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Tobacco expression of novel envelope proteins-derived HBV antigens for cost-effective vaccine development

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Hepatitis B virus (HBV) infection represents a serious public health problem especially in developing countries. Despite the availability of a safe and efficient commercial vaccine, its use in mass immunization programs is hampered because of the high costs. Moreover, 10% of the vaccinated population develops a low immune response. In this context, we aim to design new HBV antigens in order to develop a more immunogenic vaccine in plants, as a low-cost alternative. Our strategy is focused on the antigenic properties of the large (L) envelope protein and on the ability of the small (S) surface antigen (HBsAg) to self-assemble into subviral particles (SVPs). HBsAg was used as a carrier for the 21-47 L-derived peptide by insertion in the antigenic loop (AGL) of HBsAg and by replacing a fragment from the AGL. The chimeric proteins along with the wild-type S protein were produced in green plants (*Nicotiana benthamiana*) and in HEK293T cells, as a reference system. Expression of the antigens was investigated in both production systems and properties like protein folding, dimerization and N-glycosylation were analyzed. The immunogenic properties of the newly produced antigens are currently investigated. To conclude, the new antigens represent promising candidates for the development of new vaccines against HBV.

Biography

Mihaela-Olivia Dobrica was graduated in Biochemistry from University of Bucharest, Romania in 2012 and completed her Master's degree in Neurobiology from University of Bucharest, Romania in 2014. She is currently pursuing PhD at the Institute of Biochemistry of the Romanian Academy, Department of Viral Glycoproteins.

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