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Expression of hepatitis B surface antigen (HBsAg) gene in transgenic banana (*Musa* sp.)

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The Hepatitis B virus (HBV) infection is one of the most widespread viral infections of humans and causes acute and chronic hepatitis and hepatocellular carcinoma. The worldwide problem of HBV infection has necessitated the development of an effective vaccine. Currently, immunization programs for large segments of the population in many areas of the developing world are very expensive. This limitation led us to attempt the expression of the recombinant Hepatitis B surface antigen (rHBsAg) in plants with the hope of developing a less expensive production system and a way to present the rHBsAg in edible plant tissues in a form that would be useful as an oral vaccine. In this study, we attempted to express the HBsAg in cv. Williams banana plants to be used as an edible vaccine. Using a Biolistic Gene Gun, apical meristem explants of banana were bombarded with plasmid pHBsAg harboring the gene encoding the HBsAg and the bar gene as a selectable marker. Bombarded explants were selected on media containing 3 mg/l Bialaphos. The HBsAg gene was detected using PCR analysis and its expression was tested via western blot analysis using specific polyclonal antibodies directed against human serum derived HBsAg. This study indicates the feasibility of the expression of foreign antigens in plants for possible use as an oral vaccine.

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