Development of an Edible Vaccine: GM Yeast for Producing Hepatitis B Antigen Enhanced by Hsp70

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KEYWORDS

HBV

Saccharomyces cerevisiae

Heat Shock Protein 70 (Hsp70)

HBsAg

Rtp (Room temperature)

Edible vaccine

ABSTRACT

The spread of Hepatitis B in low income countries is at stake. The conventional vaccine is used for the prevention of the outbreak of this disease is not cost efficient for third world countries. The development of an edible vaccine for Hepatitis B #### offers a promising and cost-effective strategy for immunization, particularly in resource-limited settings. In this study, we explored the potential of genetically modified #### expressing Hepatitis B Surface Antigen (HBsAg) with or without the co-expression of Heat Shock #### (Hsp70) as a vaccine candidate. The objective was to determine whether co-expression of #### enhances the immune response against HBsAg, potentially improving the efficacy of the vaccine. GM yeast strains were engineered to express HBsAg alone or in combination with #### , followed by protein expression analysis and cytokine production levels. Results showed that yeast strains co-expressing HBsAg and Hsp70 exhibited significantly higher HBsAg expression levels and induced a stronger immune response, as evidenced by increased cytokine production (####) in dendritic cells. The rate of increase of cytokine production between #### and #### batch was #### . Furthermore, the #### protein exhibited high stability under refrigerated conditions, making it a promising candidate for storage in an edible vaccine format. Among the batches analysed for storage condition and antigen stability, #### survived under #### , #### survived under #### and only 13% survived under rtp. These findings demonstrate that the co-expression of #### with #### enhances immune activation and antigen expression, support