

## Correlation of different bioindicators in the analysis of the toxic effects of various aluminum salts

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Currently, the methods of bioassay do not have a generally recognized and standardized system of biological analysis, there are no unambiguous requirements that an indicator system should meet. The relevance of studying the toxicity of aluminum salts is determined by the fact that aluminum cation is contained in drinking water, artificial dyes and additives (E173, E520, E521, E523, E554, E555, E556, E598), and there is also a correlation between the concentration of aluminum ion in brain tissues and the clinical manifestations of Alzheimer's disease[1]. Purpose of the research was quantitative determination of the toxic effect of aluminum salts (chloride, sulfate, and nitrate) on various biological organisms and correlation analysis of bioindicators among themselves.

*Dero furcata* and plants (*Phaseolus*, *Lepidium sativum*) were studied as test organisms [2]. Solutions with different concentrations of the  $Al^{3+}$  ion in the range from 1 to 0.00001 mol/l were taken for the experiment. The test organisms were introduced into Petri dishes in three parallel ones for different concentrations and for each of the salts, as well as three parallel ones with the settled water for control. The study was conducted according to standard methods [3]. Toxicity (TLV) for plants was determined by calculating the percentage of sprouted seeds and that for *Dero furcata* – by the time of formation of conglomerates. A mathematical statistical analysis of the obtained results was carried out, statistically significant values of TLV and CI50 were calculated, and a correlation with the ionic strength of solutions and the activity coefficients of the  $Al^{3+}$  was established. In the cress experiment, the following TLV values were calculated for aluminum sulfate, chloride, and nitrate: 3.42 mg/dm<sup>3</sup>; 1.34 and 2.61, respectively. Similar TLV values were calculated for *Phaseolus*: 3.55 mg/dm<sup>3</sup>; 1.38 and 2.66, respectively. The experiment with *Dero furcata* showed similar data. This allows us to use the studied organisms as reliable bioindicators.

### References

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