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Single layer drying kinetics of papaya amidst vertical and horizontal airflow

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1	Single layer drying kinetics of papaya amidst vertical and horizontal
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16	
17	Abstract
18	The impact of airflow direction, namely through-flow and over-flow modes, on
19	drying kinetics of osmotically-pretreated papayas was investigated in a convective-type
20	dryer under varied conditions (temperature, humidity and velocity). The Newton model
21	was used to describe thin-layer drying characteristics and the dependence of drying air
22	parameters on the drying constant (k) was expressed by an Arrhenius-type relationship. It
23	was found that a more uniform airflow distribution in the through-flow chamber resulted in
24	higher product temperature as well as faster drying rate, especially during the initial stage
25	of drying. For both airflow modes, drying kinetics was most significantly influenced by
26	temperature and velocity of the air, whereas the specific humidity had less effect on the
27	drying rate. The value of k increased in parallel with temperature and velocity of the drying
28	air, whereas it was reduced by increasing humidity. A model incorporating the conditions
29	of drying air was developed for each airflow mode, which can help with optimization of
30	practical drying operations.
31	

Keywords Air distribution, drying rate, convective drying, through-flow, over-flow

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