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**The cultivable mycobiota of two karstic caves in Italy: undiscovered taxa and potential biotech applications**

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**The cultivable mycobiota of two karstic caves in Italy: undiscovered taxa and potential biotech applications**

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Caves are confined subterranean environments that, being characterized by constant low temperature, oligotrophy and darkness can be considered extreme.

The use of caves for touristic purposes affects the ecological balance of these environments, mining both biotic and abiotic components. Understanding the fungal biodiversity in hypogean ecosystems is important, considering that autochthonous fungi may have the potential to biomineralize metals and may be used as promising agents for bioremediation of polluted sites.

This work aims at describing and comparing the cultivable mycobiota of a touristic cave (Grotta di Bossea) in Italy with the mycobiota of a closely related non touristic one (Grotta di Costacalda), in order to determine the anthropic impact on the subterranean fungal diversity.

Sediment samples of the two karstic caves were collected at progressive distances from the entrance and from the touristic path. Fungi were isolated by applying the soil

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dilution plate method. Following incubation at different temperatures, the isolates were identified by a polyphasic approach.

Overall, 250 fungal isolates ascribable to more than 50 taxa were found. Most of them belonged to the phylum Ascomycota. The sediments of the touristic cave displayed a richer and more diversified community (224 strains - 78 taxa) in comparison with the sediments collected in the non touristic cave (26 strains - 19 taxa). This difference is probably due to visitors carrying propagules or organic material. Notably, strains of *Aureobasidium pullulans*, *Cladosporium cladosporioides*, *C. pseudocladosporioides* and *Pseudogymnoascus pannorum* were found in both caves, indicating them as possible stable resident components of the subterranean mycobiota. Psychrophilic fungi were abundant in the deepest parts of the caves, while, mesophilics and thermotolerants, were more present in the showcave. Finally, three strains, are still under investigation since they most probably represent new fungal lineages.