Median lethal concentration (LC_{50}) and morphological effects of tributyltin chloride (TBTCl) on male and female *Artemia salina*

Abu Shaala N.M.[a], Zulkifli S.Z.[a,*], Ismail A.[a], Amal M.N.A.[a] and Mohamat-Yusuff F.[b,c]

[a]Department of Biology, Faculty of Science, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia.

[b]Department of Environmental Sciences, Faculty of Environmental Studies, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia.

[c]Environmental Forensics Research Centre, Faculty of Environmental Studies, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia.

Abstract

Elevation of tributyltin (TBT) compounds in marine environment could affect organisms at any life stages. The present study aimed to determine median lethal concentration (LC_{50}) and morphological effects of tributyltin chloride (TBTCl) on adult males and females of brine shrimp (*Artemia salina*). Individuals of adult males and females of *A. salina* were exposed to different concentrations of TBTCl. Morphological conditions of every *A. salina* individuals were observed under a microscope. Results showed the LC_{50} of TBTCl toxicity in male *A. salina* was 146.99 ngL^{-1} and for the female was 94.72 ngL^{-1}. The LC_{50} of TBTCl was significantly different among different sexes. There was also a significant difference in some morphological characters of males and females exposed to different TBTCl concentrations. These morphological changes include their total length, head width, abdominal width, and tail width after the 24 h exposure to TBTCl. These results suggested that suspensions of the TBTCl were toxic to *Artemia*, most likely due to the formation of benign TBTCl aggregates in water. However, the mortality increased with extended exposure to 24 h. Highest mortality occurred at 200 ngL^{-1} TBTCl; 43.33% for male and 90% for female (LC_{50} < 150 ngL^{-1}) for both. Depended on these findings, the female was more sensitive for TBTCl toxicity test when compared to male. These effects were attributed to changes in morphological characteristics of the body *A. salina.*

Keywords: *Artemia salina,* antifouling biocides, bioassay, organotin, toxicity.

*Corresponding author: syaizwan@upm.edu.my