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Vaccination against Tuberculosis: Global and Albanian Experience, "Trained Immunity" and Expanded Uses of the BCG Vaccine

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Abstract

Tuberculosis (TB) remains one of the most significant infectious diseases affecting global public health, with 8.2 million new cases reported in 2023. The burden of disease remains disproportionately high in low- and middle-income countries. The Bacillus Calmette–Guérin (BCG) vaccine currently represents the only licensed vaccine for the prevention of tuberculosis and continues to be a cornerstone of preventive strategies, particularly in protecting children against severe forms of the disease.

This article provides a comprehensive review of the global and Albanian experience with BCG vaccination, including the most recent national epidemiological data, global immunization policies, and the immunological mechanisms underlying vaccine action, with particular emphasis on the concept of "trained immunity". In addition, it discusses the expanded therapeutic applications of BCG in oncology, as well as recent advances in TB vaccinology and future perspectives in the development of novel tuberculosis vaccines).

Keywords: Tuberculosis; BCG; trained immunity; paediatric tuberculosis; Albania

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