



DEVELOPMENT AND PHYSICOCHEMICAL CHARACTERIZATION OF GLUTEN-FREE SAVORY BISCUITS MADE WITH SWEET POTATO FLOUR AND SUPPLEMENTED WITH CARROT

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ABSTRACT

The growing demand for gluten-free foods has driven the development of new products with nutritional and technological characteristics superior to those of conventional formulations. However, many commercially available gluten-free products exhibit low nutritional value and limitations regarding technological quality. In this context, the use of sweet potato flour represents a promising alternative as a base ingredient in gluten-free bakery products, owing to its technological properties and nutritional potential. Additionally, the incorporation of carrot can contribute to the nutritional enrichment of the product due to the presence of dietary fiber, carotenoids, and other bioactive compounds. Thus, this study aimed to evaluate the physicochemical characteristics of gluten-free savory biscuits made from sweet potato flour and carrot. The three formulations prepared were: F1 (control), containing 100 g of sweet potato flour, 2 g of salt, 0.5 g of dried oregano, 4 g of baking powder, 40 g of margarine, and 60 g of water; F2 (15% carrot), containing the same ingredients as the control formulation with the addition of 15 g of cooked, mashed carrot; and F3 (30% carrot), containing the same ingredients as the control formulation with the addition of 30 g of cooked, mashed carrot and the removal of 15 g of water (totaling 45 g of added water). To prepare the biscuits, the ingredients were mixed until a dough formed; this was rolled out to a thickness of 4 mm, cut into squares (4x4 cm), and baked at 210°C for 16 minutes. The biscuits were cooled and stored in airtight containers. The samples were evaluated for thickness, length, specific volume, pH, moisture, ash content, and instrumental color. The results showed thickness (5.03–5.67 mm), length (36.64–36.88 mm), and specific volume (0.74–0.81 mL/g), with no statistical difference among the formulations. The pH decreased slightly with the addition of carrot, from 6.84 (F1) to 6.76 (F2) and 6.73 (F3), likely due to the organic acids present in the vegetable. The moisture content of the biscuits ranged from 5.37% to 7.12%, which ensures product shelf-life and crispness. The ash content ranged from 4.03% to 4.49%; this relatively high level is due to the salt (NaCl) added to the formulation. Instrumental color analysis showed a reduction in lightness (L*) and an intensification of orange tones (a* and b*) with the addition of carrot. It is concluded that sweet potato flour is a suitable ingredient for producing gluten-free savory biscuits, and carrot can be added to enhance nutritional value while imparting an attractive color to the product.

Keywords: product development, gluten-free food, sweet potato, carrot.

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