

论著

大肠埃希菌肠毒素B亚基对弓形虫速殖子SAG1-ROP2复合基因免疫效果的影响

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摘要

目的 研究大肠埃希菌不耐热肠毒素B亚基(LTB)对弓形虫速殖子SAG1-ROP2复合基因免疫效果的影响。方法 构建重组真核表达质粒pcDNA3.1-SAG1-ROP2和pEASY-E1-LTB。BALB/c小鼠88只,随机均分为4组,分别用PBS(A组)、pcDNA3.1空质粒(B组)、pcDNA3.1-SAG1-ROP2质粒(C组),以及pcDNA3.1-SAG1-ROP2质粒和pEASY-E1-LTB质粒(D组)进行滴鼻免疫,每种质粒20 μg/(只·次)。每组小鼠随机抽取15只,每周免疫1次,共4次,末次免疫后2周,测定其血清IgG和IgA抗体水平,气管和小肠黏膜冲洗液分泌型IgA(sIgA)水平,以及脾细胞培养上清中γ干扰素(IFN-γ)和白细胞介素4(IL-4)水平;每组中余7只小鼠,每周免疫1次,共3次,末次免疫后4周,弓形虫速殖子腹腔接种感染(1×10³/鼠),观察比较各组生存时间。结果 成功构建pEASY-E1-LTB重组表达质粒。D组小鼠血清IgG(0.626±0.100)和IgA抗体水平(1.086±0.138),气管和小肠黏膜冲洗液sIgA水平(0.886±0.164),以及细胞因子IFN-γ[(2 017±266)pg/ml]和IL-4水平[(203±31)pg/ml]均显著高于其他各组(均P<0.05)。感染弓形虫速殖子后,A、B、C和D组小鼠的生存时间中位数分别为3、4、6和10 d,D组的生存时间长于其他各组(均P<0.05)。结论 LTB能明显增强弓形虫速殖子SAG1-ROP2复合基因的免疫效果。

关键词 [刚地弓形虫](#); [复合基因疫苗](#); [大肠埃希菌](#); [不耐热肠毒素](#); [黏膜免疫](#)

分类号

Effect of *Escherichia coli* Heat-Labile Enterotoxin B Subunit on SAG1-ROP2 Compound Gene Vaccine of *Toxoplasma gondii* Tachyzoite

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Abstract

Objective To investigate the effect of *Escherichia coli* heat-labile enterotoxin B subunit (LTB) as a genetic adjuvant in enhancing the immune response induced by *Toxoplasma gondii* tachyzoite compound gene vaccine. Methods The eukaryotic expression plasmids of pcDNA3.1-SAG1-ROP2 and pEASY-E1-LTB were constructed. Eighty-eight BALB/c mice were randomly divided into four groups: PBS (group A), pcDNA3.1 (B), pcDNA3.1-SAG1-ROP2 (C) and pcDNA3.1-SAG1-ROP2+pEASY-E1-LTB (D). Fifteen mice in each group were randomly selected, and intranasally immunized weekly with 20 μg plasmid or 20 μl PBS, respectively. Each mouse received four immunizations with the same dose of antigen. Two weeks after the final immunization, the antibodies and cytokines were detected, including the specific IgG and IgA antibodies in serum, sIgA in mucosa douche, IFN-γ and IL-4 in splenocyte culture supernatant. The remaining mice in each group were immunized three times weekly with 20 μg plasmid or 20 μl PBS, respectively, and challenged by *T. gondii* tachyzoites at four weeks after the final vaccination (1×10³ per mouse). The survival time of mice was recorded. Results The recombinant plasmids pEASY-E1-LTB were constructed. The specific IgG (0.626±0.100) and IgA antibodies (1.086±0.138) in serum, sIgA (0.886±0.164) in mucosa douche, cytokines IFN-γ [(2 017±266)pg/ml] and IL-4 [(203±31)pg/ml] in splenocyte culture supernatant in group D were all higher than those in other groups (P<0.05). After challenged with *T. gondii* tachyzoites, the median survival time of mice in groups A, B, C, and D were 3, 4, 6, and 10 d, respectively. The survival time of mice in group D was longest (P<0.05). Conclusion *E. coli* heat-labile enterotoxin can enhance the immune response induced by the compound gene vaccine of *T. gondii* tachyzoites.

Key words [Toxoplasma gondii](#); [Compound gene vaccine](#); [Escherichia coli](#); [Heat-labile enterotoxin](#); [Mucosal immunity](#)

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