

عنوان مقاله:

The Kinetics of Forced Convective Air-drying of Papaya (*Carica papaya* L.) Slices Pretreated in Osmotic Solution

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خلاصه مقاله:

In this study, mathematical modeling of hot air-drying of thin-layer papaya (*Carica papaya* L.) slices with 5 ± 1 mm thickness pretreated in osmotic solution (5% sucrose) was investigated. Thin-layer drying was conducted under three different drying temperatures of 40, 50 and 60 °C at a constant air velocity of 0.9 ± 0.1 m/s and absolute humidity of 0.6 ± 0.02 g of water/kg of dry air. It was found that the drying process occurred in falling rate period over the drying time. The osmosis dehydration characteristics obtained by solid gain (SG), water loss (WL) and weight reduction (WR) parameters that increased with increasing immersion time. The effective diffusivity for papaya slices was within the range of 2.13×10^{-9} to 4.84×10^{-9} m²/s over the temperature range. The activation energy was 38.63 kJ/mol indicated the effect of temperature on the diffusivity. Based on the statistical analysis using coefficient of determination (R^2) and root mean square error (RMSE), it was concluded that the best model in terms of fitting performance for hot air-drying of papaya pretreated in osmosis solution in all temperature range was Midilli et al. model.

کلمات کلیدی:

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