

Chronic toxicity of valproic acid in *Daphnia magna*

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Background: Environmental exposure to pharmaceuticals, have negative effects on the health of ecosystems and humans and numerous pharmaceuticals have been identified on surface waters all around the world [1]. After administration, medicines are absorbed, metabolized, and excreted to the sewer system, but many are refractory to the traditional wastewater treatment and become widely distributed in freshwater rivers and lakes [2]. Valproic acid is a short-chain fatty acid, clinically used as a broad-spectrum antiepileptic drug, in neurological diseases [3], whose adverse effects in aquatic organisms are not fully studied. *Daphnia magna* is a planktonic crustacean found in lakes and ponds and is one of the most used organisms in aquatic toxicology studies. The adverse effects of pharmaceuticals in *Daphnia* have consequences in all the ecosystem [4].

Objective: The aim of this study is to evaluate the influence of valproic acid in the reproduction of *Daphnia magna*. **Methods:** The chronic toxicity study had a duration of 21 days. It was evaluated the effect of five different concentrations of valproic acid (0,4 mg/L, 0,6 mg/L, 0,8 mg/L, 1,0 mg/L and 1,2 mg/L). The parameters evaluated were age at first, second and third posture; the number and mortality of juveniles of each posture.

Results: Valproic acid affected the age of the first posture in all the concentrations, it is noticeable a delay comparatively to the control. In relation to the juveniles, all concentrations of valproic acid induced aborted eggs, and this number was higher at the highest concentrations (1,0 mg/L and 1,2 mg/L). The control didn't have any aborted eggs. At the highest concentrations, juvenile mortality was higher, and postures were smaller than the control. **Conclusions:** Valproic acid interfere with the reproduction of *Daphnia magna*, causing a delay in reproduction and affecting the number and viability of the offspring.

Keywords: Chronic toxicity; *Daphnia magna*; reproduction; valproic acid;

References

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