Filamentous fungi isolated and identified from Antarctic soil (Fildes Bay, Antarctica) P92

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Purpose: Antarctica is a unique place with extreme environmental conditions, including low temperature, high solar radiation, low nutrient availability and strong winds. This different environment represents a gateway to studies on the taxonomy, ecology, and biotechnology of organisms under extreme conditions. Fungi are ubiquitous and diverse organisms in Antarctica and have been described as growing in different substrates such as plants, soil, rocks, ice, snow, and animals. To survive in such extreme conditions' fungi might display unusual biochemical pathways able to generate specific or novel compounds with biotechnological relevance. Before accessing the fungal biotechnological potential, knowing the fungal species is mandatory. The main aim of this study was to isolate and identify fungal strains from Antarctic soil (Fildes Bay, Antarctica).
Material and methods: Soil samples were collected using a 4x25 m transect at a depth of 0-20 cm in different geographic areas of Fildes Bay (Antarctica). A total of 13 composed soil samples were collected. Composed soil aqueous suspensions were incubated on Potato Dextrose Agar (PDA), Dichloran Glycerol Agar 18% (DG18) and Dichloran Rose Bengal Chloramphenicol Agar (DRBC) media at 10 ºC for 21 days in the dark. Subsequently, filamentous fungi were isolated and cultured on PDA. The morphological identification of the isolated strains was carried out according to the classic macro- and micromorphological taxonomy.
Results: A set of c.a. 1600 fungal strains belonging to the genera *Acremonium*, *Aspergillus*, *Cladosporium*, *Mortierella*, *Mucor*, *Penicillium*, *Psudogymnoascus* and other four non-identified fungal genera were isolated. In addition, a relationship between the geographical area of the soil sample and the fungal genera was observed.
Conclusions: Despite both the adverse environmental conditions and Antarctic soils that are not completely devoid of life, it was possible to observe a great diversity of filamentous fungi in some assessed soil samples. This indicates the ability of filamentous fungi in adapting to and survive in extreme conditions such as some of those found in Antarctica. This work represents the first report of large-scale fungal isolation in Fildes Bay, Antarctica. Molecular biology identification is being developed for isolated fungal strains.