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APPLICATION OF ULTRASOUND IN FOOD DRYING AND ITS EFFECTS ON SOME CHEMICAL PROPERTIES OF FOODS

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Ultrasound is an innovative technology that can be used for food processing and analysis. Ultrasonic waves are composed of sound waves at the range of 20 kHz and 10 MHz frequency far beyond that can be detected by the human ear. High frequency ultrasound is generally used for monitoring or analysis of food products while low frequency ultrasound is used for food processing (extraction, emulsification, homogenization, crystallization, drying, pasteurization etc.). The interest for using ultrasound in food processing increases since it has many advantages for the food industry such as increasing production rate, reducing processing energy, more effective mixing, and increasing heat and mass transfer.
In the recent years ultrasound is used for acceleration of drying. Drying is one of the oldest methods for food preservation, but conventional methods that are using heat has some disadvantages on foods like degradation of vitamins, loss of essential amino acids and can cause undesirable food flavor and color of the final product. Ultrasonic dehydration is a promising technique because it can be used at low temperatures and time by increasing heat and mass transfer. This technique has potential for heat-sensitive foods. Besides the advantages, drying by power ultrasound has some disadvantages on some properties of foods (decreasing total phenols and flavonoids contents and reducing antioxidant capacity). Ultrasound processing requires future research in order to be used at industrial scale. In this study, the applications of ultrasound in food technology, the utilization and effects of power ultrasound for food drying are reviewed.

Keywords: Drying, food properties, ultrasound, processing