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ASPECTS OF MICROBIOLOGICAL CONTROL DURING LONGTIME SPACE EXPEDITIONS

Abstract

To achieve great scientific results in exploring and understanding mechanics of Deep Space one's must prepare manned expeditions to the Moon, Mars and other planets. Having some experiences in continuous service of inhabited space stations we convinced that in order to carry out manned orbital or planetary expeditions we must fulfill a number of measures to prevent microbiological risks (as well as medical, technical and technological). Development of sanitation conditions, on-board methods, means and technologies to control microbiological environment can be included to these measures. The first and foremost task to accomplish this mission is to gather audit microbiological samples.

In 2007-2008 such a device of express diagnostic, "Microflora", designed to collect and study microbiological samples, was created under control of SRC RF – Institute for Biomedical Problems RAS and was taken to the international ground-based experiment "Mars-500". This kit is unique. But it has serious shortcomings with remote access and lack of efficiency during urgent medical control. If one's could use modified system of pattern recognition, based on longstanding researches of Moscow Aviation Institute, and space flight's microbiological data bank, developed by SCR RF – IBP RAS together with Aerospace Department MAI, all these problems could be solved. This article shows practical recommendations to the constitutive actions, methodology of using remote detecting system, which will help us to determinate microbiological damaging agent, model of such a system and aspects of scientific and technical groundwork for development new, prospective systems of microbiological control in order to reduce bio risks of damaging structure of astronaut-inhabited spacecraft and to rise efficiency of space crew during longtime space flights.