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STUDY ON THE EFFECT OF ARTEMIA FRANCISCANA ON THE UPTAKE OF Zn(II) AND Cu(II)

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The toxicokinetic study was used to assess the potential of an organism for Zn(II) and Cu(II) bioaccumulation and it was ascertained using a bicompartmental model. The effect of Zn(II) and Cu(II) concentration on the kinetics parameter in Artemia franciscana were determined. In the present investigation, the uptake rate seems to be high with the time period of 72 h for Zn(II) when compared to Cu(II) by the process of bioaccumulation. The bioconcentration factor (BCF) and metal influx rate (I) was also found higher in the Artemia which was exposed to Zn(II) when compared to Cu(II), whereas BCF was inversely related to the concentration. From these parameters, we may predict the effective bioaccumulation of Zn(II) and Cu(II) using Artemia franciscana and whose kinetic parameters were found to be suited to the bicompartmental model.

Keywords: Artemia franciscana, bioaccumulation, bicompartmental model, metallothionein, Zn(II), Cu(II).

Introduction

Artemia is a lower crustacean form and has been widely practiced since the early 1970s as a test organism in short-term toxicity testing for environmental and pharmacological purposes (Sorgeloos P. et al., 1980). Artemia is widely used in laboratory toxicity studies due to its small body size and short lifespan together with its availability from dry cysts. Artemia has a broad tolerance to environmental factors such as salinity, temperature and dissolved oxygen in the water, allowing it to live in hyper saline waters (Sarabia R. et al., 2006). This organism has an uncommon adaptability to extreme condition, thus being found in environments where other life forms are not sustainable (Triantaphyllidis G.V. et al., 1998). Artemia, like many other similar organisms is able to

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