

## Correlative Evaluation between Experimental Copper and Lead Ion Concentrations and Root Length of *Allium cepa* L. in Some Riverside Points of NënShkodra Lowland<sup>#</sup>

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**Abstract:** The *Allium* test was applied to detect the inhibition of root growth by eleven Copper and Lead concentrations (0.01 to 10 mg/L), doped in four riverside water samples from NënShkodra lowland. Mean root length (MRL) results of Oblikë and Obot unloaded samples showed a good water quality, compared to drinking water control test (using  $\chi^2$  test,  $p < 0.05$ ). At Bahçellek and Zues samples, the inhibition was insufficient to register a statistically significant difference. Significant growth inhibition started at 0.1 mg/L  $\text{Cu}^{2+}$  and 0.125 mg/L  $\text{Pb}^{3+}$  loaded concentrations in all samples, compared to control. At concentration interval:  $\text{Cu}^{2+}$  0.1-1 and  $\text{Pb}^{3+}$  0.125-2.5 mg/L, the inhibition of root growth was significant ( $p < 0.05$ ), demonstrating cumulative inhibitory effect of both metals. No significant change was detected at Cu and Pb concentrations higher than 1 and 2.5 mg/L respectively, in all water samples. MRL and 50% toxic effective concentration ( $\text{EC}_{50}$ ) values indicated the same decreasing phytotoxicity range of  $\text{Cu}^{2+}$  and  $\text{Pb}^{3+}$  loaded samples: Zues > Bahçellek > Oblikë > Obot > control. Copper and Lead in treated drinking water showed a strong phytotoxic effect, affecting *A. cepa* at the concentration 0.20 and 0.34 mg/L ( $\text{EC}_{50}$ ). The present study was able to screen quantal and toxic tendency of natural water samples from different riverside points of NënShkodra lowland, where investigated metals are present actually at lower concentrations than WHO standards. The method resulted to be a simple and sensitive experimental tool, which could be successfully applied in Albania in case of heavy metal concentration increase.

**Key words:** *Allium* test, Water pollution, Copper, Lead,  $\text{EC}_{50}$

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