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**Screening Toxicity of Selected Industrial Effluents Reaching Kelani River, Sri Lanka
using *Allium cepa* (Common onion) Bioassay**

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Kelani River is the largest industrial waste recipient of Sri Lanka. Besides, it is the main source of drinking water supply for the urbanized cities and suburbs in the area. In the present study, toxicity / genotoxicity of selected industrial effluents reaching Kelani River basin were screened with *Allium cepa* bioassay using root growth, mitotic index, occurrence of chromosomal aberrations and nuclear abnormalities as toxicological end points. *A. cepa* bulbs were exposed to treated effluents from two textile industries, three rubber based industries, two industrial complexes and two water treatment plants collected in the year 2012, along with upper stream water and aged tap water under undiluted and diluted (1:8 dilution) conditions (n = 10) and toxicological end points were evaluated using standard procedures. The results showed that root tip cells of *A. cepa* bulbs exposed to the effluents under undiluted and diluted conditions significantly inhibited root growth (up to 95% and 80% respectively), induced nuclear abnormalities (up to 217% and 57% respectively) and inhibited mitotic indices (up to 71% and 50% respectively) in comparison with the *A. cepa* bulbs exposed to upper stream water and aged tap water which served as controls. Further, increased occurrence of chromosomal abnormalities associated with clastogenic effects (chromosomal bridges and fragments in anaphase) and aneugenic effects (diagonal, c-mitosis, sticky chromosomes and disordered conditions in the metaphase, vagrant chromosomes, multipolar, polar slip, chromosomal bridges in anaphase) was detected in the root tip cells exposed to the selected effluents under undiluted (up to 921%) and diluted (up to 824%) conditions respectively. The results of the plant based bioassay revealed that the tested effluents were cytotoxic and genotoxic even under 1:8 dilution conditions and calls for further evaluations on toxicity of industrial effluents reaching the Kelani River basin using different biological systems considering the environmental safety.

Keywords: *Allium cepa* bioassay, cytotoxicity, genotoxicity, Kelani River

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