

Resident humans under polar conditions

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Examination of the history of Antarctic exploration food supplies reflects the advances in food technology, the changing science of human nutrition, and the impetus given to the field by polar and space exploration. Scurvy and debilitation was suffered by Scott's ill fated expedition, whereas Amundsen's succeeded by planned provisioning including eating raw seal, the expedition dogs, B group vitamins and milk powder. Shackleton's stranded party lived on marine life and birds until rescued.

Antarctic provisioning has been documented in a series of papers in the 1950's. Many of the problems of the 1950s are still relevant in the present day, as most provisions are delivered in the short summer when the ships can penetrate the pack ice, and must be stored over the long winter. Historically the vitamin C content of the supplies was always well below the RDI due to lack of fresh produce.

The isolation of the Antarctic has provided an ideal opportunity for a range of different studies over many years: including examination of physiological adaptations to extreme environments, measurements of food intake and nutritional status, and changes in body weight, lipids and blood pressure over time and in response to dietary interventions.

Recent studies indicated an increase in energy intake over the winter months. This contrasts with earlier observations (1955–57) where rapid increases occurred in the first 3 months, followed by a plateau as fresh food was used up. Fresh food is now available all year, despite some storage difficulties.

Dietary analysis of inventory, recipes, and individual intake at one base was correlated with blood levels of carotenoids, folate and homocysteine and shown to be adequate. The vitamin C content of the inventory, recipes and intake were all shown to be above the RDI in 1997–98. Redesign of the annual inventory improved the nutrient density of folate.

RDI for Vitamin C is 60 mg /day. The nutrient density supplied is 130 mg/day.

Adequate antioxidants are provided in the annual food supply, not requiring supplementation, if the individual expeditioner consumes adequate fruit and vegetables. Inventory analysis is a simple monitoring device to ensure nutrient quality. Provedore contracts with specifications of quality, handling and storage on the supply vessel are an essential element of the food supply.