

## Monitoring of Endocrine Disruptors in Surface Waters and Sediment from the River Nile (Egypt) by Yeast Assays

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**Abstract :** In Egypt, no previous records are available regarding possible multiple hormonal activities in the aquatic systems and especially the river Nile. In this paper, the in vitro yeast estrogen screen (YES) and yeast androgen screen (YAS) were used to assess the multiple hormonal activities in surface waters and sediment from the Egyptian river Nile for the first time. This study sought to determine if river Nile water caused changes in gonadal histology of Nile tilapia (*Oreochromis niloticus niloticus*). All water samples exhibited extremely low levels of estrogenicity. Estrogenicity was not detected nearly in any of the sediment samples. Unlike the estrogenicity, significant androgenic activities were recorded in the water and sediment samples along the Nile course. The present study reports for the first time quantified anti-estrogenic and anti-androgenic activities with high levels in both water and sediment of the river Nile. The greatest anti-estrogenic and anti-androgenic activities were observed in sample from downstream river Nile. These results indicated that the anti-estrogenic and anti-androgenic activities along the Nile course were great and the pollution of the sites at the downstream was more serious than the upstream sites due to industrial activities at these sites. Good correlations were observed among some hormonal activities, suggesting coexistence of these contaminants in the environmental matrices. There were no signs of sexual disruption in any of the gonads analysed from either male or female Nile tilapia, demonstrating that any hormonal activity present along the Nile course was not sufficient to induce adverse effects on reproductive development. Further investigation is necessary to identify the chemicals responsible for the hormonal activities in the river Nile and to examine the effect of very low levels of hormonally active chemicals on gonadal histology, as well as in the development of more sensitive biomarkers.

**Keywords :** multiple hormonal activities, YES, YAS, river Nile, Nile tilapia, gonadal histology

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