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They were treated with concentration series of vermiwash and pH, Electrical Conductivity (EC), Total Dissolved Solid (TDS), Nitrate Content (NC), Phosphate Content (PC), Gross Primary Productivity (GPP) and Chlorophyll Content (CC) were measured once a fortnight for ten weeks. We found that EC, TDS, NC, PC, GPP and CC data were significantly different ( $P < 0.05$ ) in different treatments and in different weeks. EC, TDS, NC and PC of different treatment tanks were proportional to the concentration of vermiwash. The GPP and CC were significantly reduced in the 100%, 75% and 50% treatment tanks. Higher concentrations (100%, 75% & 50%) of vermiwash might be harmful to the survival of planktons and can be used as an algal controller liquid. Hence, preparation of vermiwash is an organic waste treatment method and relevant to treat eutrophicated polluted ponds.

**Key words:** waste treatment, vermiwash, pollution control

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#### Use of amphibians as environmental markers for ecoimmunotoxicological studies in Sri Lanka: A preliminary study

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Amphibians are one of nature's best indicators of overall environmental health and their catastrophic decline serves as a warning that humans are currently facing significant environmental degradation. Their permeable skin, aquatic larvae, and unshelled eggs are constantly exposed to water borne chemicals making them good environmental markers and sentinels. Their known characteristics can be measured to assess the extent of environmental impacts and to provide early warning of such implications.

Immunotoxicology is the study of adverse effects of toxic compounds (xenobiotics) on the immune system of man and animals. Heavy metals Cd, Cu and Pb are highly potent immunosuppressants. This study, for the first time in Sri Lanka, investigated the ecoimmunotoxicological impacts on the six fingered frog, *Euphlyctis hexadactylus* (Ranidae: Raninae), in the Bellanwila-Attidiya sanctuary located in Colombo suburbs receiving heavy pollution loads from industries, motor traffic, commercial activities as well as urban dwellings. An undisturbed wetland area in association with the Bolgoda South Lake was used as the reference site.

Each study site was visited bi-weekly from January to May 2010. Frogs were randomly captured, sexed, snout to vent length measured, weighed and the female frogs transported to the laboratory. Water quality parameters were measured (temperature, DO and pH) on site while water samples were analysed in the laboratory for BOD (Winkler method) and heavy metals - Zn, Pb, Cu and Cd (by Atomic Absorption Spectrophotometry). Both non-functional (based on total WBC counts, spleen weight/body weight ratio, spleenocyte count and basal immunoglobulin level), and functional (in terms of phagocytic capacity of peritoneal macrophages) immunotoxic tests were carried out on the frogs using standard methods. Also, some reproductive biological parameters (egg volume, estimated egg count, egg count/volume ratio) were obtained using recommended methods, from frogs of the two study sites.

The four metal ions tested were in detectable concentrations in water of the Bellanwila site; zinc (2.71 ppm) lead (0.955 ppm) copper (0.04 ppm) and cadmium (0.019 ppm). Only one metal ion, *i.e.* Zn, was in detectable concentration (0.01 ppm) in water of the Bolgoda site. The nonfunctional immunological parameters and the only functional test, phagocytic capacity, showed a significantly lower immune functionality ( $P < 0.05$ ) of frogs of the Bellanwila site compared to those of the reference site. Further, the reproductive biological parameters of frogs of the Bellanwila study site were found to be significantly higher ( $P < 0.05$ ) than those of the reference site.