



INFLUENCE OF DIFFERENT PRETREATMENTS ON THE PHYSICOCHEMICAL CHARACTERISTICS OF DEHYDRATED SWEET POTATO SLICES

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ABSTRACT

The use of sweet potato-based products is often limited by the enzymatic browning process, which occurs mainly due to the activity of polyphenol oxidase enzymes. Given this problem, the objective of this work was to evaluate the application of pretreatments on the physicochemical characteristics of dehydrated sweet potato. The study consisted of subjecting sweet potato slices (1.5 mm) to three types of pretreatments before dehydration in an oven at 60 °C: blanching in water (70 °C for 5 minutes), immersion in a citric acid solution (1% for 30 minutes), and immersion in a glucose solution (40% for 60 minutes). A control sample was dehydrated without any pretreatment for comparison purposes. The analyses performed on the dehydrated samples were pH, titratable acidity, moisture, ash content, and luminosity (L parameter, using the Lab Tools application). After dehydration, the sample treated with citric acid showed the lowest pH (4.33) and the highest titratable acidity (1.42%), indicating effective absorption of the acid during pretreatment. In contrast, the bleaching treatment resulted in the lowest acidity (0.07%), a behavior that can be explained by the solubilization and loss of natural organic acids during the thermal process in aqueous medium. Regarding moisture, all pretreatments showed low levels after dehydration, ranging from 4.68% to 5.73%. These reduced values are fundamental to guaranteeing the microbiological safety of the product and maintaining sensory characteristics such as crispness. The ash content, an indicator of mineral content, was highest in the control sample (3.88%), followed by the sample treated with citric acid (3.01%), glucose (2.56%), and finally, bleaching (0.76%). The drastic reduction in ash in bleaching is explained by leaching, that is, the transfer of minerals to the treatment water during the process. Regarding luminosity, all pretreatments were effective in reducing darkening. The control sample showed the darkest color (73.95), followed by the glucose pretreatment (80.33), the bleaching pretreatment (82.13), and the citric acid pretreatment (85.47), which was the lightest sample. Therefore, it can be concluded that pretreatments significantly alter the physicochemical composition of dehydrated sweet potatoes, requiring specific criteria for choosing the best methodology. If the main objective is to preserve nutritional value (mineral content), blanching is the most detrimental treatment. On the other hand, if the goal is microbiological control or the improvement of sensory attributes, such as color maintenance and inhibition of enzymatic browning, the application of citric acid proves to be the most effective technique, due to its ability to significantly reduce the pH.

Keywords: *Ipomoea batatas*, drying oven, enzymatic browning.

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