

Development of a Y-maze task for studying cognitive function using teleost zebrafish (*Danio rerio*) and cavefish (*Astyanax mexicanus*)

ABSTRACT

The usage of zebrafish in cognitive test by responses to visual cues has been established in the past two decades. In contrast to zebra fish, cavefish is a blindfish that uses hydrodynamic to gather information about its surroundings and make cognitive interpretations. Thus, the aim of this study is to compare the cognitive functions of both fish using Y-maze test. Adult male zebrafish and cavefish were used to assess their capabilities to respond towards a new environment provided by a Y-maze test. There is no significant difference on cavefish enters and time spent in the visual cues test, but inconsistent on the novel arm performance. However, numbers of entries and time spent in the novel arm were significantly higher in the zebra fish both in the visual cues and arms performance. Zebrafish have higher exploratory behavior and are able to recognize the preferential cues after several intervals hours. Nevertheless, the cognitive functions of cavefish are based on their mechanosensory lateral line and olfactory buds, which are highly sensitive to water movements and helps them to discover novelty in complete darkness. Thus, the advantage of Y-maze and the characteristics of these teleosts can be a good bio model for studying olfactory and neuro function.

Keyword: Zebrafish; Cavefish; Y-maze; Cognitive function