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Title: Effect of Skin Removal from Spherical Fruits and Vegetables

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Abstract: Apple, orange and potato samples were exposed to chilled air blast, first with their natural skin and then after removal of the skin and transient temperature-time variations were recorded at the center. This data record was used to determine the thermal diffusivity of each produce sample by the empirical approach of the first author and his co-workers. Thermal diffusivity was found to be higher than the literature value. This is due to additional cooling effect resulting from desiccation of the exposed samples. The value decreased with the amount of cooling of the produce. The rate of reduction was fast in the beginning and later it had slowed down. The rate of decrease of thermal diffusivity was slow in case of produce samples with natural skin. In case of peeled off samples, this rate in the decrease was more pronounced. This must be due to the removal of natural moisture barrier; the skin. The variations of thermal diffusivity have been plotted and correlations developed. Temperature calculations with these variable thermal diffusivity values agreed well with the measured temperatures.

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