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ISOLATION AND CHARACTERIZATION OF MICROORGANISMS FROM WASTEWATER SAMPLES COLLECTED FROM HASSA, SAUDI ARABIA

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Abstract

As part of a study of the biodiversity of Alasfar Lake and Drainage/Irrigation Canals, Hassa, Saudi Arabia, we isolated three bacterial strains by exposing the water samples to high levels of NaCl (0.5 to 2 M). Two strains were isolated from a drainage canal prior to reaching the main lake and were identified using 16S rDNA sequencing as *Staphylococcus warneri* and *Halobacillus blutaporensis*. The third strain was isolated from the western point of Alasfar Lake and was identified by 16S rDNA sequencing as *Halomonas venusta*. All three species were shown to grow well at high salinities, despite their origin in a freshwater habitat. *H. venusta* is an unusual strain of the *Halomonas* genus, because it has been implicated in a human infection. *Hb. blutaporensis* has only been previously described as part of the microbial flora of the roots of *Blutaparon portulacoides* a rhizomatous herb found in sandy soil in Brazil. On the other hand *S. warneri* is a well known pathogenic bacterium. To better understand their presence in the freshwater Hassa habitats, the three strains have been characterized further using NMR to determine their compatible solutes and examining their susceptibility to UV light. Two important conclusions can be drawn from this work. Firstly, pathogenic bacteria (e.g. *S. warneri*) and potentially pathogenic bacteria (e.g. *H. venusta*) are present in the Hassa water samples and these strains survived isolation in high salinity media. Secondly, an unusual species of *Halobacillus* was isolated using the same high salinity media, which suggests that a rich diversity of bacteria may well be present in the Hassa waters which would reward a more detailed systematic study of the biodiversity of this freshwater habitat.
