P12: Toxicity of pentachlorophenol on the reproductive cycle of Eisenia fetida

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Introduction: Pentachlorophenol (PCP) in the environment can largely be attributed to contamination of sediments from historic usage, since nowadays the use of PCP is restricted. The soil accommodates a huge amount of organisms and is a very important resource because it is the basis for farming, which allows obtaining food. The organisms present in the soil are part of the basic trophic levels in the food chain and maintain the soil fertile. A very important organism for soil fertility is the earthworm because it's responsible for the improvement of the soil structure, decomposition of organic matter, mineralization of nutrients and its diffusion to the plants. The earthworm Eisenia fetida is used on toxicity tests because of its susceptibility to chemicals and its short life cycle.

Objectives: Evaluate the effect of different concentrations of PCP in *Eisenia fetida* reproductive cycle.

Materials and Methods: The method used was based on a guideline of Organization for Economic Co-operation and Development (OECD) for the testing of Chemicals – Earthworms Reproduction (*Eisenia fetida/Eisenia andrei*). The adult worms were exposed to contaminated soil (4.5, 6.7, 10, 15 mg PCP/kg dry soil) for 3 weeks, removed and weighed after that period of time, leaving on the soil the cocoons for more 3 weeks. At the end of that period, the juvenile worms and the cocoons were removed and counted.

Results and Discussion: Statistically, there was no significant differences between the control and concentrations but cocoon production and their hatchability was affected by the presence of PCP, decreasing the number of cocoons and juvenile worms as the concentrations of PCP increased.

Conclusion: PCP does not significantly interfere with the reproductive cycle of *E. fetida,* although it slightly reduces the number of cocoons and juvenile worms produced. These results should be considered in ecotoxicity studies regarding environmental limits definition.

References:

1. OECD. (2004). OECD Guideline for the testing of Chemicals – Earthworms Reproduction (*Eisenia fetida / Eisenia andrei*).