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”A FOOD AND NUTRITION PLAN FOR SPACE FLIGHT TO MARS” - HEALTHY GUT
MICROBIOME TAKES US TO MARS!

Abstract

NASA is planning missions that will put the first woman and next man on the moon this decade and will send humans to Mars next decade. Hence, providing food and nutrition in deep space becomes a significant challenge. Therefore, if we aspire to send people to distant planets, space food research has never been more important. In these deep space missions besides physiological adaptation to the new circumstances, changes in the human body can be also experienced, more precisely in the cardiovascular and musculoskeletal systems, metabolic and neurobehavioral health and immune function. To keep astronauts healthy on their trip to Moon, Mars and beyond and their return to Earth, a variety of precautionary measures before and during the space flights need to be taken. Nutrient supply must be optimized for exploration missions. Moreover, disease risks need to be mitigated as well. Food intake is linked to changes in the gut microbiome composition, so it influences the production of key resources, digestion of nutrients, protection against pathogens, appetite, energy storage, immune- and neurobehavioral functions. Our breakthrough gene-based personalized space nutrition program, called SpaceABC provides the solution for this urgent issue; what astronauts' diet must include to keep humans in space healthy, and thus contribute to the success of space missions. The related study has been acknowledged by the National Space Society with the first prize on the international competition on Space Nutrition. SpaceABC's innovative program comprises nutrigenomics, personalized diet and AI-supported nutrition program integrating space-sustainable food, developed specifically for astronauts, analog astronauts and space travelers.