*Detection and Quantification of Oestrogenic Endocrine Disruptors in Water in Mwanza Gulf in the Lake Victoria Basin, Tanzania*

*R H Mdegela, F Mabiki, S Msigala, J Mwesongo, M P Mhina, K Waweru, P Mbuthia, D K Byarugaba 2014*

Abstract

The aim of this study was to detect the presence and quantify the total oestrogens (estriol (E1), estradiol (E2), and estrone (E3)) in Lake Victoria water with a view of assessing their contribution to the health status of fish. A total of 27 water samples; three from each of the nine sampling sites were collected in Mwanza gulf in the city in May 2012. Solvent extraction procedures were used to obtain extracts of pollutants that were further analysed using the competitive Enzyme- Linked Immunosorbent Assay (ELISA) technique to detect and quantify the total oestrogens. Overall, the concentration of total oestrogens was low and ranged from 10 – 200 pg/L. Concentrations of these chemicals decreased along the gradient, being highest (107±81.4 pg/L) in rivers before entering into the lake and lowest (19±5.4 pg/L) in water samples collected in the lake at about 100 meters from inshore (intermediate sampling points). Levels of total oestrogens were significantly different between categories of water sources (P = 0.009). Two most polluted rivers were Butimba and Nyakurunduma with concentrations at 150 pg/L and 200 pg/L respectively. Dumping of wastes in rivers without treatment was the most likely source of the pollutants. Findings from this study have revealed the existence of oestrogens with endocrine disrupting properties at different concentrations, and that rivers are the main sources of oestrogenic endocrine disruptors in Lake Victoria water near Mwanza City.

**Keywords**: ELISA, endocrine disruptors, oestrogens, pollution