Halophibacterium profundimaris gen. nov. sp. nov., a novel short alkane-degrading bacterium isolated from deep sea water of Indian Ocean

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Abstract:A taxonomic study was carried out on strain PC39^T, which was isolated from a PAHs-degrading consortium, enriched from a deep seawater sample collected from the Indian Ocean. The isolate was Gram-negative, short rods, no-mobile. Growth was observed at salinities from 1 to 36 % and at temperatures from 4 to 40°C, and it was able to degrade Tween 80 but no gelatin. Phylogenetic analysis of the 16S rDNA sequence reveals that strain PC39^T forms a novel lineage close to the genus *Salinisphaera*, with the highest similarity to '*Salinisphaera sedimenticola*' T31B1^T (92.7 %), followed by *S. dokdonensis* CL-ES53^T (91.8 %), *Salinisphaera shabanensis* E1L3A^T (91.7 %) and *S. hydrothermalis* EPR70^T (91.2 %), all other species had sequence similarity below 89 %. The dominant fatty acids were $C_{18:1}\omega 9c$ (30.52 %), $C_{18:0}$ (18.91 %), $C_{19:0}\omega 8c$ cyclo (13.57 %), Sum Feature 8 ($C_{18:1}\omega 7c/\omega 6c$) (10.35 %)$C_{16:0}$ (8.28 %), Sum Feature 7 ($C_{19:1}\omega 6c$ and/or ECL 18.846 and/or $C_{19:0}\omega 10c$ cyclo) (8.01 %), and. The G+C content of the chromosomal DNA was 68.2 mol%. Phylogenetic analysis, as well as physiological and biochemical tests, showed that strain PC39^T was different from all members of the genus *Salinisphaera*. Strain PC39^T therefore represents a novel genus, for which the name *Halophibacterium profundimaris gen.* nov. sp. nov. is proposed (type strain PC39^T=CCTCC AB 2010013^T=LMG 25545^T=MCCC 1A03214^T).

key word: *Halophibacterium profundimaris*; alkane; deep sea