

A *Talaromyces* Fungal Species with Strong Antimicrobial Activity from Deception Island, Antarctica

ABSTRACT

Deception Island is well-known for harboring highly diverse microbial communities due to its unique volcanic environment in Antarctica. Most studies focused on bacteria, and relatively little was known about the fungal species on this island. The present study was aimed to determine the antimicrobial production and nutrient utilization profiles of a soil fungus from Deception Island, designated as Im33. Our findings showed that the strain had maximum mycelial growth and sporulation on malt-extract agar (MEA) medium, but it demonstrated the strongest antimicrobial activity in yeast extract-malt extract broth (YMB) medium. Phylogenetic analysis of the internal transcribed spacer 1 and 2 regions showed that it is a species belonging to the genus *Talaromyces*. It was resistant to cycloheximide concentrations up to 1,000 mg/L and exhibited broad-spectrum antimicrobial activity against Gram-positive and Gram-negative test pathogens, as well as being able to utilize a variety of carbon sources. This is the first report of a *Talaromyces* species from Deception Island. The capability of the strain to produce broad-spectrum antimicrobial compounds and various enzymes indicated that Antarctic fungi, like their bacterial counterparts, have adopted various adaptation strategies to compete and survive in the extreme environment.