Abstract

Heavy metals are important soil pollutants and pose a significant risk to plants under certain conditions. These include some essential microelements (Fe, Zn, Mn, Mo, Cu, Ni) and toxic metals (e.g. Cd, As, Pb, Hg). Essential microelements have important functions in plants, and are mainly involved in plant metabolism as cofactors of enzymes. Toxic metals have no function, yet they enter the plant in varying degrees from the environment and cause toxicity. However, excessive concentrations of essential metals in the plant also have negative effects and plants have different mechanisms to counteract these negative effects. The bachelor thesis focuses mainly on the uptake of heavy metals from the soil by the root, which is achieved by membrane transporters. It also discusses several mechanisms involved in defence against heavy metal toxicity, not only in terms of regulating uptake, but also after heavy metals have entered plant bodies. These mechanisms are an important aspect of hyperaccumulation, which is also included in this thesis. Hyperaccumulators use these mechanisms on a completely different scale than non-hyperaccumulators, which allows hyperaccumulators to live in environments where heavy metal concentrations are high, making them completely different from each other. The properties of hyperaccumulators can be utilized by people for their purposes, such as phytoremediation or phytomining, which are also briefly mentioned.