

Research Note

STUDIES ON THE SHELF-LIFE OF YAM INSTANT FLAKES¹

Yam (*Dioscorea alata* L.) is one of the most important root crops grown in Puerto Rico. Due to its seasonal nature, supplies are greater from October to January and there are practically none from February to September. However, the natural yam season can be extended somewhat by early planting and early harvesting through storage of tubers, but their availability is nevertheless restricted by season.

Elaboration of an agricultural product is another way of extending its availability throughout the whole year.

In countries where the demand of yams is high, the availability of means of preservation is highly desirable. Instant dehydrated yam flakes could supply yams throughout the whole year. Even though antioxidants are usually added, this study was carried out to determine the shelf-life of instant yam flakes without the addition of antioxidants.

Instant yam flakes were prepared by the method developed by Rodríguez-Sosa and González². Flakes thus obtained were sifted through 8.00 mm mesh screens and samples retained on sieve No. 8 (2.38 mm) were packed in four different media: 7½ oz tin cans under vacuum, 303 tin cans at atmospheric pressure, aluminum bags, and polyvinylidene chloride-coated 210-yield double cellophane bags. No preservatives were added and flakes thus packed were stored at ambient conditions.

The stored instant flakes were submitted to sensory evaluations as mashed yams every 15 days. A 6-point hedonic scale ranging from like very much (1) to dislike (6) was used. The mashed yams were evaluated for flavor, appearance, texture (mouth feel), and overall acceptability. Samples were prepared by mixing 23% instant flakes, 73% tap water at 180° F (82.2° C), 3% olive oil, and 1% table salt. At the same time intervals, the moisture content of flakes was determined. Table 1 shows the results of sensory evaluations and table 2 those of moisture content.

Mashed yams with no preservatives added and packed in different media were fairly accepted after 60 days (table 1). Panelists preferred samples packed under vacuum at the end of the storage period. As storage time increased, flakes changed from white to a greyish color. After 60 days of storage the samples developed a noticeable hay odor and had to be discarded.

¹ Manuscript submitted to Editorial Board June 10, 1980.

² Rodríguez-Sosa, E. J. and González, M. A., 1972. Preparation of yam (*Dioscorea alata* L.) Flakes, J. Agri. Univ. of P.R. 56 (1): 39-45.

TABLE 1.—Sensory evaluation of mashed yams stored in different packing media

Storage time	Quality attribute	Panel scores for packing media ¹			
		Vacuum packed tin cans	Atmospheric pressure packed tin cans	Atmospheric pressure packed aluminum bags	Atmospheric pressure packed cellophane bags ²
<i>Days</i>					
0	Texture	4.0	4.0	4.0	3.0
	Appearance	3.0	3.0	3.0	2.0
	Flavor	3.0	3.0	3.0	3.0
	Overall acceptability	3.0	3.0	5.0	3.0
15	Texture	3.0	3.0	3.0	3.0
	Appearance	3.0	3.0	3.0	2.0
	Flavor	3.0	2.0	3.0	2.0
	Overall acceptability	3.0	3.0	3.0	2.0
30	Texture	3.0	3.0	3.0	3.0
	Appearance	3.0	3.0	3.0	3.0
	Flavor	3.0	3.0	3.0	3.0
	Overall acceptability	3.0	3.0	3.0	3.0
45	Texture	3.0	4.0	4.0	3.0
	Appearance	3.0	3.0	4.0	3.0
	Flavor	3.0	4.0	4.0	3.0
	Overall acceptability	3.0	4.0	4.0	3.0
60	Texture	3.0	4.0	3.0	4.0
	Appearance	3.0	3.0	3.0	3.0
	Flavor	3.0	4.0	4.0	4.0
	Overall acceptability	3.0	3.0	4.0	4.0

¹ Ranging from "like very much" (1) to "dislike" (6); (3) corresponds to "like moderately."

² Polyvinylidene chloride-coated 210-yield double cellophane bags.

TABLE 2.—Moisture content of *Florido* (*D. alata*) instant yam flakes stored in different packing media

Type of package	Moisture content (%) at storage periods (days)				
	0	15	30	45	60
Vacuum-packed tin cans	4.32	5.55	5.32	5.69	5.41
Atmospheric-pressure packed tin cans	5.23	6.36	5.50	5.97	5.71
Atmospheric-pressure-packed aluminum bags	4.15	5.41	6.48	6.18	6.42
Atmospheric-pressure-packed cellophane bags ¹	4.46	8.00	8.42	8.51	8.25

¹ Polyvinylidene chloride-coated 210-yield double cellophane bags.

Generally speaking, moisture content increased with the increase in storage time. The increase in moisture in samples packed in cellophane bags was higher than that of samples packed in other media (table 2).

This shelf-life period undoubtedly may be extended by adding antioxidants or other additives which may inhibit the usual deterioration reactions.

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