

028

NUTRITION ON THE MOON AND BEYOND

NUTRITION SUR LA LUNE ET AU-DELÀ

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Introduction: With next year's anniversary of Apollo 11, fifty years will have passed since human life was first supported on the Moon. Although nutritional research was not a primary objective of the Apollo lunar landings some data were obtained from biomedical experiments and the life support systems. The food system employed on the lunar surface was of particular interest.

Methods: The author drew from scientific papers, NAS-NRC recommendations, NASA reports and his own recollections to trace the Food and Nutrition Program during the Apollo era and to highlight more recent developments.

Results: Studies on how to feed astronauts in space and on the Moon were initially undertaken by NAS-NRC. Nutritional and psychological requirements were considered along with conventional and non-conventional foods. Biomedical studies prior to Apollo confirmed that humans could function for at least 14 days in 0 g. Experience gained on U.S. and U.S.S.R. missions formed a baseline for the Apollo food system. Improvements were made by testing on the ground and in parabolic flight. Concerns for the mechanical difficulties posed by eating at 1/6 g were allayed. During the actual Apollo flights no evidence was uncovered to suggest that nutritional requirements at either 0 g or 1/6 g were different from those established at 1 g, although electrocardiographic anomalies led to some adjustment of electrolyte intakes.

Conclusion: Biomedical data obtained during the Apollo Program confirmed the adequacy of the food system. Subsequent studies over many decades have refined knowledge of nutritional requirements, explored the potential of nutrients to counteract the adverse effects of spaceflight and led to improvements in space food technology. Experience gained on Mir and the International Space Station with water recycling, oxygen production and plant growth have vindicated some early NAS-NRC recommendations although possible advantages of carbohydrate recycling by chemical means remain to be demonstrated.