

Abstract

The environmental pollution by heavy metals has been becoming currently a big problem. The contents of these metals in soils and water increase, particularly in consequence of human activities particularly in developed countries. Local contaminations are problematic in our country, too. Soil contamination by heavy metals negatively affects agricultural production and food chains in nature. It may have an adverse impact to human health. The general public is interested in possibilities of removing these metals from the environment. The phytoremediation is one of those methods for removal of contaminants via plants. This is a relatively new, environmentally friendly method. However, not all plants are suitable for use in phytoremediation. For the best selection of plant species and their subsequent effective use in phytoremediation, it is necessary to study the relationship between heavy metals and plants, physiological processes that affect the intake of heavy metals and their distribution in a plant body, effects of heavy metals on the anatomical structure of plants at different levels of functioning. A group of plants called hyperaccumulators is specially adapted to high concentrations of metals in soil. These plants are capable to accumulate in their aboveground parts quantities of metal greater than the metal contents in soil and non-hyperaccumulating plants. This feature is possible use in removing contaminants from the environment through phytoremediation techniques. The aim of my Bachelor thesis is a summary of the impact of heavy metals in plants with emphasis on changes in the anatomical structure of roots and leaves induced by heavy metals. Since the majority of metals are taken into a plant by roots, attention is paid particularly to root structure. The most studied elements affecting the properties of plants are mainly cadmium, arsenic, nickel and others, thus, the focus of the present review is given to the effects of these metals on the anatomical structure of plants. The effect of some elements regarded as heavy metals on anatomical structures, however, has not been studied earlier. For example, to my knowledge, there has not been published a study in available literature containing information about the effect of uranium on plant structure. Nevertheless, contamination caused by this element in nature, is becoming common due to anthropogenic mining activities. The effects of uranium on plant anatomical structures, therefore, is one of the interesting topics for further study and, thus, I want to focus on it in my following research.