

## Comparison of biochemical and Molecular Methods in Isolation and identification of Halophilic bacteria from saline Lake Inche boroun, Almagol and Ajigol in Golestan Province

Elham Khastar<sup>1</sup>  
Ayler Jamali<sup>2</sup>  
Farhad Niknejad<sup>3\*</sup>

1. MSc, Department of Microbiology, Damghan Branch, Islamic Azad University, Damghan, Iran

2. Ph.D, Department of Microbiology, Golestan University of Medical Sciences, Gorgan, Iran

3. Ph.D, Laboratory Sciences Research Center, Golestan University of Medical Sciences, Gorgan, Iran

\*Corresponding author:  
fniknezhad@yahoo.com

Received date: 2016/09/16

Reception date: 2017/07/20

### Abstract

Saline lakes with a salinity level close to that of seawater are extreme environments with a broad spectrum of microbial agents. The present study aimed at Comparison of biochemical and Molecular Methods in Isolation and identification of Halophilic bacteria from saline Lake Inche boroun, Almagol and Ajigol in Golestan Province. 51 samples were obtained from different regions of the above-mentioned lakes (seventeen samples from each lake) with varying EC and pH within a 4 month period from February to May 2015. The isolates were cultured on Saline nutrient broth and selected for a better identification. They were determined in terms of colony and cell morphology. Colony morphologies were specified with emphasis on pigment production, colony size, and turbidity. The properties were evaluated by culture growth in optimum EC, pH, and salinity. Biochemical tests of catalase, gelatinase, amylase, oxidase, citrate, urease, indole, Voges-Proskauer, fermentation/oxidation (lactose, sucrose, dextrose) and also PCR (tuf gene) were performed and the capability of producing the above-mentioned four enzymes was determined. According to the biochemical tests and molecular method, 22 halophile and extreme halophile isolates were separated from saline waters of Incheboroun, Almagol, and Ajigol lakes where *Staphylococcus epidermidis* and *Staphylococcus capitis* were the most abundant species, respectively. Furthermore, three strains were able to produce the four enzymes; two strains belong to *Staphylococcus capitis* and one belongs to *Staphylococcus hominis*. Due to harsh living condition, saline environments have limited biological diversity compared to the so-called temperate environments. However, saline environments possess a high level of biological diversity in terms of halophile and halotolerant microorganisms with variety of relative halophiles and halotolerants living in these environments.

**Keywords:** Incheboroun, Almagol, and Ajigol lakes; tuf gene; *Staphylococcus epidermidis*, *Staphylococcus capitis*, *Staphylococcus hominis*.