The objective of this project is to determine the shelf life end-point of various food items by means of actual measurement or mathematical projection. The primary goal of the Advanced Food Technology Project in these long duration exploratory missions is to provide the crew with a palatable, nutritious and safe food system while minimizing volume, mass, and waste. The Mars missions could be as long as 2.5 years with the potential of the food being positioned prior to the crew arrival. Therefore, it is anticipated that foods that are used during the Mars missions will require a 5 year shelf life. Shelf life criteria are safety, nutrition, and acceptability. Any of these criteria can be the limiting factor in determining the food's shelf life. Due to the heat sterilization process used for the thermostabilized food items, safety will be preserved as long as the integrity of the package is maintained.

The shelf life of the foods range from 0 months to 8 years, depending on formulation. All three products maintained their functionality over the three year test suggesting that the shelf life is at least 8 years.

The nutritive value of the proteins and resulting in a decrease in green color for samples held at 95°F and 72°F. Vitamin B6, folic acid and pantothenic acid showed linear decline with time and temperature. All three products demonstrated a clear linear decline with time and temperature. At baseline, the content was 175 mg/100g. After 36 months storage at 72°F, the content was 4.87 mg/100g. Shelf life projected to be 65 months at 72°F.

Shelf life projected to be 65 months at 72°F. The shelf life of the foods range from 0 months to 8 years, depending on formulation.

The Q10 is a measure of how the rate of a reaction changes for every 10°C change in temperature. The overall flavor, level of sweetness, level of vanillin, and overall aftertaste all decline as the shelf life increases. shelf life projected to be 65 months at 72°F.