

Title Evaluation of the Water Tranfering in Osmotically Dehydrated Fruit and Vegetables Using TA-XT2

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Abstract

The water transfer between a sucrose solution and sample tissues (apples, potatoes, and pineapples) was determined by evaluating the concentration profile of water and the force-distance curves obtained by an appropriate test method with a Texture Analyzer (SMS-TA-XT2). The distance at minimum force point "MFP" extracted from a blade cutting curve was used to investigate the changes in mechanical properties of osmotically dehydrated plant tissues. It showed a good relation to the distance calculated from the concentration profile method and can be used as parameter to determine the depth of affected sample tissue at various processing time. The blade cutting method is much faster and easier to carry out than the concentration profile method. Under the used conditions of osmotic dehydration (66% w/w sugar solution, at $20\pm 2^{\circ}\text{C}$ under constant agitation and at atmospheric pressure, sample thickness = 10 mm) the time to dehydrate the samples down to the center was 6 h for apples, 3 h for potatoes, and 2 h for pineapples. The blade cutting method could be used as a rapid method to investigate the affected distance from osmotic dehydration based on the water transfer in apple and potato tissues at various processing times. However, it is not the suitable method for some plant tissues having a tough structure, for example, structure of pineapple.