

Haloaraneus kashanensis proposed as new taxon of extremely halophilic archaea

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Abstract:

A gram negative, motile, polymorph shaped, orange pigmented, extremely halophilic archaeon, designated as Strain Ea3T was isolated from hypersaline playa in central desert of Iran. Sampling was carried out in dry season and the modified growth medium (MGM) with 23% total salt concentration from Halohandbook online protocol used for the isolation procedure. Pure isolate were obtained by successively cultivations on solid MGM medium. Characterization of this strain was achieved by following the minimal standards recommended by Oren et al. (1997) for describing novel taxa of the order Halobacteriales. Strain Ea3 is a mesophilic and neutrophilic haloarchaeon, whose optimal growth temperature and pH optimum are 40 °C and pH 7. Optimal NaCl and Mg²⁺ concentrations for growth are 4 M and 0.2 M respectively. The genomic DNA of the isolate was extracted by DNA extraction kit (Roche, Germany) according to the manufacturer's recommended procedure and the 16S rRNA gene was PCR-amplified using the archaeal universal primers: 21F (5'-TTCCGGTTGATCCYGCCGGA-3') and 1492R (5'-GGTTACCTTGTTACGACTT-3'). Phylogenetic analysis based on 16S rRNA gene sequence analysis suggested that strain Ea3T is a member of the phylogenetic group defined by the family Halobacteriaceae, but there were as low as 90.2%, 89.6%, 89.2% and 88.9% similarities to species of other members of this family including: Halosarcina, Halopelagius, Halobaculum and Halogeometricum respectively. The G + C content of the DNA is 65.9 mol%. Polar lipid analysis revealed the presence of phosphatidylglycerol, phosphatidylglycerol phosphate methyl ester, phosphatidylglycerol sulphate and three unknown glycolipid. On the basis of the data presented, we propose that strain EA3T should be placed in a new species of new genus, *Haloaraneus kashanensis* gen. nov, sp.nov. Reference 1- Dyall-Smith M L (2008). The Halohandbook: Protocols for haloarchaeal Genetics. 259 <http://www.haloarchaea.com/resources/halohandbook>. 2- Oren A, Ventosa A and Grant W.D(1997). Proposed minimal standards for description of new taxa in the order Halobacteriales. *Int. J. Syst. Bacteriol*, 47, 233-238.

Key words: Haloaraneus, Halophilic archaea, Extreme halophiles