

## OPTIMIZATION OF OSMOTIC DEHYDRATION OF POTATO SLICES IN SUGAR SOLUTION USING RESPONSE SURFACE METHODOLOGY

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### ABSTRACT

Response surface methodology was used to determine the optimum processing conditions that yield maximum water loss (WL), weight reduction (WR) and minimum solid gain (SG) during osmotic dehydration of potato slices in sugar solution. The experiments were conducted according to Central Composite Design (CCD). The independent process variables for osmotic dehydration process were temperature (20 - 60°C), processing time (80 -300 minutes) and sugar concentration (40 - 60% w/w). For each response, second order polynomial models were developed using multiple linear regression analysis. Analysis of variance (ANOVA) was performed to check the adequacy and accuracy of the fitted models. The response surfaces maps showing the interaction of process variables were constructed. The optimum conditions of dehydration were found to be: temperature 60°C, immersion time 300 min and sugar concentration 40% w/w. At this optimum point, water loss, solid gain and weight reduction were found to be 69,34(g/100 g initial sample), 3,56 (g/100 g initial sample) and 66,8(g/100 g initial sample) respectively. Frying the potato slices previously dehydrated has reduced the frying time to 40.47 %.

**KEYWORDS:** Optimization, Osmotic Dehydration, Potato Slices, Response Surface Methodology, Sugar Solution