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DETERMINATION OF THE SPECIES COMPOSITION AND ANTIBIOTIC SENSITIVITY ANALYSIS OF OPPORTUNISTIC STRAINS ISOLATED FROM THE INTERNAL VOLUME OF THE RUSSIAN SEGMENT OF THE INTERNATIONAL SPACE STATION

Abstract

The objects of the study were representatives of different non-spore-forming families of microorganisms isolated within the framework of microbiological monitoring of the ISS Russian segment during the period from Expeditions 45/46 to 65. Biological samples were analyzed by MALDI-TOF mass spectrometry on a MALDI Biotyper 3.0 in accordance with the protocols developed by Bruker. Analyzed strains were compared with the international database in MALDI Biotyper RTC (Realtime Classification) format. The frequency of occurrence of antibiotic-resistant opportunistic strains was assessed using the disk-diffusion method, and the interpretation of the results of growth retardation zone measurements was based on EUCAST standards.

Identification of microorganisms by MALDI-TOF showed a predominance of strains of the genus Staphylococcus, such as St. aureus, St. hominis and St. epidermidis, which are representatives of the normal human microflora. In addition to the above cultures, strains that may be sources of opportunistic infections and therefore require further investigation were of particular interest.

The sensitivity to a wide range of antimicrobial agents of non-spore-forming Staphylococcus, Enterococcus microorganisms isolated within the framework of microbiological monitoring of the ISS Russian segment during the period from Expeditions 45/46 to 65 was studied. Resistance to 1 g oxacillin was found in 21

Further expeditions are required to study the sensitivity of strains to a wide range of antibiotics, as the detection of resistant strains may indicate horizontal gene transfer as well as their differential expression. The studied strains, which have shown modification and specificity, require further research to identify their peculiarities and degree of influence on spacecraft and crew, which is of great importance for future long-duration missions and construction of bases on other objects of the solar system.