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Immunogenicity and therapeutic effects of Ag85A/B chimeric DNA vaccine in mice infected with *Mycobacterium tuberculosis*

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The situation of tuberculosis (TB) is very severe in China. New therapeutic agents or regimens to treat TB are urgently needed. In this study, *Mycobacterium tuberculosis*-infected mice were given immunotherapy intramuscularly with Ag85A/B chimeric DNA or saline, plasmid vector pVAX1, or *Mycobacterium vaccae* vaccine. The mice treated with Ag85A/B chimeric DNA showed significantly higher numbers of T cells secreting interferon-gamma (IFN-γ), more IFN-γ in splenocyte culture supernatant, more Th1 and Tc1 cells, and higher ratios of Th1/Th2 and Tc1/Tc2 cells in whole blood, indicating a predominant Th1 immune response to treatment. Infected mice treated with doses of 100 μg Ag85A/B chimeric DNA had an extended time until death of 50% of the animals that was markedly longer than the saline and vector control groups, and the death rate at 1 month after the last dose was lower than that in the other groups. Compared with the saline group, 100 μg Ag85A/B chimeric DNA and 100 μg Ag85A DNA reduced the pulmonary bacterial loads by 0.79 and 0.45 logs, and the liver bacterial loads by 0.52 and 0.50 logs, respectively. Pathological changes in the lungs were less, and the lesions were more limited. These results show that Ag85A/B chimeric DNA was effective for the treatment of TB, signifantly increasing the cellular immune response, and inhibiting the growth of *M. tuberculosis*.

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