



## Effect of poly- $\epsilon$ -caprolactone micro-spheres containing usnic acid on the nucleus of the hematocytes of mice submitted to the acute toxicity test

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### ABSTRACT

**Introduction:** Usnic acid, derived benzofuran (2,6-diacetyl-7,9-dihydroxy-8,9b-dimethyl-1,3 (2H, 9Bh) -dibenzofuran, C<sub>18</sub>H<sub>16</sub>O<sub>7</sub>) produced by some species of lichen. The high toxicity of this substance involves the generation of free radical that results in the injury to the cellular and mitochondrial membrane, peroxidation of lipids and cellular death. The incorporation of the usnic acid (UA) into microspheres of Poly- $\epsilon$ -caprolactone, a polymeric particulate system, can reduce hepatotoxicity. **Objective:** To analyze the effect of poly- $\epsilon$ -caprolactone microspheres incorporated with usnic acid on the histomorphometry of the hepatocyte nuclei of Swiss mice submitted to the acute toxicity test. **Methodology:** The groups treated with vehicle (0.9% NaCl and 5% cremophor), usnic acid (2000, 300 and 50 mg/kg) and microspheres incorporated with usnic acid (UA-Micro) in the dose of 2000 mg/kg were subjected to the acute toxicity test according to Organisation for Economic Co-operation and Development (OECD - Guideline, 423). Fragments of hepatic tissue were removed for preparation of histological slides stained with Hematoxylin and Eosin. The morphometric analysis of the diameters of the hepatocyte nuclei was performed using the IMAGE software, from the photomicrographs (final magnification 790  $\mu$ m). Statistical analysis of the diameters of hepatocyte nuclei was performed using Variance (ANOVA), followed by the Tukey test. **Results and Discussion:** Treatment with UA-Micro (2000 mg/kg) showed no histomorphometric changes in the hepatocyte nuclei of the mice submitted to acute toxicity, but the animals treated with UA (2000 and 300 mg/kg) had a statistical difference (\*\*p <0.01 and \*p <0.1, respectively) when compared with the control group. **Conclusion:** The poly- $\epsilon$ -caprolactone microspheres incorporated with usnic acid reduced the hepatotoxicity caused by this lichen metabolite.

**Keywords:** Usnic Acid; Hepatocytes; Histomorphometry; Microspheres; Toxicity

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