

Abstract

Arsenic and cadmium are both non-essential, highly toxic and carcinogenic elements that often occur together in the environment. Given the frequent co-contamination of the environment, it is necessary to investigate both plant strategies for dealing with one metal(loid) and the mechanisms that lead to tolerance or, conversely, sensitivity in the presence of both elements. Simultaneous exposure to multiple toxic elements may lead to extensive plant damage, however it may also result in the increasing engagement and intensity of defence strategies. Contamination of the food chain through crops growing on contaminated soils is a major concern, one that poses a risk to both human and animal lives. The aim of this research field is to reduce accumulation and translocation to aboveground edible parts as much as possible, for example by understanding the mechanisms behind heavy metal accumulation and translocation, or by stabilising toxic elements in the soil, or by cleaning up contaminated soil. One method of clean-up is phytoremediation, which usually utilizes plants with high tolerance to toxic elements, called hyperaccumulators. The knowledge of how defence strategies and mechanisms are affected by the interaction of multiple elements is important for identifying plant species capable of activating these defence mechanisms, which can be used for phytoremediation at sites contaminated by multiple elements simultaneously. The aim of this bachelor thesis is to summarize the available information about plant responses to simultaneous exposure to As and Cd, to compare them with single exposure to these elements and, if possible, to outline the mechanisms behind the tolerance or sensitivity of the plants investigated.