

New anaerobic thermoalcaliphilic bacterium of genus *Anaerobranca*,
dissimilatory reducing sulfur, Fe(III) and other inorganic electron acceptors
isolated from hot spring off shore of Mono lake, California

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During the summers of 2000 and 2001 water and biofilms were collected from the bed of hot springs on Paoha Island located in alkaline Mono Lake (USA, California). The temperature of the sample sites ranged from 45 to 94°C and pH was between 9.0 and 9.8. A number of strains of obligately anaerobic thermoalcaliphilic bacterium were isolated. The rod shape bacterium produced cells with primary branches. The cells were motile via peritrichous flagella. The thin cell wall of the new bacteria was Gram positive type, but stained as Gram negative. Isolated strains grew optimally at 10 –25 g/l NaCl, pH 9.0 – 9.5 and temperature 58 °C. The strains were chemoorganotrophic and mainly proteolytic, using peptone, casamino acids, and yeast extract. Some sugars and carboxylic acids were utilized slowly. The best growth was found when S⁰, polysulfide or thiosulfate were used, with concomitant reduction to hydrogen sulfide. Thiosulfate transformed to hydrogen sulfide and sulfite. The new isolate also reduced Fe(III), Mn(IV), Cr (VI), As(V) and Se(VI) on media with tryptone peptone and yeast extract. In the absence of organic compounds the isolate was able to reduce Fe(III), but not sulfur, if hydrogen was present. Microbial transformation of iron, manganese, chromium, and selenium oxides under alkalithermophilic conditions was demonstrated first time. The DNA G + C content of isolate is 30.3 mol%. Based on 16S rRNA sequence, the strain belongs to the genus *Anaerobranca*. Phenotypic and genetic differences demonstrate that the new isolate is a new species of the genus *Anaerobranca*.