Abstract

Arsenic is classified as a heavy metalloid. Small amounts of arsenic can be found in the environment naturally, but human activity constantly increases the amount of arsenic in the soil. Increasing arsenic contamination of the soil causes serious health problems for both animals and humans. Due to its toxicity, it can also cause considerable problems for plants. Arsenic negatively affects a number of processes in the body of plants, such as oxidative stress or the metabolism of important macromolecules. Photosynthesis is a physiological process that is the most affected by arsenic toxicity. Closely related to photosynthesis are the growth properties of plants. Negative effects that arsenic has on many biochemical, physiological and morphological processes in the plant body, we must understand the uptake, translocation and detoxification of arsenic in the plant body. Arsenic hyperaccumulators are plants that can accumulate orders of magnitude higher concentrations of As and better manage the phytotoxicity of this contaminant than non-hyperaccumulating plants. Hyperaccumulation of heavy metals is associated with changes in the physiological properties of plants. A common characteristic of hyperaccumulators is that they can accumulate the higher concentrations of metals they in the aboveground parts than in their roots. This knowledge can also help with removing this contaminant from soils by using phytoremediation techniques that use hyperaccumulating plants. Phytoremediation techniques have many advantages such as lower financial costs, sustainability, a positive public attitude towards greenery, but on the other hand there are also many disadvantages. The most significant disadvantage is the time required to clean the substrate, but an obstacle to the use of phytoremediation techniques is the formation of small biomass, a narrow ecological niche of hyperaccumulators. A promising alternative to the search for suitable natural hyperaccumulators may be genetically modified plants that have beneficial properties and thus improve the efficiency of phytoremediation.