

A GENOMIC APPROACH: THE EFFECTS OF BISPHENOL A ON ZEBRAFISH

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Abstract: Genomics, proteomics, and metabolomics are emerging technologies used to analyze the effects of the increasing level of environmental pollutants that are affecting aquatic organisms. Some of these toxins are considered endocrine-disrupting chemicals (EDC) due to their interference with the hormonal activity needed for the maintenance of homeostasis within the body, as well as developmental processes. To determine the effects of these EDCs fish models such as the fat-head minnow (*Pimephales promelas*) or the zebrafish (*Danio rerio*) are used to analyze mode of action of the chemicals and their effect on biological systems. Bisphenol A (BPA) is an organic compound with two phenol groups that is used to make polycarbonated plastic and epoxy resins, among other applications. Due to its estrogenic activity it is a compound of great concern to the US Environmental Protection Agency and other regulatory agencies worldwide. As the compound is often present in freshwater like rivers or lakes, we used the zebrafish model to find its NOTEL dose (no observable transcriptional effect level). Zebrafish females were exposed to 0, 0.01, 0.1, 1, 10, and 100 mg/L BPA for 96h. We used 44,000 feature microarrays (Agilent platform) to analyze gene expression at each of these doses. We also analyzed ex vivo sex hormone levels and found no changes in ex vivo estradiol at any of the doses.

Keywords: Endocrine-disrupting chemicals, bisphenol A, NOTEL

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