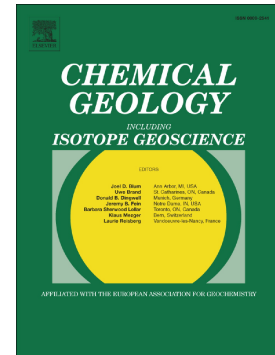


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Distribution of Major and Trace Elements in the Bolete Mushroom *Suillus luteus* and the Bioavailability of Rare Earth Elements

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Abstract

Fungi are eukaryotic organisms within the kingdom Fungi. They are classified as macrofungi when they produce, usually above-ground, fruit bodies which are often simply referred to as “mushrooms”. Since many species are edible, numerous studies discuss major elements and the accumulation of toxic and radioactive elements. Rare earth elements are economically important metals which are increasingly used for high-technology applications like renewable energies and state-of-the-art electronic devices. Although the significantly increasing anthropogenic input into the environment may affect living organisms, available data on the concentration, distribution and uptake of rare earth elements and yttrium (REY) by fungi are limited and often ambiguous.

Here, we present trace element and REY concentrations for the fungus species *Suillus luteus* and the distribution of major and trace elements between the different compartments of individual fruit bodies separated into cuticle, flesh of cap, tubes & pores, and stipe. Our results show that P, K, Zn, Rb and Cs are the only elements enriched in fruit bodies relative to

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