Studies on the Development of Microwave Baked Potato Chips to Optimize Process Parameters

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ABSTRACT

The present investigation was to study the development of microwave baked potato chips using response surface methodology to determine the optimum operation conditions of microwave baked potato chips and to analyze the effects of microwave baking processing variables, including thickness (0.5-2.5mm), microwave power (300-900 Watts), baking time (4-12 min). Quadratic polynomial equations were also obtained by multiple regression analysis. The predicted models were adequate based on the lack-of-fit test and coefficient of determination obtained. By superimposing individual contour plots of the different responses, regions meeting the optimum conditions were also derived. Quadratic regression equations describing the effects of these factors on the physico-chemical attributes were developed. It was found that effects of thickness and microwave power were more significant on the moisture, ash, CHO & fat content than baking time. As for protein and browning index, the power level has no significant effect. The microwave baking process was optimized for physico-chemical attributes. The optimum conditions were found to be: thickness of 1.5 mm, microwave power of 600 Watts and baking time of 8min. At this condition the optimum values of moisture, ash, fat, protein and carbohydrate contents were found to be 6.12%, 4.12%, 0.44% and 82.5 g/100 g respectively.

Key words : Microwave baking, Potato chips, Response surface methodology.