

A *Talaromyces* fungal species from Deception Island, Antarctica exhibited strong antimicrobial activity against pathogenic bacteria

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Deception Island is a member of the South Shetland Islands in Antarctica. Since Deception Island is the largest volcano in the area, its ongoing volcanic eruptions have altered the landscape and produced remarkably distinct environments in comparison to other regions of Antarctica, which led to the emergence of extremely diverse microbial communities. This island is home to a wide variety of incredibly rare microbial species, but there have been few investigations into their antimicrobial and metabolic abilities. Although some studies have emerged in recent years, most of them concentrated on bacteria, and therefore, the fungi inhabiting this island were mostly unexplored. The study aimed to determine the fungi from Deception Island's antimicrobial activity and nutrient utilisation profiles. The ability of thirty soil fungi strains from Deception Island to inhibit fourteen pathogens has been tested. One, strain, IM33, was chosen for further study because it inhibited all 14 test pathogens, including Gram-negative, *Escherichia* spp., *Salmonella* spp., *Enterococcus* spp., *Klebsiella pneumonia* and Gram-positive *Bacillus cereus*. It exhibited the strongest inhibition against *Salmonella equorum* with the least activity against *Escherichia coli* O157:H7. Strain IM33 was identified as *Talaromyces* sp. based on the phylogenetic analysis of the internal transcribed spacer 1 and 2 sequences. Its crude extract's minimum bactericidal concentration (MBC) and minimum inhibitory concentration (MIC) against *E. coli* ATCC PTA-10989 were 50 g/ml and 75 g/ml, respectively. The carbon sources that strain IM33 was able to use were arabinose, fructose, galactose, glucose, inositol, mannitol, mannose, raffinose, sorbitol, sucrose, and xylose. The ability of the Antarctic fungus *Talaromyces* sp. IM33 to utilise a variety of carbon sources and to produce potent antimicrobial compounds may give it the advantage to survive in the tough growing conditions on Deception Island.