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PHYSICOCHEMICAL AND TECHNOLOGICAL EVALUATION OF CASSAVA PRODUCTS MARKETING IN BELÉM (PA) BRAZIL.

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Abstract

In the northern Brazilian region, especially in the state of Pará, the small producers, in so-called flour houses, transform cassava (*Manihot esculenta* Crantz) into products such as cassava flours (white, yellow and water flour) and cassava starch which are widely consumed in the country. This project aimed to characterize the technological and physicochemical characteristics of cassava roots products. White, yellow, tapioca and water cassava flour presented content of moisture and ashes within the limits stipulated by Brazilian legislation. All analyzed cassava products showed low levels of protein and fats, consequently they were rich in carbohydrates. White and yellow cassava flour by trade (Belém - PA) were classified as fine, as well as water flours. The tapioca flour was classified as coarse and had a lower apparent density. The pH of the water flour was higher than the other samples. These studies showed the lack of padronization of the flour in the trade and a great energetic potential and satiety of the all products from cassava, because they presented high content of carbohydrates.

Key words: Cassava, cassava flour, starch.

Introduction

In Belém (PA), cassava products are usually marketing in bulk without the nutritional information and often are not in quality standards^{1, 2}. The physicochemical characteristics of cassava products depend on both the intrinsic characteristics of cassava and the quality of processing^{1, 3}. The focus of the research was the better knowledge of the products processed from cassava roots, often handcrafted and of great importance for feeding of the north of Brazil population.

Results and Discussion

The cassava products were evaluated by grain size, using the Manual of Classification of Cassava Flour⁴; apparent density and pH according to the indicated methodology⁵. It has been found that the dried flours white and yellow are fine flours, going against the classification of local trade as fine, medium and coarse and also with the visual difference (Fig. 1a and 1b). The tapioca flour (Fig. 1c) was classified as coarse and was the ones with the highest apparent density. Water flours (Fig. 1d) were classified as fine and had a higher pH, as opposed to the characteristic of the water group⁶.

Figure 1. Images of the samples of tapioca flour in (a) White flour; (b) Yellow flour; (c) Tapioca Flours; And (d) Water Flours.

The values found in the physicochemical characterization are shown in Table 1. All cassava products were rich in carbohydrates and low levels of protein and fat. The contents found for moisture and ashes were within the limit established by Brazilian legislation⁶.

Table 1. Results of physicochemical analyzes of cassava products marketed in Belém (PA) Brazil¹

Cassava Products ²	Carbohydrates ³ (%)	Moisture (%)	Proteins (%)	Fats (%)	Ashes (%)
White Flour	89.75±0.07 ^a	8.00±0.11 ^c	1.22±0.14 ^a	0.41±0.22 ^a	0.61±0.07 ^a
Yellow Flour1	90.69±0.06 ^a	7.07±0.21 ^e	1.25±0.09 ^a	0.87±0.05 ^b	0.71±0.03 ^a
Yellow Flour2	91.30±0.39 ^a	6.27±0.10 ^f	0.98±0.09 ^b	0.50±0.21 ^a	0.65±0.01 ^a
Water Flour1	90.93±0.39 ^a	7.15±0.04 ^e	1.25±0.08 ^a	0.14±0.02 ^b	0.69±0.01 ^a
Water Flour2	90.94±0.58 ^a	6.28±0.21 ^f	1.14±0.00 ^a	0.11±0.02 ^b	0.76±0.01 ^a
Tapioca Flour1	91.97±0.03 ^a	7.55±0.03 ^d	0.36±0.03 ^c	0.02±0.00 ^b	0.09±0.00 ^b
Tapioca Flour 2	92.22±0.05 ^a	7.33±0.08 ^d	0.27±0.00 ^c	0.93±0.06 ^b	0.09±0.00 ^b
Cassava Starch 1	57.46±0.01 ^b	42.45±0.10 ^a	*	0.03±0.00 ^b	0.22±0.01 ^b
Cassava Starch 2	56.70±0.01 ^b	42.48±0.10 ^a	*	0.15±0.01 ^b	0.67±0.01 ^a
Cassava Starch 3	89.75±0.19 ^a	9.44±0.20 ^b	*	0.29±0.19 ^a	0.09±0.07 ^b

¹The analytical results correspond to the mean of at least 3 determinations ± standard deviation. ²Different lowercase letters in the column differ from each other by the Scott-Knott test ($p \leq 0.05$). *The samples showed no significant amount of proteins

Conclusions

From the physical-chemical and technological analyzes it is noted that the cassava flours were within the limit established by Brazilian legislation for moisture and ashes, contrary to grain size which is stipulated differently by trade. Cassava products were rich in carbohydrates being possible foods that provide energy to the population.

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