

Approaches to tuberculosis mucosal vaccine development using nanoparticles and microparticles: a review

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Abstract:

Next-generation vaccines for tuberculosis should be designed to prevent the infection and to achieve sterile eradication of *Mycobacterium tuberculosis*. Mucosal vaccination is a needle-free vaccine strategy that provides protective immunity against pathogenic bacteria and viruses in both mucosal and systemic compartments, being a promising alternative to current tuberculosis vaccines. Micro and nanoparticles have shown great potential as delivery systems for mucosal vaccines. In this review, the immunological principles underlying mucosal vaccine development will be discussed, and the application of mucosal adjuvants and delivery systems to the enhancement of protective immune responses at mucosal surfaces will be reviewed, in particular those envisioned for oral and nasal routes of administration. An overview of the essential vaccine candidates for tuberculosis in clinical trials will be provided, with special emphasis on the potential different antigens and immunization regimens.

Keywords: [ADJUVANTS](#); [MICROPARTICLES](#); [MUCOSAL IMMUNITY](#); [NANOPARTICLES](#); [TUBERCULOSIS VACCINES](#); [VACCINE DELIVERY SYSTEMS](#)

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