ABSTRACT

Recently, concern has arisen that certain environmental contaminants as well as some naturally occurring compounds have the potential to impact the endocrine system. These compounds have been demonstrated to have estrogenic activity. They have gained increasing attention because of their interesting biological properties and their role in various diseases like cancer, reproductive anomalies, immune function disorder etc. The studies reported in this thesis concentrate on the investigation of the endocrine active as well as toxic properties of Bisphenol A on *H. fossilis* (Bloch).

Bisphenol A (BPA) is an industrial chemical, used to make polycarbonate and numerous plastic articles. Recent studies have shown that it can leach out of certain products, including the plastic lining of cans used for food, polycarbonate babies’ bottles, tableware, and white dental filling and sealants. BPA have been found to cause biological effects, and its mode of action appears to imitate that of the female hormone estrogen. BPA therefore belongs to the group “Hormone disruptors” and is capable of disrupting the chemical messenger system of the body.

Three doses of BPA were selected after the LC$_{50}$ study. 17β-estradiol was taken as positive control. Morphometric study, Histology, Sperm count and Sperm viability study confirmed the endocrine active nature of BPA, while Electron microscopic study, Genotoxicity and Cytotoxicity study confirmed the toxic nature of BPA. Additionally polluted waters from three different sites around Guwahati city was also evaluated for the presence of endocrine active heavy metals as well as some potentially dangerous endocrine active compounds.