

Title Influence of dipping on thin-layer drying characteristics of seedless grapes
Author Mohsen Esmaili, Rahmat Sotudeh-Gharebagh, Mohammad A.E. Mousavi and Ghader Rezazadeh
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Abstract

The drying characteristics of pretreated seedless grapes were studied using a laboratory-scale tray dryer with the air temperature varied from 40 to 70 °C at air velocity of 1 m s^{-1} . The effective moisture diffusivities were determined using an analytical–numerical solution method considering shrinkage, while variable thermal diffusivity was calculated from experimentally estimated values of thermo-physical properties at a given moisture contents. These parameters were correlated with the corresponding moisture content and temperatures in an empirical model using a non-linear regression method. This shows that the seedless grapes of the same clone vines, as subjected to the hot water (HW) and alkaline emulsion of ethyl oleate (EO) pretreatments, exhibited average effective moisture diffusivities that ranged from 3.34 to $8.46 \times 10^{-10} \text{ m}^2 \text{ s}^{-1}$ at 50 °C. The increase in mass transfer coefficients at a given moisture content at different temperatures for the EO-pretreated samples was two times that for the HW-pretreated samples during the drying. However, the pretreatments had no the significant effect on the thermal diffusivities of the grapes during the drying.