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## DIFFERENT INTERACTIONS OF FUNGI WITH TOXIC METALS

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It is well known that the accelerating pollution of the natural environment by toxic metals, metalloids, radionuclides and organo-metal(loid)s has aroused much interest because of the ubiquitous presence of fungi in metal-polluted habitats (GADD G.M., New Phytologist 124:25-60,1993).

Many papers have reported the uptake and translocation of toxic metals and radionuclides to fruit bodies of edible fungi and also to mycelia biomass. Our aim is to study how to reduce the metal phytotoxicity by mychorrizal fungi pointing at land reclamation and at the detoxification of metal/radionuclides-containing industrial effluents.

We have measured the bioabsorption of Cu and Pb by the mycelia of three different fungal strains of Trichoderma, Mortierella and Fusarium and then the recovered metals after treatments with  $\text{CaCl}_2$  and EDTA. We have used strains of Trichoderma hartianum and Mortierella alpina isolated from a soil of Marganai (SS) and a Fusarium culmorum (strain 254 from Ist. Sper. Patologia Vegetale di Roma). The fungal strains were cultured for 10 days on PDA liquid medium and then the collected mycelia placed in a batch uptake solution of 300 ppm di Cu e Pb for 6h. The mycelia were then removed by filtration through a 0.45  $\mu\text{m}$  Millipore membrane filter and analysed by an atomic adsorption spectrophotometer. Also the filtrates were analysed for residual metal concentration. Other mycelia of the batch uptake solution were then treated with EDTA and  $\text{CaCl}_2$  to measure the recovery of adsorbed metals.

Our results show that Fusarium culmorum accumulates a low concentration of metals compared to other tested fungi, but only the 20% of the metals were recovered. Mortierella alpina shows the higher bioadsorption (9.14 me/g  $\times 10^{-3}$  for Cu, 4.21 me/g  $\times 10^{-3}$  for Pb) compared to Trichoderma hartianum (5.96 me/g  $\times 10^{-3}$  for Cu, 4.10 me/g  $\times 10^{-3}$ ). However from Trichoderma and Mortierella mycelia all the accumulated metals were recovered.