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EFFECTS OF HEAVY METALS ON *Lepidium sativum* GERMINATION AND GROWTH

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Abstract

Basic principles for assessing phytotoxicity are the same whether the test compound is a heavy metal, herbicide, fungicide, insecticide or other toxic compounds. The difference lies not in the method of evaluation, but in the experimental program and working methodology.
In this paper the phytotoxic effects of heavy metals, Cr (VI) and Cd (II) on plants germination and growth were studied. Stock solutions of the two heavy metals were prepared at a concentration of 1000 mg/L, in distilled water. Diluted working solutions were prepared for experiments, with the following concentrations: 30, 60, 90, 120, 150 and 300 mg/L. Heavy metal solutions were used in the phytotoxicity tests, by taking 3 mL for each metal ion, and soaked in Whatman filter paper discs placed in Petri dishes. This way the interaction between the liquid phase in soil (soil solution) in which various concentrations of heavy metals are dissolved and the environmenta (in particular the vegetation) are simulated. *Lepidium sativum* was used as test plant, by conducting germination tests for three days of exposure. *Lepidium sativum* is a sensitive test species, widely used in the toxicity tests because it is rapidly growing, it is cheap and easy to analyze.
The seed germination, root length and dry biomass of plants were assessed. It was found that metal ions have inhibitory effect on seed germination process of *L. sativum.* Root development is affected by both the tested metal ion and its concentration. The dry biomass reflects the toxicity of metal ions tested, which is dependent on the type of metal ion and its concentration. The study shows that the tested plant experiences a important toxicity stress due to the exposure to heavy metals.

Key words: germination, heavy metals, *Lepidium sativum*, phytotoxicity

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