

Heterotrophic Bacteria of the Soil Ferrosphere

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Aim of the study: The participation of heterotrophic bacteria in the processes of microbial corrosion and the issue of their diversity in the soil ferrosphere (a zone of soil directly adjacent to the surface of the metal) remain insufficiently studied. In addition, the isolation and identification of strains of heterotrophic bacteria become important because of the need for the use of pure test cultures in the study of microbial corrosion processes. Therefore, the aim of this study was to isolate and identify heterotrophic corrosive active bacteria in the soil ferrosphere.

Material and methods: The isolation of pure cultures of bacteria was carried out from the ferrosphere of the underground metal structure by the Koch method. Meat peptone agar and FWA-Fe (III) citrate medium were used to isolate and cultivation. Cultivation temperature was 29°C. The study of culture, morphological, physiological and biochemical properties of bacteria was carried out by well-known methods. Methods described by Safronova et al. were used for sequencing the 16S rRNA gene. Phylogenetic analysis was performed using the MEGA 6.0 program.

Results: We isolated and identified heterotrophic bacteria with ammonifying activity - *Bacillus simplex*, *Streptomyces gardneri*, *Streptomyces canus*; with ammonifying and iron-reducing activity - *Fictibacillus sp.* Isolated strains are registered in the GenBank database. The strains are potentially corrosive and can be used as test cultures in the study of microbial induced corrosion processes.

Keywords: soil, ferrosphere, heterotrophic bacteria