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GROWTH OF HALOTOLERANT AND HALOPHILIC BACTERIA IN SULFATES: PROSPECTS FOR
LIFE ON EUROPA**Abstract**

The growth of halotolerant and halophilic bacteria under different concentrations of sodium chloride (NaCl), and different concentrations of a number of sulfate salts was investigated.

On Earth, NaCl is the most abundant salt. But on some scenarios of astrobiological interest, the situation is different. For example, there are reports about the presence of sulfates in the ocean of Europa, one of Jupiter's moons, or under the surface of the planet Mars.

The objective of this study is to demonstrate whether these bacteria have the ability to grow in media enriched with some salts of astrobiological interest. The importance of this monitoring is to evaluate the fitness of the studied strains to the hypothetical salt content, and composition of extraterrestrial sites, such as the ocean of Europa.

The mechanism of fitness used by our bacteria was investigated by characterizing, by nuclear magnetic resonance (NMR), the compatible solutes accumulated by each strain. We have found a correlation between the type and concentration of a specific compatible solute accumulated by a strain and the salt content of its environment.

These results are discussed in the context of the salinity and salt composition of Europa's ocean and under their implications for the habitability of this Jovian satellite.