

Degradation Kinetics of Lycopene in Watermelon Pomace (Cv Sugar Baby) During Hot Air Drying and Thermal Treatment

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Abstract Lycopene retention in watermelon pomace during drying was investigated in fluidized-bed and cabinet dryer at 50-70°C using 2-6 kg/m² tray loads. Page's model described the drying behaviour of watermelon pomace better than other models. Lycopene content of watermelon pomace dried in fluidized-bed dryer was 5.67-9.86 mg/100g (db) where as in cabinet dryer was 4.82-8.12 mg/100g (db) under experimental conditions. Lycopene retention was lower in cabinet dryer due to longer drying time. Degradation kinetics of lycopene in watermelon pomace followed first order model over 50-90°C. Thermal degradation showed higher lycopene retention than drying under similar conditions of temperature and time indicating that circulating air increased the rate of lycopene degradation. Lycopene loss during drying of watermelon pomace was 19.02-60.57% where 7.46-43.28% was observed during thermal treatment of watermelon pomace. Fluidized bed dryer can be employed preferably over cabinet dryer to stabilize the watermelon pomace with higher lycopene retention. Higher lycopene loss was obtained during dehydration as compared to thermal degradation of watermelon pomace which might due to fact that higher degradation of lycopene by aeration in drying process. Dried pomace with higher shelf life containing high value of lycopene can be utilized as a potential food ingredient to increase the nutraceutical and aesthetic value of food products.

Keywords: Watermelon; Pomace; Lycopene; Drying; Thermal Treatment; Degradation kinetics.