

ENGINEERING

Origins of Space Food From Mercury to Apollo

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What did astronauts eat during the Apollo missions? NASA menus included a variety of choices like freeze-dried potato soup, banana pudding, and sugarcoated cornflakes. The options for the first man who walked on the moon were no different. Neil Armstrong's menu for the Apollo 11 mission is safely stored in his papers at the Virginia Kelly Karnes Archives and Special Collections Research Center. The Apollo 11 astronauts ate three meals (named A, B, and C) a day, repeating these meals every four days.

Armstrong's food selection had a variety of fruit, meat, carbohydrates, and drinks. The food category and amount were specified in detail, and also included accessories like 30 pieces of chewing gum, 60 wet skin-cleaning towels, and an oral hygiene kit. Despite sounding rather tasty, the actual food looked unappetizing. NASA placed its efforts on ensuring that the food was safe, not pretty. It was freeze-dried, double-wrapped, and vacuum-packed, and all food samples had to

meet strict microbiological analysis testing. For example, the total aerobic plate count, the total number of bacteria able to grow in an oxygenated or aerobic environment, had to be less than 10,000 per gram. This was to ensure that the astronauts would not get sick due to food contamination.

As these documents attest, space food was meant to be light yet calorie-dense. On average, the astronauts ate 2,800 calories a day. That is the same amount recommended for an active 35- to 40-year-old male. The nutritional content for the meals was about 20% protein, 62% carbohydrates, and 18% fat. This diet was recommended for an astronaut weighing around 145 pounds (66 kilograms), as the weight range for astronauts selected for training was between 140 and 187 pounds during the Apollo era.

Research advisor Michael G. Smith writes: "From start to finish, Celine Chang achieved a high standard of original scholarship, linking archival research and personal interviews, and bridging biology, engineering, and history, in a comprehensive survey of Purdue University's contributions to space food."