

Nowadays, the environmental pollution by heavy metals is very serious problem all around the world. Radionuclides, including uranium, are heavy metals that cause both chemical and radioactive pollution. Naturally occurring uranium is not so dangerous for living organisms. Human activities, especially uranium ore mining and use of phosphate fertilizers, have increased its concentration in the environment with consequent contamination of soil, water and air. Compared to other countries, the Czech Republic is relatively rich in deposits of uranium ore. Extensive mining results in large contaminated areas, containing not only uranium but also other heavy metals and xenobiotics that need to be removed from the environment. One way how to decontaminate soils and waters is phytoremediation. This eco-friendly and cost-effective technique exploits the ability of plants to take up, translocate, transform and sequester xenobiotics. In order to provide functional phytoremediation, it is necessary to understand the mechanisms of plant responses to stress caused by xenobiotics. Therefore in my master thesis, I focused on the impact of uranium on physiological processes of uranium-stressed plants, with the emphasis on carbohydrate metabolism and antioxidative defense mechanism.