

EFFECT OF DIELECTRIC PROPERTIES OF BANANA ON MICROWAVE DRYING CHARACTERISTICS

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The aim of this study was to investigate the relation between dielectric properties and microwave drying characteristics (moisture content, drying rate, color) of banana (*Dwarf Cavendish*). Banana samples with different initial moisture contents (20%, 30% and 40%) were dried by using different microwave powers (180 W, 270 W, 360 W). The moisture content variation of samples was determined by simple weighing and the drying rate of each sample was calculated. The color values (L, a and b) were measured by a color reader and the dielectric properties were obtained by using a network analyzer and a dielectric probe. The results of the study showed that an increase in microwave power resulted in an increase in drying rate and a decrease in processing time. Similarly, an increment in initial moisture content of bananas had a positive effect on the drying rate of samples. These effects can easily be explained by microwave and water molecule affinity. Dielectric properties of products (dielectric constant and loss factor) were found to be correlated with drying rates and some colour values. When microwave drying of banana samples were compared with conventional drying, it can be concluded that products with lower final moisture content and higher quality could be produced by microwave drying. Additionally, dielectric properties can be named as the most important property of the sample which is effective on the microwave drying performance.

Keywords: Microwave, drying, dielectric loss factor, dielectric constant

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