TOXICOLOGICAL EFFECTS OF GLYPHOSATE AND ITS COMMERCIAL FORMULATION IN CAENORHABDITIS ELEGANS

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Introduction and objectives: The most used active ingredient in pesticides in the world is glyphosate, a broad-spectrum herbicide. There is a growing concern about environmental contamination because studies have shown the presence of glyphosate in vegetation, water and soil. Also, the World Health Organization classifies glyphosate as a putative carcinogenic to humans. However, most of the studies analyze glyphosate in its commercial formulation which is mainly composed of "inert ingredients". Little is known about the constitution and the toxicology of these adjuvants. Therefore, the aim of this study is to analyze the different toxic effects caused by glyphosate and by its commercial formulation. The experimental model adopted for this study was the Caenorhabditis elegans, a nematode that lives in the soil, which is of easy maintenance, has short development cycle and great reproductive capability. Materials and methods: The parameters used for the toxicological assessment were lethal dose 50\% (LD50), reproduction and development assays following chronic exposure. The chronic assay consisted of exposing the worms to different concentrations of glyphosate (Sigma-Aldrich) and its commercial formulation for 48h on NGM plates. After 48h, survival, development and the reproduction of the worms were analyzed. In addition, the presence of heavy metals in the commercial formulation was investigated by atomic absorption spectroscopy. Data were analyzed with ANOVA and post hoc (p<0.05). Results and conclusions: All parameters analyzed in the chronic exposure to commercial formulation were significantly altered when compared to the chronic exposure to glyphosate only. In addition, it was found the presence of heavy metals in the commercial formulation. The commercial formulation proved to be more toxic than the active ingredient per se. This finding may be due to the toxicity of the inert ingredients (e.g. metals) and their interaction with glyphosate. Acknowledgements: UNIPAMPA, CNPq e FAPERGS. Key words: Glyphosate; Commercial; C. elegans.