

# A Study on Industrial Applications of Halophilic Bacteria from the Arabian Coastal Regions of Dakshina Kannada, Karnataka, India

Paramashree Deepa B. K., Siddaraju M. N.\*

Department of Botany, Extremophile lab, University College Mangalore, Mangalore University,  
Dakshina Kannada, Karnataka, India

\*Corresponding author

## ABSTRACT

The bacteria which survive in extreme environment such as high temperature, pH, salinity, pressure etc., are called extremophiles. One of such extremophiles is halophilic bacteria. Halophilic bacteria are classified into three types depending on the salinity range they live in such as, slightly halophilic, moderately halophilic and extremely halophilic. The potential secondary metabolites and enzymes produced by halophilic bacteria has applications in many fields like industrial, food processing, medicinal, pharmaceutical, bioremediation etc., In this study, the halophilic bacteria were isolated from the Arabian coastal regions of Dakshina Kannada, Karnataka, India and screened for the production of industrially important enzymes. The bacteria were producing enzymes such as catalase, oxidase, urease and gelatinase. One of the isolates was identified as *Microvirga sp.* strain UCM9. The isolate UCM9 was able to grow in medium with pH range 7 – 11, temperature 30 – 40 °C and 0 - 2% salinity. The effect of physiological conditions on enzyme production showed that, the isolate can produce enzymes such as, oxidase, gelatinase and catalase up to pH 11, 40 °C temperature and 2% salinity. The isolate UCM9 showed 34,667 U/mL of catalase activity at its optimum growth conditions, 19,422 U/mL activity at pH 11, 34,900 U/mL activity at 2% NaCl (w/v) and 33,656 U/mL at 40 °C. Since the enzymes tolerate high level of pH, temperature and salinity, they can be potentially used in food processing, medicinal, industrial, bioremediation, biocalcification fields etc. To the best of our knowledge, the microbial diversity of the rhizospheric-halophilic bacterial population that produces industrially necessary enzymes has never been documented before, in Dakshina Kannada, Karnataka, India until now.

**Keywords:** Arabian coastal regions, Catalase, Extremophile, Halophiles, Potential enzymes

## How to Cite

Paramashree Deepa B. K., Siddaraju M. N., “A Study on Industrial Applications of Halophilic Bacteria from the Arabian Coastal Regions of Dakshina Kannada, Karnataka, India”, *AIJR Abstracts*, p. 20, Mar. 2025.

