

**TITLE:** FILAMENTOUS FUNGI AND YEASTS FROM ANTARCTIC MARINE SEDIMENTS

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## **ABSTRACT**

Antarctica is known as the continent of extremes, mainly due to very low temperatures, high incidence of UV radiation, low availability of water and nutrients. These conditions limit the development of life on this continent, being the microorganisms the only life forms able to inhabit some places in this environment. The microorganisms that inhabit the marine and terrestrial Antarctic ecosystems are adapted to the extreme conditions, emphasizing the importance of the isolation, purification, and *ex situ* maintenance of these microbial resources for further studies related to diversity knowledge and biotechnological exploitation. The aim of this study was to isolate and preserve filamentous fungi and yeasts from different samples of Antarctic marine sediments. The samples were collected in seven different points of the Admiralty Bay, King George Island (Antarctica), during OPERANTAR XXXIV (PROANTAR/CNPq project under the coordination of Prof. Dr. Vivian Pellizari - IO/USP). For fungal isolation was used the enrichment technique. An amount of 12.5 g of each sample was placed in 125 mL of PDB (2% Potato dextrose broth) culture medium formulated with artificial sea water and incubated at 15 °C for 10 days at 150 rpm. After this period, aliquots of 200 µL of the dilutions 10<sup>-1</sup> and 10<sup>-3</sup> were transferred to Petri dishes containing two different culture media (PDA and PDA diluted 10x) with addition of streptomycin (0.001%) and chloramphenicol (0.01%), and incubated at 15 ° for 30 days. A total of 25 filamentous fungi and 27 yeasts were recovered from the marine sediment samples. It was possible to observe the predominance of filamentous fungi and yeasts in some samples: 72% of the filamentous fungi were recovered from Punta Ullman and 40.7% of yeasts were obtained from Botany Point. The fungal isolates were preserved by two different methods: cryopreservation at -80 °C (20% glycerol) and Castellani (sterilized water at 4°C). In addition, some of the isolates (60%) produced redish pigments around the colony in the culture media. This can be a mechanism used by the fungi as a protection to UV radiation. The filamentous fungi and yeast obtained from the Antarctic marine sediments will be identified using molecular approaches. Studies of microorganisms from Antarctic marine sediments may lead to the discovery of new species and compounds for biotechnological application in several sectors of economic importance, as well as to improve the understanding of the microbial diversity that inhabit this environment.

**Keywords:** Antarctica; Extremophiles; Fungi; Marine Sediments, Pigments

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