



## **Cyto- and Genotoxic Activity of Pesticide Cypermex Plus 550 EC on *Allium cepa* L.**

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**Abstract:** The impact of pesticides on crop production is undoubtedly profitable, but they constitute a common and widespread cause of soil, water and air pollution, especially in developing countries as Albania. Remaining available into the environment, pesticides can be locally and globally dangerous for ecosystems. Many studies using different bioassays have demonstrated their harmful toxic effects. The present study aimed to evaluate the short-term cyto- and genotoxic activity of the insecticide cypermex plus 550 EC (Chlorpyrifos 50% + Cypermethrin 5% EC) on a crop plant and bioassay as *Allium cepa* L. The roots of onion bulbs were exposed for 48 h to three doses, representing  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $EC_{50}$  concentrations of the pesticide. The following microscopic parameters: mitotic and phase indexes, micronuclei formation and chromosomal aberration frequency and types were evaluated and compared. The results showed obvious pesticide concentration-dependence. Mitotic index substantially decreased at the highest applied concentration in particular, while accumulation of dividing cells in prophase stage started being significant since at  $\frac{1}{2} EC_{50}$  of cypermex plus. The frequencies of abnormal dividing cells and interphase micronucleated cells were considerably increased, as well. Physiological and clastogenic types of chromosomal aberrations, as: bridges, multipolarity, laggard chromosomes and c-anaphase, were observed in all concentrations. The current data obviously demonstrated that the analyzed concentrations of cypermex plus insecticide (commonly used and applied for decades in Albanian agriculture) can potentially induce cyto/genotoxic effect (even mutagenic and clastogenic impact) on crops and non target organisms, ultimately damaging biota and human health.

**Key words:** *insecticides, cypermex plus 550 EC, Allium cepa L. assay, cytotoxicity, genotoxicity*

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