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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 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 sub categories of flakes 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. Headspace oxygen ranged from 0.02% to 18%. The highest scoring flake 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 190 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, 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 (Brogg, 1964; Cornett, 1983; Norton, 1986; Sapers, 1975; Sapers, 1972; 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 two different manufacturers. The condition 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 brands F and H which did not have expiration dates.

RESULTS AND DISCUSSION

Headspace Oxygen, Can 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 included nitrogen flash and 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 be acceptable. Water activity ranged from 0.31 to 0.46 (Fig. 2).

Sensory Analysis

Headspace Oxygen for aroma ranged from 4.9 to 6.9 (Fig. 3). Flavor varied greatly from brand to brand and ranged from 5.6 to 6.5. Texture showed the least amount of variation among brands, ranging from 5.1 to 6.4. Overall acceptability ranged from 4.0 to 6.5. Flavor scores mirrored overall acceptability scores, indicating the importance of flavor in judging overall acceptability.

REFERENCES


CONCLUSIONS

There was significant variation in sensory and nutritional quality between brands of dehydrated instant mashed potatoes 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.

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