

Title Use of vacuum impregnation for minimally processed fruits and vegetables
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Abstract

Vacuum impregnation (VI) is a recent development in the osmotic treatment of foods. VI of a porous product consists of exchanging the internal gas or liquid occluded in open pores for an external liquid phase by the action of hydrodynamic mechanisms promoted by pressure changes. This process is carried out by applying vacuum pressure (P1) to the tank which contains the product immersed in a solution for a time (t1) sufficient for it to be de-aired, and subsequently restoring the pressure to atmospheric pressure (P2) while the product remains immersed for time (t2). VI can be useful introducing dissolved or dispersed substances directly into the porous structure of the food matrix. Moreover, VI can increase the mass transfer rate, as a result of shorter diffusive paths after impregnation step, in processes in which solid-liquid operations are present, such as salting of meats, osmotic dehydration of fruits, oil extraction by liquid solvents and the incorporation of preservatives or additives to food items. VI has broad applications in fruit and vegetable processing and provides many unique advantages. This technique is being investigated to incorporate physiological active compounds (minerals, probiotics, vitamins and firming agents such as hydrocolloids) into the structure of fruits and vegetables. Impregnated products can be commercialized as minimally processed fresh functional foods or can be dried osmotically or by air in order to obtain more stability. In this study, the main factors and responses of fruits and vegetables to VI processing were explained and quality aspects of VI applied minimally processed fruit and vegetables were discussed.