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EXPERIMENTAL STUDY OF PRODUCTION AND CHARACTERIZATION OF DATE FRUIT POWDERS AND SYRUP

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ABSTRACT

In the present work, date pulp and pomace powders were produced under freeze drying conditions and syrup was extracted from Garn Ghzel date variety. Date products were characterized in terms of physicochemical properties (moisture, water activity, ash, soluble solids content, titrable acidity, pH and color) and functional properties (water holding capacity, wettability index, dispersibility and density). Freeze drying kinetic of date pulp and pomace was modeled using five empirical models (Newton, Page, Henderson and Papis, Logarithmic and Wang and Singh). Results showed that there is a slight difference between powders properties. Page and Logarithmic models best fitted the freeze drying kinetic of date pulp and pomace with the highest determination coefficient, R^2 (0.9635) and R^2 (0.9987) and the lowest chi-square χ^2 (0.000021) and χ^2 (0.000052) values respectively. Fick's law was used to determine the effective moisture diffusivity. Its values were 9.74×10^{-11} and 5.15×10^{-11} m^2/s for date pulp and pomace respectively. These results contribute added value to date technology.