Als3-Th-cell-epitope plus the combined adjuvant of MDP, CpG and FIA synergistically enhanced the immune responses triggered with recombinant TRAP proteins in mice

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Abstract

Here, Als3-Th-cell-epitope (Als3 epitope) was connected to the N-terminal of TRAP by flexible linker, and the Als3-Th-cell-epitope-TRAP (ATT) proteins were prepared, then, the ATT proteins plus freund's adjuvant were inoculated in mice to evaluate Als3 epitope to increase the immunogenicity of TRAP. To strengthen the immunogenicity of ATT protein, the proteins plus the novel combined adjuvants of MDP, CpG and FIA were immunized in mice. After the booster immunization, the results showed that the mice immunized with ATT protein plus Freund's adjuvant exhibited significantly higher level for IFN-γ, IL-4, IL-10 and IL-17A, and displayed the stronger humoral immune response against TRAP than the control groups, importantly, the survival rate of these mice was significantly higher than the control groups. In addition, the mice immunized with ATT protein plus CpG+MDP+FIA adjuvants exhibited significantly higher level for IFN-γ and IL-17A than other groups, and the level of IgG antibody against TRAP was higher than other groups, moreover, the survival rate of these mice was obviously higher than other groups. These data suggested that the immune protection triggered with ATT was significantly stronger than TRAP or TRAP+Als3 epitope did, which indicted Als3 epitope significantly enhanced the immune responses triggered with TRAP through their fused forms of expression. Additionally, these data manifested that ATT plus the novel combined adjuvant, MDP, CpG and FIA, induced the strongest immune response and protection against S.aureus among all the groups, revealing the synergistic effect on different adjuvant. This study provides an important reference for the further development of a new effective vaccine against S.aureus.

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