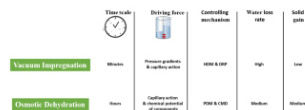


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A Comprehensive Review on Vacuum Impregnation: Mechanism, Applications and Prospects

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Vacuum impregnation (VI), the revised version of osmotic dehydration technology (OD), is used to improve the nutritional properties of food products and promote the production of fortified foods by adding functional elements to the impregnating solution. This emerging technology can be applied to get food matrices with superior quality, better shelf life, improved sensory and nutritional characteristics. A comprehensive review of vacuum impregnation for the food sector is scanty at the moment. The current review covers the basic features of vacuum impregnation, its mechanism, variables that influence the processes, applications and recent advancements in the field of vacuum impregnation viz. ultrasound, pulsed electric field, microwave, ohmic heating and high pressure processing. The compilation of the applications of vacuum impregnation technology for various operations in a variety of matrices indicates the potential of the technology in food processing. A detailed description regarding the major industrial applications of vacuum impregnation and the challenges faced by the industry is also envisaged with emphasis on its future prospects.

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