physico-chemically characterized using standard analytical procedures. Water quality parameters indicated high levels of chemical oxygen demand and heavy metal levels in Mattakkuliya and Kaduwela sites in comparison to Ruwanwella site. Despite temporal variations, frequencies of total erythrocytic nuclear abnormalities were significantly higher in the *E. suratensis* sampled from Mattakkuliya site than those from Ruwanwella site ( $P < 0.05$ ). In addition, *D. singhala* sampled from Kaduwela site had significant total erythrocytic nuclear abnormalities than the fish from Ruwanwella site. Of the four types of nuclear abnormalities detected, blebbed and noched nuclei contributed mainly to the induction of total erythrocytic nuclear abnormalities than binuclei and nuclear buds. Comparison of erythrocytic nuclear abnormalities of the two feral fish species inhabiting Kelani river together with physico-chemical analysis revealed that Mattakkuliya and Kaduwela sites of the Kelani river are polluted with genotoxic contaminations which can induce harmful impacts on indigenous fauna.

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