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Evaluation of valproic acid toxicity in duckweed, *Lemna minor*

BEATRIZ MACHADO¹, CRISTINA PRUDÊNCIO^{1,2}, RICARDO FERRAZ^{1,2,3} & PIEDADE BARROS¹

1. CISA, Health and Environment Research Center, School of Health, Polytechnic Institute of Porto, Porto, Portugal; 2. i3S, Institute for Innovation and Health Research, University of Porto, 4200-135 Porto, Portugal; 3. LAQV-REQUIMTE, Department of Chemistry and Biochemistry, Faculty of Sciences, University of Porto, 4169-007 Porto, Portugal.

In the last years the contamination of water caused by drugs has increased significantly. The main cause is the increase of the number and quantities of drugs that is being used. Many of these compounds cannot be removed effectively by wastewater treatment plants. This problem affects the water cycle and, consequently, all the environment as well as the human health, so it is important to find new methods that can help the removal of drugs from the water.

This research is aimed to understand the influence of different concentrations of valproic acid on the growth of the duckweed *Lemna minor*. After 7 days of exposure it was analysed the number of fronds, the length of the root and the chlorophylls content. The chlorophylls of the *Lemna minor* samples were analysed by spectrophotometry.

The number of fronds was influenced by the concentration of valproic acid. The higher concentrations (0,1 mg/mL; 0,05 mg/mL; 0,025 mg/mL) showed an inhibitory effect while the lower concentrations (0,005 mg/mL; 0,0001 mg/mL) showed a stimulating effect. Relative to the control, the number of fronds was lower in the higher concentrations and higher in the lower concentrations. The root length was affected in all the concentrations. Comparative to the control the higher concentrations presented a diminution of the root's length while the higher ones had an increase. Like the other parameters the concentration of chlorophylls was affected in all the samples. In the higher concentrations (0,1 mg/mL; 0,05 mg/mL; 0,025 mg/mL) the quantity was lower, comparatively to the control, and in the lower ones (0,01 mg/mL; 0,005 mg/mL; 0,0001 mg/mL) it was higher.

In general, the valproic acid influenced all the parameters evaluated: number of fronds, length of the root and concentration of chlorophylls. In the higher concentrations it is notable an inhibitory effect while the lower concentrations have a stimulating one.

Keywords: *Lemna minor*, Duckweed, Valproic acid, Toxicity, Water contamination