

Influence of the Compression Force and Powder Particle Size on Some Physical Properties of Date (*Phoenix dactylifera*) Tablets

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Abstract : In recent years, the compression of date (*Phoenix dactylifera* L.) fruit powders (DP) to obtain date tablets (DT) has been suggested as a promising form of valorization of non commercial valuable date fruit (DF) varieties. To further improve and characterize DT, the present study aims to investigate the influence of the DP particle size and compression force on some physical properties of DT. The results show that independently of particle size, the hardness (y) of tablets increases with the increase of the compression force (x) following a logarithmic law ($y = a \ln (bx)$ where a and b are the constants of model). Further, a full factorial design (FFD) at two levels, applied to investigate the erosion %, reveals that the effects of time and particle size are the same in absolute value and they are beyond the effect of the compression. Regarding the disintegration time, the obtained results also by means of a FFD show that the effect of the compression force exceeds 4 times that of the DP particle size. As final stage, the color parameters in the CIELab system of DT immediately after their obtaining are differently influenced by the size of the initial powder.

Keywords : powder, tablets, date (*Phoenix dactylifera* L.), hardness, erosion, disintegration time, color

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