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Culture of Psychrophilic strain from the predominat genus in the most saline environment of the Salar de Ascotán, Northern Chile

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Microbial diversity of the Atacama Desert is being studied by various research groups with differing orientations including i) the search for new molecules of scientific and commercial value; ii) astrobiology; iii) bioprospecting of exploitable biological material for innovation in bioprocesses; iv) microbial ecology and biogeochemical cycles, for example those of arsenic and nitrogen. The work carried out to assess the microbial diversity in saline lakes using culture independent techniques, showed that the microorganisms of the Bacteroidetes group are the predominant one. The abundance of this group varies with the geological setting of the salt lakes studied. To better understand the metabolisms of these microorganisms and the reason for their predominance in these environments, culture experiments were carried out. Results are reported of the medium selection and culture condition to obtain Psychroflexus, the closest relative of the predominant sequences ($>$70% of the total bacterial community) in the Salar de Ascotán. A pure culture was obtained from a psychrophilic strain. The phylogenetic analysis of the 16S rRNA gene indicates that the cepa BAAMJ1 forms a cluster with the cultivated strains of the genus, and are 99% similar to Psychroflexus tropicus. The similitude with the Atacama cluster, without representative cultures is 97.9%. The polyunsaturated fatty acids (PUFA) productive capacity of the BAAMJ1 strain at various temperature and salinity conditions were analyzed. In addition various enzyme activities were determined using a semi-quantitative method. The predominant component (27.41%) of the PUFA of the BAAMJ1 strain is the trans-9-12-octadecadienoic acid (linolelaidic acid). Also present, at a low percentage (0.71%) is linoleic acid (C18:2n6). The enzymatic activity tests show that the strain has among

their constitutive enzymes alkaline phosphatase, esterase lipase and alfa-glucosidase. The results indicate that culture independent techniques allow a better orientation of the cultivation of microorganisms from unknown environments and that more work should be carried out to cultivate indigenous microorganisms.