

Environmentally relevant concentrations of Bisphenol A trigger sex-specific behavioral changes in *Danio rerio*

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INTRODUCTION: Bisphenol A (BPA) is a chemical widely found in plastics and resins, leading to continuous exposure to both humans and animals. Even at low concentrations, BPA acts as an endocrine disruptor, potentially affecting neurological functions and inducing behavioral changes. **OBJECTIVE:** This study aimed to investigate whether BPA concentrations considered safe for humans induce behavioral alterations in adult zebrafish. **MATERIALS AND METHODS:** *Danio rerio* adults (WT) were maintained in tanks with water at a controlled temperature of 27 °C, under a 14 h light/10 h dark photoperiod. Fish were fed twice daily at 3% of their body weight. The animals were exposed for 60 days to one of the following diets: control, BPA 4 µg/kg, or BPA 50 µg/kg. Every 15 days, body weight was measured to adjust feeding. After exposure, three behavioral tests were conducted: (i) Novel Tank Task, where fish were introduced to a novel environment; (ii) Social Preference Test, with a tank containing conspecifics placed at one end of the testing tank; and (iii) Aggression Test, using a mirror positioned at a 45° angle to simulate an intruder. Behaviors were recorded and analyzed using Any-Maze, and statistical analyses were performed with GraphPad Prism. Although housed in groups, males and females were assessed separately. **RESULTS AND CONCLUSION:** In the Novel Tank Test, exposure to 4 µg/kg BPA significantly increased immobility time and frequency in both sexes, indicating an anxiogenic-like effect. Conversely, BPA at 50 µg/kg did not alter behavior in this task. In the Social Preference Test, females exposed to 4 µg/kg BPA displayed an increased number of entries and reduced time spent near conspecifics; similar alterations were observed in males at both BPA concentrations. In the Aggression Test, increased biting behavior was noted exclusively in females exposed to 50 µg/kg BPA, with no changes in proximity to the mirror among groups. BPA induced sex- and concentration-specific behavioral alterations in *Danio rerio*, with 4 µg/kg eliciting anxiogenic-like and social impairments in both sexes, and 50 µg/kg promoting increased aggression in females. These findings underscore the neurobehavioral sensitivity to environmentally relevant BPA concentrations.

Key-words: Endocrine disruptors; Behavioral alterations; zebrafish

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