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Hepatitis B core-based virus-like particles: A platform for vaccine development in plants

Maryam Moradi Vahdat^a, Farshad Hemmati^b, Abozar Ghorbani^b, Daria Rutkowska^c, Alireza Afsharifar^b, Mohammad Hadi Eskandari^d, Nahid Rezaei^e, Ali Niazi^a

^a Institute of Biotechnology, College of Agriculture, Shiraz University, Shiraz, Iran

^b Plant Virology Research Center, College of Agriculture, Shiraz University, Shiraz, Iran

^c CSIR Next Generation Health, PO Box 395, Pretoria, 0001, South Africa

^d Department of Food Science and Technology, College of Agriculture, Shiraz University, Shiraz, Iran

^e Department of Immunology, School of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

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Abstract

Virus-like particles (VLPs) are a class of structures formed by the self-assembly of viral capsid protein subunits and contain no infective viral genetic material. The Hepatitis B core (HBc) antigen is capable of assembling into VLPs that can elicit strong immune responses and has been licensed as a commercial vaccine against Hepatitis B. The HBc VLPs have also been employed as a platform for the presentation of foreign epitopes to the immune system and have been used to develop vaccines against, for example, influenza A and Foot-and-mouth disease. Plant expression systems are rapid, scalable and safe, and are capable of providing correct post-translational modifications and reducing upstream production costs. The production of HBc-based virus-like particles in plants would thus greatly increase the efficiency of vaccine production. This review investigates the application of plant-based HBc VLP as a platform for vaccine production.