



Evaluation of aluminum and silicon accumulation on species of genus Amanita depending on soil characteristics

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Ectomycorrhizal fungi, as different species of the Genus Amanita, have the potential to attack the mineral particles of soil, especially clay, and actively mobilize and translocate plant nutrients, as well as toxic elements, from minerals. At field conditions, the mineral composition of the bed rock and texture could determine which elements are going to be released to the environment and the relative amounts of each specific substance. In this sense, the study of the relationship of ectomycorrhizal fungi and soils is of great importance since the uptake of substances could determine potential toxicity on soil biota. In order to evaluate the potential relationship between substrate and fungi, the authors studied aluminum and silicon content found in seven different species of mycorrhizal fungi of the Genus Amanita. The sampling areas were located in the forest area of the region of Ciudad Real, Centre Region of Spain. All sampling locations had in common a quartzite acid substrate but with differences in texture and shale content. As regards the relationship of fungi with inorganic substrate, the relative presence of the clay is of great importance since they are easily altered by the acid attack of fungi. The results indicated large fluctuations in content of aluminum and silicon among the different species of Amanita and sampling locations. The mean values of concentrations in the studied fungi species ranged between 0.243 g kg⁻¹ and 2.240 g kg⁻¹ for aluminum and between 0.550 g kg⁻¹ and 6.493 g kg⁻¹ for silicon. The highest values for the accumulation of aluminium were found for Amanita citrina, while Amanita phalloides showed the highest concentration in silicon. Both species were collected in the area of Saceruela, which possess the highest sand content and the predominant mineral content is quartzite. The results showed that the content of silicon and aluminum found in different Amanita species was highly significant correlated to the texture and silicon content of soil, as well as physiological specificity among species.