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COCONUTS AND KETOSIS – THE (ALMOST) ALL-IN-ONE SOLUTION FOR SPACE EXPLORATION AND PLANETARY SETTLEMENT?

Abstract

Since the highly questionable "Seven Country Study," the macronutrient fat was demonised, while carbohydrates ventured into the limelight as the primary source for energy. Although some studies show a connection between high intake of carbs and insulin resistance, obesity and cardio-vascular related problems, the overall approach towards food and fat in particular has not seen much of a change. Therefore, the widely accepted dietary plan for space explorers still recommends calorie ratios like 50-60% from carbs, 30% from fat and approximately 15% from protein. Apart from publications by Dominic D'Agostino, PhD or Dale Bredesen, MD the benefits of β-hydroxybutyrate (a ketone body made by the liver from MCT oil, respectively medium-chain triglycerides) have not arrived in mainstream, let alone in "space food"-related discussions.

We propose revising the current approach to space nutrition; hence discuss the benefits and physiological implications of a ketogenic diet for long-term space missions and planetary habitation. Examples follow of how palm tree products, and in particular whole foods like coconuts (including their fatty acids, vitamins and trace minerals) may provide groundbreaking building blocks for future dietary plans. In theory, this may help to mitigate some forms of space sickness; however, this is a subject of further studies. We conclude by examining attendant questions like whether or not this kind of sensible product is useable in-flight or can be grown on other planets.

Note: This presentation is inspired by NASA's Extreme Environment Mission Operation (NEEMO 22), the UAE sending date palm seeds to the International Space Station to learn more about their potential for planting them on Mars and the upcoming IAC's theme.