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BACTERIAL POSSIBILITIES FOR SUSTAINABILITY ON MARS – IN-SITU RESOURCE
UTILIZATION WITH MICROORGANISMS

Abstract

With growing knowledge of the ore and material composition of Mars, in-situ resource utilization becomes a viable point for research on permanent solutions for settlements. Traces of methane in the Martian atmosphere leave speculations on a particular bacterial presence on Mars, opening the question of life sustainability on the planet. Many microorganisms, especially cyanobacteria and proteobacteria can feed on in-situ sourced elements and pose as ideal and efficient producers of many crucial substances such as oxygen, magnetic metal and biomass, as well as support the lifetime of other organisms, providing organic matter to the planet. Extremophiles can be cultured in the harshest conditions and accommodated to conditions of the surface of Mars. Furthermore, self-sustaining wastewater treatment could decontaminate the water from production routes providing a closed circuit of water. This paper stands as the research on the possible application of bacteria for sustaining life on Mars with a view on plans of manned outposts.