

BACTERIA AND MICORRHIZAL FUNGI ENHANCE PLANTS' EFFICIENCY IN TRACE METAL PHYTOREMEDIATION OF TRACE METALS CONTAMINATED AREAS

Summary

The environmental pollution caused by trace metals is still a widespread and serious problem. Numerous methods of metal clean-up strategies were developed. The phytoremediation, is considered as a very promising, environmentally friendly and relatively cheap technology. Three main groups of plants are used for this technology: hyperaccumulators, crop plants and tree species. However, no one group of plants is enough efficient for this technology what limits their commercial application.

In order to increase plant phytoremediation potential, genetic and non-genetic modifications are carried out. In this review we focused on non-genetic ones.

Plant non-genetic modifications include: inoculation (an artificial infection) by Plant Growth Promoting Rhizobacteria (PGPR)/Plant Growth Promoting Bacteria (PGPB), for instance Siderophore Producing Bacteria (SPB) and by endophytes or micorrhizal fungi.

In brief, all used modifications resulted in: (1) improvement of mineral nutrition of the plant, (2) better root's morphology and topography what increased the surface of mineral and trace metals absorption, (3) increase the plant resistance for pathogens and (4) increase its accumulation and tolerance of trace metals. It lets the modified plants, survive on high contaminated areas, do not markedly decrease the biomass together with relatively high accumulation of trace metals in their tissues. Consequently they obtained all key features for successful phytoremediation.

It is worth noting moreover, that non-genetic plant modifications depicted in this review are environmentally friendly.

Taking into account the facts this direction of plant modifications for phytoremediation of trace metals contaminated areas seems to be promising.