

Pollution by estrogens in river and estuarine waters around Kuala Lumpur, Malaysia, and their effects on the estuarine Java-medaka, *Oryzias javanicus*.

ABSTRACT

Estrogens (17 β -estradiol and estrone) concentrations in river and estuarine waters around Kuala Lumpur, Malaysia were determined by enzyme-linked immunosorbent assay while estrogenic potential of the waters were ascertained by three in vitro bioassays, namely E-screen, Ishikawa cell-alkaline phosphatase and yeast estrogen screen. Moreover, hepatic vitellogenin, a precursor of yolk protein that is specific to females, were examined in male and female Java-medaka collected in the same area. 17 β -estradiol and estrone concentrations were less than 6.1 ng/L and 127 ng/L, respectively. The highest 17 β -estradiol equivalent activity, 284 ng/L, was detected by in vitro assay in Sungai Kuyoh, which was adjacent to a sewage plant. 17 β -estradiol and estrone concentrations were not equal to their estrogenic potentials determined by in vitro assay implying the presence of other estrogenic chemicals in these waters. Hepatic vitellogenin concentrations of both male and female java-medaka were the same to laboratory-cultured individuals. Although relatively high estrogen concentrations were detected in some waters of Malaysia, these were not high enough to induce hepatic vitellogenin in male fishes. Further research, however, is necessary to cover more number of sampling sites.

Keyword: Estrogen; Malaysia; vitellogenin; E-screen; YES; Ishikawa cell-ALP; Javamedaka.