

MICROWAVE APPLICATIONS IN FRUIT DRYING

ABSTRACT

Microwave can be applied for drying fruit by combined techniques, i.e. microwave-vacuum (MWVC) and microwave-hot air (MWHA) drying. The advantage of microwave is its ability in direct heating moisture inside the fruit. This leads to better energy efficiency as compared to a hot air drying. The direct heating makes a temperature of drying fruit increase rapidly and results in high evaporating rate of moisture inside and high vapor pressure gradient in consequence. This phenomenon enhances drying rate and develops porous structure of dried products. As a result, better color and qualities of dried products, especially for a snack, can be achieved. The drying rate of product undergoing microwave drying or combined microwave drying methods mainly depends on a microwave power. The higher microwave power, the higher drying rate. The vacuum pressure and hot air in the combined methods can help increase drying rate. Better drying rate can be achieved under low level of vacuum pressure. High microwave power, however, cannot be constantly applied throughout the drying process because too high product temperature can deteriorate the product qualities, especially color. In order to use high microwave power, the step-down microwave power is, therefore, applied in fruit drying.

Keywords: Combined drying techniques, Fruit, Hot air, Microwave, Vacuum

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