COMPARATIVE STUDY OF TAURINE ACTIONS ON ANXIETY-LIKE BEHAVIORS IN ZEBRAFISH USING THE NOVEL TANK AND THE LIGHT-DARK TASKS

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Zebrafish is a promising animal model for assessing anxiety-like parameters and defensive behavior. Anxiety is a complex behavior evoked by potentially dangerous situation. Taurine (TAU) is one of the most abundant amino acids in central nervous system (CNS), which increases during stress, hypoxia and energy deprivation, suggesting a neuroprotective effect. However, the actions of TAU on anxiety-like behaviors are scarce. Here we investigated the effects of acute TAU exposure on anxiety-like parameters in zebrafish using the novel tank and the light-dark tests. Animals were individually exposed for 1 h in 500-mL beakers at 42, 150, and 400 mg/L TAU (n = 12 per group). Control group (n = 12) was kept for 1 h in a similar condition except that no TAU was added in the water. In the novel tank test, the distance travelled, turn angle, and also the number of immobile episodes of TAU-treated animals were similar to the control group, suggesting that TAU did not alter locomotor and motor parameters. TAU did not alter the vertical exploratory activity of zebrafish, as observed in the latency to enter the top, time spent in the upper area and in the number of transitions to top. In the light-dark test, all TAU concentrations tested significantly increased the time spent in the lit area and shuttling. In addition, the results showed that the risk assessment was significantly decreased in TAU 150 group. The average duration of entry in lit area as well as the latency to enter the dark area did not significantly differ between the experimental groups. These findings suggest that TAU has an anxiolytic effect in zebrafish, which could be of great importance to elucidate TAU roles in brain functions and for further neurobehavioral studies in this species.

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