THE SHALLOW WATER TEST (SWT) AS A NOVEL BEHAVIORAL TOOL FOR SCREENING DESPAIR-RELATED PHENOTYPES IN ADULT ZEBRAFISH

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INTRODUCTION: Affective disorders, such as depression and anxiety, are often associated with exposure to adverse stimuli, including environmental stressors, pharmaceuticals, and contaminants. These agents can induce neurological dysregulation, characterizing models that mimic toxin-induced stress, in which homeostasis of the central nervous system is disrupted. In this context, the zebrafish (*Danio rerio*) has emerged as an alternative model in behavioral toxicology assays due to its high genetic homology with humans, conserved neurotransmitter systems, and sensitivity to psychoactive compounds. **OBJECTIVE**: This study aimed to evaluate the applicability of the Shallow Water Test (SWT) as a behavioral screening tool to detect neurotoxic effects based on despair-like responses in zebrafish. **METHODOLOGY**: In this experiment, adult zebrafish (n = 108) were used, (4–6 months old; 50:50 male: female; short-fin phenotype) were acclimated for at least two weeks in 40 L tanks (4 fish/L). Briefly, fish were exposed to two distinct aversive conditions: Electric shock (ES) (100 Hz, 50 × 5 ms pulses/500 ms) as a physical stimulus, and conspecific alarm substance (CAS – 3.5 mL/L), as a naturalistic chemical cue (Experiment 1). Secondly, we also exposed fish to two anxiolytic drugs: fluoxetine (FLU – 0.1 µg/mL) for 20 min and diazepam (DZP – 1.25 µg/mL) for 3 min (Experiment 2). **RESULTS AND CONCLUSION:** Both stressors significantly reduced distance traveled, absolute turn angle, and mean speed, but only CAS increased latency to mobility. While DZP increased distance traveled, maximum speed, and mean speed, FLU showed no significant effects. The data suggests possible dysfunction of the GABAergic and the serotonergic system, which are important system regulating brain function and are frequently affected by environmental toxicants. Beyond its value in studying affective states, the SWT is also a promising test for behavioral toxicity screening, especially in the context of reducing the use of mammalian models. This paradigm may contribute to identifying functional alterations induced by chemical agents, reinforcing its applicability in toxicological risk assessment and behavioral neurotoxicity testing.

Keywords: affective disorders; pharmacological agents; aversive stimuli; zebrafish; despair-related behavior.