

## Determination of concentration boundaries for the toxicity of *Terminalia catappa* Linn. leaves extract on healthy *Carassius auratus*

### ABSTRACT

*Terminalia catappa* from Family Combretaceae or locally known as Ketapang is naturally grows plant and abundantly available in many tropical areas. The medicinal properties such as anti-parasitic and antibacterial of the leaves have been proven repeatedly in many scientific studies of aquaculture to treat infected fish. In the present study, toxicity level of different leaves extract concentrations on the healthy *Carassius auratus* or goldfish was investigated before the next study on its efficacy to treat the unhealthy *C. auratus* could be initiated. Ten *C. auratus* in 30-L tank aquarium were tested with five different concentrations of leaves extract; 400 mg/L, 500 mg/L, 600 mg/L, 800 mg/L and 1000 mg/L respectively and pH of bath extracts were determined before performing the tests. The results of pH are reduced or became acidic when the concentrations of leaves extract are increased significantly. During the test, toxicological signs were detected by physiological changes such as increased respiration frequency or erratic behavior. Overall results showed the methanolic extract of *T. catappa* leaves demonstrated a significantly high safety margin for the host of *C. auratus*. The *C. auratus* were well-tolerated with methanolic extract of *T. catappa* at the concentration of 400 mg/L for 3 hours without any visible effect. At 500 mg/L concentration, *C. auratus* also managed to survive for 3 hours but number of survived fish is reduced significantly different at ( $P < 0.05$ ) throughout 3 hours exposure time compared to control. Exposure to 600 mg/L, *C. auratus* were managed to survive up to 2 hours; meanwhile at 800 mg/L only up to 1 hour survived. At the highest concentration of 1000 mg/L, *C. auratus* have demonstrated an increased operculum movement and inconsistent behavior within few minutes of exposure time. However, no lethality of *C. auratus* was observed in the experimental period.

**Keyword:** *Carassius auratus*; *Terminalia catappa* leaves, Methanolic extract; Toxicity level