

Extremotolerant Gelatinase Production from Halophilic Bacteria in the Rhizospheric Soil of *Ipomoea Purpurea* in the Arabian Coastal Regions

Siddaraju M N* and Paramashree BK

Department of Botany, University College Mangalore, Mangalore University, Mangalore, 575001, Karnataka, India.

*Corresponding author

ABSTRACT

Gelatinases are metalloproteases that break down gelatin into valuable polypeptides, peptides, and amino acids, finding applications across chemical, medical, and food industries. There is a growing demand for extremotolerant gelatinases with unique properties suitable for industrial applications. This study focuses on isolating an extremotolerant gelatinase-producing halophilic bacterium from the rhizospheric soil of *Ipomoea purpurea* in the coastal regions of Dakshina Kannada, Karnataka, southern India. The isolate, identified through 16S rRNA sequencing, was evaluated for its gelatinase production capabilities under varying physiological conditions including different pH levels (7–11), temperature ranges (30°C–45°C), and salinity levels (0%–8% NaCl, w/v). The bacterium exhibited extracellular gelatinase production of 27,500 µg/ml under optimal conditions. Gelatinase production was highest at pH 7 and remained stable across pH levels. The bacterium also showed significant tolerance to a range of temperatures (30°C to 40°C) and salinity levels (0% to 5% NaCl w/v), with maximum production observed at 3% NaCl (w/v) and 40°C. These findings underscore the industrial potential of this bacterium for extremotolerant gelatinase production, offering a valuable resource for diverse biotechnological applications.

Keywords: Coastal biodiversity, Extremotolerant enzymes, Gelatinase, Halophilic bacteria, Rhizosphere.

How to Cite

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