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Quality of dehydrated mashed potatoes retail packaged in No. 10 cans

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ABSTRACT
Manufacturers of fresh processed potato products recognize consumer demand for convenience and the economy of transporting dehydrated commodities. Because of their bulkiness, dehydrated potato products are often sold in large containers, including No. 10 cans. The quality of such products available at the retail level has not been reported. The objective of this research was to determine the quality of several brands of dehydrated instant mashed potatoes packaged in No. 10 cans for retail sale.

Eight brands of instant mashed potatoes, including two types (4 granules, 4 flakes) packaged in No. 10 cans were obtained from retail outlets representing at least five different manufacturers. A 50-member consumer panel evaluated aroma, flavor, texture, and overall acceptability using a 9 point hedonic scale. Other observations included can headspace oxygen, can seam evaluation, water activity, and vitamin C content.

Regarding overall acceptability, mean hedonic scores for flakes and granules were 6.2 and 4.5 respectively. Within the subcategories of flakes and granules, overall acceptability of the highest brand was significantly different from the lowest brand. Flakes ranged from 6.5 to 5.9 and granules from 5.0 to 4.0. Headspace oxygen ranged from 0.02% to 18% (Fig. 1). This was influenced by oxygen removal method which increased headspace air volume and granules, overall acceptability of the highest brand was significantly different than the lowest brand: flakes ranged from 6.5 to 5.9 and granules ranged from 5.0 to 4.0.

RESULTS AND DISCUSSION
Headspace Oxygen, Cam Seams, and Water Activity

Wide variation was found in headspace oxygen, ranging from 0.02% to 18% (Fig. 1). This was influenced by oxygen removal method which increased headspace air volume and oxygen. Cans with high oxygen likely would not retain quality over an extended storage time. All cans seemed to be acceptable. Water activity ranged from 0.31 to 0.46. Wide variation was found in vitamin C content, ranging from 0 to 196 μg/g.

There was significant variation in quality between brands of dehydrated instant mashed potatoes packaged in No. 10 cans for retail sale. Those who purchase instant potatoes should be aware of possible differences in headspace oxygen, sensory quality and vitamin C content among types and brands.

INTRODUCTION

In 2001, 25.1 billion pounds of potatoes were processed in the United States. Of these, 16% were dehydrated. Many studies have examined the effects of processing and storage on dehydrated mashed potato quality (Bos, 1968; Cornicelli, 1985; Norseth, 1988; Sapers, 1975, Sapers, 1972; Wang, 1992). These studies found wide variation in quality parameters depending on processing and storage conditions.

Manufacturers of fresh processed potato products recognize consumer demand for convenience and the economy of transporting dehydrated commodities. Because of their bulkiness, dehydrated potato products are often available at the retail level in large containers, including No. 10 cans. The quality of such products available at the retail level has not been reported. The objective of this research was to compare the sensory and nutritional quality of several brands of dehydrated instant mashed potatoes packaged in No. 10 cans for retail sale.

METHODOLOGY

Samples

Eight brands of instant mashed potatoes, including two types (4 granules, 4 flakes) packaged in No. 10 cans were obtained from retail outlets representing at least five different manufacturers. The conditions of processing and storage were unknown. Cans of all brands were less than 1 year old, except brand A which was 2.5 years old. The seams were given an overall rating of good, satisfactory, or poor by an experienced evaluator. Water activity was measured using a B-Aqua C2 (Decagon Devices, Inc., Pullman, WA).

Sensory Analysis

Sensory analysis was conducted at the BYU Sensory Laboratory using standard procedures. Samples were prepared according to package directions and served in a randomized manner to a 50-member consumer panel in 4 visits. Panelists evaluated aroma, flavor, texture and overall acceptability using a 9 point hedonic scale.

Vitamin C

Vitamin C analysis was conducted after the BYU Sensory Laboratory using standard procedures. Samples were prepared according to package directions and served in a randomized manner to a 50-member consumer panel in 4 visits. Panelists evaluated aroma, flavor, texture and overall acceptability using a 9 point hedonic scale.

REFERENCES


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