Zebrafish *(Danio rerio)* vs. Javanese medaka *(Oryzias javanicus),* who is more anxious?

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Abstract

Anxiety disorders are prevalent neuropsychiatric conditions that affect human emotion and cognitive functions. Increasing incidence of anxiety in the society caused global economic burden. The causes of anxiety are still unfathomable. Also, anxiety treatment using modern drugs are associated with different types of negative effects. These two situations increased the use of animal models for toxicological and neuropharmacological studies. In this context, a Malaysian native fish species, Javanese medaka (*Oryzias javanicus*) offer an opportunity to be developed as a model organism for neurotoxicology and neuropharmacology study. In general, anxious zebrafish (*Danio rerio*) will spend more time in the dark while, bold zebrafish will spend more time in the light. However, currently there is no empirical evidence for this particular condition in Javanese medaka. Since the zebrafish has been established to model anxiety, we will compare anxiety responses in the zebrafish and Javanese medaka to measure the sensitivity of these two species for the assessment of anxiety-related responses. To evaluate anxiety in these two different species, we study the anxiety response of zebrafish and Javanese medaka when introduced to novel environment light/dark plus maze. The aquatic light/dark plus maze is a behavioral testing battery developed based on the tendency of fish to seek dark backgrounds (or avoid light backgrounds) in unfamiliar environments. Fish behavior was observed in the light/dark plus maze for 5 minutes. Based on our preliminary study, we found medaka spend more time in light as compared to the zebrafish.

Keywords: Zebrafish, Javanese medaka, anxiety, novel environment, light/dark plus maze.

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