Quality of dehydrated potato flakes in long-term storage

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ABSTRACT

The objective was to assess the sensory and physicochemical quality of dehydrated potato flakes stored for 30 years for use as a food source in future missions to Mars. Sensory analysis, Headspace oxygen, Headspace hexanal, Water Activity, Color, Texture, and Vitamin C analyses were conducted. The results suggest that dehydrated potato flakes are a feasible long-term food source for future space missions.

INTRODUCTION

Dehydrated potato flakes were selected as a model food product to study long-term storage. Potatoes are a high-energy, low-water content food that can be quickly rehydrated for consumption. These attributes make them ideal as a food source for long-term storage. Sensory analyses revealed that dehydrated potato flakes are consumed and accepted when reconstituted (Kalsec 2004). However, studies are needed to understand any changes in quality and physical attributes of reconstituted flakes over time.

METHODOLOGY

Potatoes were dried and ground into flakes using a commercial dehydrator and ground to a consistent particle size. Samples were sterilized using gamma irradiation (10 Mrad). Headspace oxygen, Headspace hexanal, Water Activity, Color, Texture, and Vitamin C analyses were conducted. The results suggest that dehydrated potato flakes are a feasible long-term food source for future space missions.

RESULTS AND DISCUSSION

Analysis of variance was conducted to determine if there were significant differences in sensory attributes, physicochemical attributes, and oxidative status of the reconstituted potato flakes. The results suggest that dehydrated potato flakes are a feasible long-term food source for future space missions.

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