



## OSMOTIC TREATMENT OF ORANGE AND PINK SWEET POTATO-MASS TRANSFER RATE AND EFFICIENCY

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### ABSTRACT

Sweet potatoes (*Ipomoea batatas*) are globally cultivated due to their adaptability, high nutritional value, short growing season, tolerance to high-temperature soils, low fertility, and minimal disease issues, making them a valuable asset to the food industry. Eaten as a vegetable, sweet potatoes are prepared through boiling, frying, baking, or even fermenting for various dishes and beverages. The drying process of sweet potatoes typically combines the effects of blanching and/or freezing pre-treatments along with higher drying temperatures. This study specifically focused on osmotically treating samples of pink and orange sweet potatoes in sugar beet molasses (80% w/w) to explore the influence of solution temperatures (20°C, 35°C, and 50°C) and osmotic treatment durations (1h, 3h, and 5h) on mass transfer rate and treatment efficiency. The Principal Component Analysis and color correlation analysis were employed to illustrate the connections between different sweet potato samples. Findings indicate that the mass transfer rate peaks at the onset of the process, particularly with the highest temperature for both orange and pink sweet potatoes. Notably, diffusion is most rapid within the initial three hours, suggesting potential reductions in processing time aligned with these results. The mass transfer rate was more rapid, and the osmotic treatment was more efficient for the orange sweet potato samples.

*Keywords: osmotic drying, sweet potato, sugar beet molasses, dehydration efficiency, PCA*

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