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Convective Hot Air Drying of Different Varieties of Blanched Sweet Potato Slices

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Abstract : Drying behaviour of blanched sweet potato in a cabinet dryer using different five air temperatures (40-80oC) and ten sweet potato varieties sliced to 5 mm thickness were investigated. The drying data were fitted to eight models. The Modified Henderson and Pabis model gave the best fit to the experimental moisture ratio data obtained during the drying of all the varieties while Newton (Lewis) and Wang and Singh models gave the least fit. The values of Deff obtained for Bophelo variety (1.27 x 10-9 to 1.77 x 10-9 m2/s) was the least while that of S191 (1.93 x 10-9 to 2.47 x 10-9 m2/s) was the highest which indicates that moisture diffusivity in sweet potato is affected by the genetic factor. Activation energy values ranged from 0.27-6.54 kJ/mol. The lower activation energy indicates that drying of sweet potato slices requires less energy and is hence a cost and energy saving method. The drying behavior of blanched sweet potato was investigated in a cabinet dryer. Drying time decreased considerably with increase in hot air temperature. Out of the eight models fitted, the Modified Henderson and Pabis model gave the best fit to the experimental moisture ratio data on all the varieties while Newton, Wang and Singh models gave the least. The lower activation energy (0.27-6.54 kJ/mol) obtained indicates that drying of sweet potato slices requires less energy and is hence a cost and energy saving method.

Keywords : sweet potato slice, drying models, moisture ratio, moisture diffusivity, activation energy
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