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

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ABSTRACT
Manufacturers of further 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 brand 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 56-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.

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

Wide variation was found in headspace oxygen, ranging from 0.02% to 6.5% (Fig. 1). The highest scoring brand had low headspace oxygen (0.02%), suggesting that quality would be optimally retained during storage. However, several brands of flakes that scored high in sensory evaluation were not packaged to exclude oxygen and would likely not retain high quality during an extended storage period. Most observations of can seams fell within specifications. Water activity ranged from 0.33 to 0.45. Wide variation was found in vitamin C content, ranging from 0 to 199 mg/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, 23.1 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 (Briggs, 1984; Grooman, 1985; Norseth, 1988; Sapers, 1975, 1977, Wang, 1992). These studies found wide variation in quality parameters depending on processing and storage conditions.

Manufacturers of further 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 and possibly Brand F which did not have decipherable codes.

RESULTS AND DISCUSSION

Headspace Oxygen, Can Seams, and Water Activity

Wide variation was found in headspace oxygen, ranging from 0.02% to 6.5% (Fig. 1). This was influenced by oxygen removal method which included nitrogen, oxygen absorbers, no treatment, and one brand in which the method was unknown. Cans with high oxygen likely would not retain quality over an extended storage time. All cans seemed to have good tightness. Can seams were evaluated by visual inspection and were rated as good, acceptable, or poor. All cans were given an overall rating of good, satisfactory, or poor by an experienced evaluator. Water activity was measured using a Aquapor CX-2 (Drager Devices Inc., Pulman, 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 followed the method of Wang (2000) using an Agilent Model 1100 high performance liquid chromatograph (Agilent Technologies, Palo Alto, CA). The detection limit was 10 μg/L, and a double array detector. Determinations were carried out under subdued light. Recovery rate was 105%.

RESULTS

Vitamin C content of the potato products is shown in Fig. 4. Half of the brands studied (brands A, B, C, and E) had amounts of vitamin C that were below the amount claimed on their label. The amount in all but 1 brand was lower than the amount reported in the USDA National Nutrient Database for Standard Reference for granules and flakes, 170 μg/g and 86 μg/g respectively. Wide variation between cans of the same brand was found for Brand B and C. The label value for Brand D was over three times the USDA value for vitamin C, yet none was detected in the sample. Brand D did not report any vitamin C on the label, yet 180 mg/g of sample was found.

CONCLUSIONS

There was significant variation in sensory and nutritional 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 type and brand.

REFERENCES


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