Some physical properties of Pistachio (*Pistacia vera* L.) nut and its kernel

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Abstract

Some physical and aerodynamic properties of pistachio nut and its kernel were determined in order to design processing equipment and facilities. In this study, several physical properties of pistachio nut and its kernel were evaluated as a function of moisture content in the range of 4.10–38.10% (w.b.). The length, width, height, shell splitting and unit mass of pistachio nut ranged from 16.07 to 17.25 mm, 12.41 to 12.75 mm, 10.98 to 12.24 mm, 3.59 to 4.47 mm and 0.90 to 1.30 g respectively as the moisture content increased. The respected value for pistachio kernel varied from 15.21 to 16.22 mm, 9.11 to 10.53 mm, 8.73 to 9.66 mm and 0.51 to 0.80 g, respectively. In pistachio nut, the sphericity decreased from 80.83 to 80.71%; the geometric mean diameter increased from 12.97 to 13.90 mm; bulk density increased from 465.38 to 576.20 kg/m$^3$; true density decreased from 1180.75 to 1102.78 kg/m$^3$; porosity decreased from 60.59 to 47.75%; terminal velocity increased from 7.19 to 7.93 m/s and the coefficient of static friction increased linearly against all the tested surfaces as the moisture content increased. In pistachio kernel, the sphericity increased from 70.06 to 72.87%; the geometric mean diameter increased from 10.65 to 11.81 mm; bulk density increased from 523.48 to 545.52 kg/m$^3$; true density increased from 1082.73 to 1087.98 kg/m$^3$; porosity decreased from 51.65 to 49.86%; terminal velocity increased from 6.45 to 7.32 m/s and the coefficient of static friction increased linearly against all the tested surfaces as the moisture content increased.

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1. Introduction

Pistachio nut (*Pistacia vera* L.) is one of the popular tree nuts. Several species of the genus *Pistacia* are referred to as pistachio, but only the fruits of *P. vera* attain a large enough size to be acceptable to consumers as edible nuts (Shokraii & Esen, 1988). Pistachio is cultivated in the Middle East, United States and Mediterranea...