The bioaccumulative potential of heavy metals in five forest species living in mining environments in the Ecuadorian Amazon region

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Abstract

Pollution caused by heavy metals in soils and ecosystems is an environmental problematic that requires urgent attention due to the ecological problems that it generates. Forest species can be used to mitigate contamination because of their potential to bioaccumulate contaminating metals. Hence, the aim of this research was to identify tree species with good heavy metal bioaccumulating capacities that can contribute to mitigate pollution. The bioconcentration factor for five forest species, such as: Spanish cedar (*Cedrela odorata* L.), cutanga (*Parkia multijuga* Benth.), guaba or ice cream bean (*Inga edulis* Mart.), guarumo (*Cecropia ficifolia* Warb. ex Snethl.) and Amazon tree grape (*Pourouma cecropiifolia* Mart.), commonly found in the Ecuadorian Amazon was analysed, based on the relationship between the leaves and soil concentration of the heavy metals. For heavy metal analysis in leaves and soil samples of each plant species, atomic absorption spectrometry was used. The results showed that *P. cecropiifolia* had the highest bioconcentration factor for lead, *C. odorata* for cadmium and nickel, and *I. edulis* had the highest potential for iron and aluminium absorption. Any kind of correlation between the concentration of each element in soil and leaves was found, which shows that the bioaccumulation capacity of the species studied does not determine the concentration of metals in the soil.

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