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2004-07-01

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Quality of dehydrated potato flakes in long-term storage

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ABSTRACT

There is a demand for dehydrated potato flakes in long-term food storage of space missions, disaster relief, emergency situations, as well as retail and manufacturing applications. A better understanding of the effects of various storage conditions on quality attributes would be helpful. These attributes include physical appearance, moisture content, vitamin C, sensory acceptability, and lipid oxidation products. The purpose of this study was to determine the effects of long-term storage on dehydrated potato flakes. Vitamin C analysis followed the method of Wang (2000) using an Agilent Model 1100 high performance liquid chromatograph (Agilent,Technologies, Santa Clara, CA). Vitamin C levels appeared to remain fairly constant during extended storage. Sensory data suggest that the product maintains sufficient acceptability to be used as a staple food source. The purpose of this study was to evaluate the effects of various storage conditions on the quality attributes of dehydrated potato flakes. The data were then analyzed using the Statistical Analysis System (SAS, Cary, NC). The statistical analysis used was a completely randomized design. Duncan's multiple comparison test was used to determine significant differences. Significance was set at α=0.05.

RESULTS AND DISCUSSION

Long-term storage of dehydrated potato flakes in cans varied from 0-30 years. Vitamin C levels appeared to remain fairly constant during extended storage. Sensory acceptability of the product, however, decreased significantly with increasing sample age. The presence of lipid oxidation products in the dry product was positively correlated with sample age. Also, hexanal levels may not be well correlated with sample age due to the break up in the product. The product maintained sufficient acceptability to be used as a staple food source. The purpose of this study was to determine the effects of long-term storage on dehydrated potato flakes. Vitamin C analysis followed the method of Wang (2000) using an Agilent Model 1100 high performance liquid chromatograph (Agilent,Technologies, Santa Clara, CA). Vitamin C levels appeared to remain fairly constant during extended storage. Sensory data suggest that the product maintains sufficient acceptability to be used as a staple food source. The purpose of this study was to evaluate the effects of various storage conditions on the quality attributes of dehydrated potato flakes. The data were then analyzed using the Statistical Analysis System (SAS, Cary, NC). The statistical analysis used was a completely randomized design. Duncan's multiple comparison test was used to determine significant differences. Significance was set at α=0.05.

INTRODUCTION

Potatoes are commonly used in the United States as a dehydrated market potato flake. There is a large market and high weight, potato flake has increased over the years due to its controllable water activity, low microbial content and long storage life. These applications require that the potato flakes maintain the same quality attributes as fresh produce, even after long periods of storage.

This study was designed to evaluate the effects of long-term storage on dehydrated potato flakes. The effects of long-term storage on potato flakes were examined with respect to physical appearance, vitamin content, sensory acceptability, and lipid oxidation products. Numerous evaluations have been conducted on dehydrated potatoes stored up to 10 years (Brandt et al. 1989, Yuen et al. 1997, Libby and Chen 1997). However, there is an interest in the current storage quality after longer periods of storage. The purpose of this study was to determine the effects of long-term storage on dehydrated potato flakes. Vitamin C analysis followed the method of Wang (2000) using an Agilent Model 1100 high performance liquid chromatograph (Agilent,Technologies, Santa Clara, CA). Vitamin C levels appeared to remain fairly constant during extended storage. Sensory data suggest that the product maintains sufficient acceptability to be used as a staple food source. The purpose of this study was to evaluate the effects of various storage conditions on the quality attributes of dehydrated potato flakes. The data were then analyzed using the Statistical Analysis System (SAS, Cary, NC). The statistical analysis used was a completely randomized design. Duncan's multiple comparison test was used to determine significant differences. Significance was set at α=0.05.