ISOLATION AND CHARACTERISATION OF A HALOPHILIC ARCHAEON *HALORUBRUM SODOMENSE* FROM MANAIKKUDI SALT PANS, TAMIL NADU, SOUTH INDIA

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Introduction

- Archaea are mostly unexplored and distinct class of microorganism with unique features and are commonly encountered in extreme environments. They are phylogenetically more similar to eukarya than bacteria.
- Achaeal membrane lacks peptidoglycan but have different membrane lipid bonding. Archaeal lipid lacks the fatty acid found in bacteria and eukaryotes and instead have side chains composed of repeating units of isoprene.
- They are key players of ocean biogeochemical cycles and potential source of novel natural products including chemicals and biomolecules.
- The present study attempted isolation and characterization of a halophilic archaeon from a solar saltern situated at Manaikkudi Village in Nagercoil District, Tamil Nadu.

Materials & Methods

Filtration of water; processing of sediment/sampled organisms → ❑**0.2 & 0.45 µm filter**

Isolation of Archaea on microbiobiological media → ❑**Selective media**

Purification, preservation and analysis of predominant colonies → ❑**Phenotypic, Biochemical & Molecular methods**

Results

A red pigmented halophilic archaeon was isolated which was identified as *Halorubrum sodomense* by biochemical and molecular tools.

Phenotypic & biochemical characteristics of the isolate

Characteristics	Isolate
Cell shape	Rod
Pigmentation	Red
Gram Nature	-ve
Range of NaCl that support growth	10-30 %
Optimum NaCl required for growth	25%
Catalase and Oxidase	+ve
Starch hydrolysis	+ve
Gelatin hydrolysis	+ve
Casein hydrolysis	-ve
Tween 80 hydrolysis	+ve
Indole production	-ve
Reduction of nitrate to nitrite	-ve

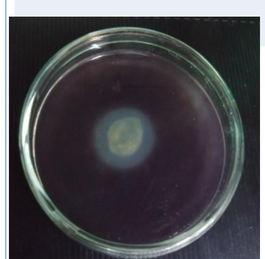

Fig. 1& 2. Isolate showing Amylase and Gelatinase activity
Fig.3. Results of Antibiotic sensitivity tests

Discussion

➢*H. sodomense* belongs to the family Halobacteriaceae, occurring in hypersaline environment.

➢The isolate is Gram negative rod, catalase and oxidase positive, and shows optimum growth at 25 % salinity.

➢ The strain was resistant to all tested antibiotics except Rifampicin.

➢*H. sodomense* has a high content of bacterioruberin, a 50-carbon open chain carotenoid, which is one of the most diverse and broadly distributed class of pigments in nature with enormous biotechnological applications.

Conclusion

This is the first report on isolation and identification of *H. sodomense* from India, which could be a potential source of bacterioruberin carotenoid as well as a source of Halotolerant genes.

References

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