

POSTER PRESENTATION

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Development of a vaccine delivery system using hepatitis B core antigen based VLPs to deliver mycobacterial antigens

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Background

Growing prevalence of TB and the emergence of XDR-TB have stimulated substantial efforts to develop better vaccines for TB. Recent researches have shown that some of the antigenic proteins and fusion of different proteins produced by *Mycobacterium tuberculosis* can give protection in animal models when administered with specific adjuvants. In the present study, we explored the use HBCag-VLPs for delivery of tuberculosis antigens.

Methods

HBcVLPs bearing ESAT-6 and CFP-10 were constructed using PCR and recombinant DNA methods. Proteins were expressed in *E. coli* and purified. VLPs formation was confirmed with TEM. BALB/c mice were immunized with VLPs and controls without any adjuvants. Sera were analysed for antibody responses (ELISA). Splenocytes were cultured and restimulated with purified antigens and CF (culture filtrate) of *M.tb*. The cell proliferation was measured using cell proliferation assay kit and the culture supernatants were analysed for IL-2, IFN- γ and TNF.

Results

The recombinant VLP induces preferentially a Th1-type immune response against mycobacterial antigen even though Th2 has been reported as the predominant response in BALB/c mice. IFN- γ , IL-2, TNF and proliferation were significantly higher in mice immunised with HBcVLPs-*M. tuberculosis* antigen. Restimulation with mycobacterial CF also produced the same effect.

Conclusion

The humoral and cellular responses suggest that the VLP containing fusion constructs generated immune response in a Th1 dependent manner. By virtue of its self-adjuvant nature, HBc VLPs are a better vaccine delivery system for use with newer antigens identified in the course of recent developments in subunit protein vaccine research in tuberculosis.

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