

Desorption Isotherm Models of Sesame Seed

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A b s t r a c t

The modeling of desorption isotherm of sesame seed at temperature levels of 40,50,60, 70, and 80 °C and moisture content ranging from 4.5 to 25.5% d.b. has been described. The equilibrium moisture content decreased with increased environment temperature at constant relative humidity typical of biological products. Five-sorption isotherms were fitted to the experimental data using a non-linear regression analysis to obtain model parameter estimates. Equilibrium relative humidity (ERH) models parameters were consistently different from those that were obtained for Equilibrium moisture content (EMC) models. A two way ANOVA at 5 percent significant level revealed no significant differences between the models used but there were differences between the ERH and EMC models. The goodness of fit of the models determined by the RMS values for the models revealed that the equilibrium relative humidity models represented the experimental data better than the equilibrium moisture content models. The Modified Henderson model gave the best fit for experimental data with standard errors of 3.3. and 4.1 percent for equilibrium relative humidity and equilibrium moisture content isotherms respectively.

Keywords: Desorption, Isotherm, Sesame, Drying