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TECHNICAL PROBLEMS OF MICROBIOLOGICAL PROTECTION FOR AN ORBITAL SPACE STATION

Abstract

Microorganisms, which are populated in human body, during long-time activity of a manned space vehicle, are forming microflora of a confined space object and become constant ecological partners with the crew. Many exploitation years of space technology forms all necessary premises for natural selection and adaptation, mutability among microbiota and their development and reproduction inside the spaceship as a peculiar ecological niche. Obviously, in a time, such processes could obtain dangerous and irreversible nature because of the specific agents and microorganisms pathogenic for humans. They called bio-destructors, which could make damage to the constructional materials and station equipment. But in conditions of space vehicle it is quite impossible to make total sterilization, so in this situation we must low all microbiological risks. Experimental researches and space flights certified, that microflora during long stay in a confined object with human is exposed to substantial changes. First of all, such changes influence on the bacterial content of the air and surfaces. Of course we have special requirements to all actions within the modules of International Space Station, the transport ships and the delivered freights one's must perform in order to minimize microbiological risks. All necessary conditions of the spaceship air environment (oxygen supply, carbon dioxide and micro-admixture utilization) are regulated by cutting-edge complexes of life-support system. But still it is quite important to check cosmonaut's environment and quality of disinfection inner content of the space station and delivered freights for microbiological protection. To fulfill this task we must make an improvement of existence methods of microbiological detection on the prefight stage and make air and surfaces on the space station more resistance to these intruders. Here some requirements to the equipment that will be used - quality, speed, simplicity of monitoring, ecological safety and safety for the crew. This presentation observes new draft proposals and developments intended for achieving this goal.