

## **Abstract**

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Title of diploma thesis: Difference in the action of the herbicides tribenuron-methyl and isoproturon in *Arabidopsis thaliana*

Herbicides are a crucial tool for weed control in agriculture; however, their excessive use can lead to the development of herbicide resistance. One mechanism contributing to this resistance is the increased expression of genes encoding uridine diphosphate-glucuronosyltransferase (UGT), which plays a key role in the detoxification of herbicides and the protection of plants from their effects. This thesis focuses on comparing the effects of the herbicides tribenuron-methyl (TBM) and isoproturon (IPU) on the expression of UGT and the activity of selected antioxidant enzymes in the model plant *Arabidopsis thaliana*.

The experiments were conducted on hydroponic cultures of *A. thaliana*. Gene expression was measured using quantitative PCR, and enzyme activity was analyzed spectrophotometrically. The results showed that isoproturon had no significant effect on gene expression. For tribenuron-methyl, a significant increase in the expression of the UGT74E2, UGT73C6, UGT71B6, and UGT91C1 genes was observed, particularly at the lowest concentration. The activity of antioxidant enzymes did not show any increase, even with rising herbicide concentrations, suggesting that the tested concentrations were not sufficiently stressful to trigger the activation of defense mechanisms in the plants.