

# REACTIVE OXYGEN SPECIES IN ALLELOPATHIC INTERACTIONS BETWEEN PLANTS

## Summary

Allelopathy phenomenon describes mostly negative interactions between plants mediated by specific chemicals released into environment. Inhibition of growth of various organs, and delay or restriction of seed germination are most frequently observed effects of allelopathic interactions. At times, allelochemicals subjected in low concentration may also lead to hormesis (stimulation of seed germination or plant growth).

Allelochemicals often induce oxidative stress, manifested as an increase in ROS production, which not always correlates with enhancement of cellular antioxidant systems, although in most cases there are observed significant changes in the activity of ROS modulating enzymes: catalase, superoxide dismutase and enzymes of Halliwell-Asada cycle, accompanied by modification in the level of low molecular antioxidants ascorbate and glutathione. In view of

large differences in plant sensitivity to allelochemicals, and a wide range of concentration of already tested compounds, it is hardly to believe that induction of oxidative stress is an uniform response to allelopathy stress.

In this work, there are described selected examples of various allelochemicals or extracts from allelopathic plants known to induce oxidative stress in acceptor organisms. Accumulation of ROS and modification of growth and/or development of organs of acceptor plants induced by allelochemicals are correlated with "stress induced morphogenic response" (SIMR), modification of phytohormonal balance and factors crucial for cell wall formation. Additionally, the relationship between allelopathic interaction and plant sensitivity to other biotic and abiotic stresses is discussed.