

**Pemodelan Kinetika Proses Pengeringan Kombinasi Osmotik-Microwave
Pada Lapisan Tipis Labu Kuning (*Cucurbita moschata*)
(Kinetic Modeling of the Combined Osmotic-Microwave Drying Process on
Thin Layers of Yellow Pumpkin (*Cucurbita moschata*))**

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ABSTRACT

Pumpkin (*Cucurbita moschata*) is a food material with high moisture content, making it highly perishable. One effective method to extend its shelf life is drying. This study aimed to determine the most appropriate mathematical model for describing the drying kinetics of pumpkin slice subjected to combined osmotic-microwave drying process. Osmotic pretreatment was carried out using a 20% concentration NaCl solution and using a microwave with varying power levels (low, medium low, and medium). The osmotic dehydration process effectively reduced the initial moisture content through water loss and solid gain mechanisms. The drying data were then analyzed using 10 mathematical models to determine the best model based on statistical parameters, including the coefficient of determination (R^2), Sum Of Squared Error (SSE), Root Mean Square Error (RMSE), Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC). The results showed that at low power the best model was midilli-kucuk with a coefficient of determination (R^2) of 0,9994. Meanwhile, at medium low and medium power, the Two-Term Exponential model showed the best model suitability with each determination coefficient (R^2) value of 0,9968 and 0,9999 and had the smallest SSE, RMSE, AIC and BIC values among the other models. The effective moisture diffusivity (D_{eff}) range from $8,325 \times 10^{-10}$ to $1,378 \times 10^{-9}$ m²/s. The exergy efficiency ranged from 5,83% to 6,42%.

Keywords: Pumpkin, microwave, osmotic, drying kinetics.