

Optimasi Suhu dan Waktu Pengovenan Muffin Tepung Jagung dan Tepung Labu Kuning Menggunakan *Response Surface Methodology*
(*Optimization of Temperature and Baking Time for Corn Flour and Pumpkin Flour Muffins Using Response Surface Methodology*)
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ABSTRACT

Muffin that can be enjoyed as a heavy or light meal, muffins require a proper baking process to achieve optimal doneness and tenderness. Corn contains fat and protein while pumpkin is rich in minerals such as iron, phosphorus, and calcium, making it a good ingredient for food products in the form of flour. This study aims to obtain optimal factors and responses using Response Surface Methodology (RSM). Optimization was carried out with a Central Composite Design design based on Design Expert 13 using two factors of temperature and baking time. The three responses observed in this study were specific volume, texture and crude fiber content. The results of optimization of curing using Response Surface Methodology resulted in quadratic models for specific volume, texture, and crude fiber content. The R-square (R²) value of specific volume response was 0.9077, crude fiber content was 0.5381, and also texture was 0.9311. The optimal condition suggestion was found at a temperature of 181.743°C with a time of 33.191 minutes which was predicted to produce 2.351cm³/g for specific volume, on the texture response produced 6.960g/mm and on the crude fiber content response of 9.789% with a desirability value of 0.563. The validation test was carried out in three replications with the actual average value of the specific volume response of 2.130cm³/g with an accuracy value of 91.02% specific volume, 6.430g/mm texture with an accuracy value of 92.38%, and 9.374% crude fiber content with an accuracy value of 95.76% crude fiber content. The one sample T-test explains that the actual average value is not significantly different from the predicted value.

Keywords : *Corn flour, muffin, optimization, pumpkin flour, response surface methodology*