

论著

白细胞介素-12在日本血吸虫脂肪酸结合蛋白诱导小鼠保护性免疫力中的佐剂作用

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收稿日期 修回日期 网络版发布日期 接受日期

摘要

目的 研究白细胞介素-12 (IL-12) 对日本血吸虫脂肪酸结合蛋白 (Sj14FABP) DNA疫苗的免疫增强效果。方法 分别构建pVIVO2-Sj14FABP 和pVIVO2-IL12-Sj14FABP疫苗, 鉴定构建成功后免疫小鼠。48只雄性BALB/c小鼠随机分为A、B、C和D等4组, 分别用0.9% NaCl (对照组)、pVIVO2、pVIVO2-Sj14FABP和pVIVO2-IL12-Sj14FABP肌注免疫1次 (100 μg/只)。免疫后30 d各组小鼠感染40±2条尾蚴, 感染后45 d剖杀, 计数成虫及肝内虫卵; 同时用ELISA法检测小鼠血清中IgG抗体水平, 用双夹心ELISA法检测脾淋巴细胞经刀豆球蛋白A (ConA) 和可溶性虫卵抗原 (SEA) 刺激后培养上清中白细胞介素-2 (IL-2)、白细胞介素-4 (IL-4) 和干扰素-γ (IFN-γ) 含量。结果 经PCR和酶切鉴定, 成功构建pVIVO2-Sj14FABP和pVIVO2-IL12-Sj14FABP重组质粒; C、D组免疫后分别获得24.1%和39.4%的减虫率、27.2%和32.8%的减卵率; 细胞因子检测结果, D组经ConA和SEA诱生的IL-2和IFN-γ水平显著增高 ($P < 0.01$), 而IL-4水平显著降低, 差异有统计学意义 ($P < 0.01$); 免疫后30 d小鼠血清IgG水平无明显升高, 各实验组间差异也无统计学意义 ($P > 0.05$)。结论 Sj14FABP DNA疫苗可诱导BALB/c小鼠产生部分抗血吸虫感染保护作用, 细胞因子IL-12能够诱导机体免疫反应向Th1型优势分化, 并增强血吸虫病DNA疫苗免疫保护性效果。

关键词 [日本血吸虫](#) [脂肪酸结合蛋白](#) [白细胞介素-12](#) [DNA疫苗](#) [免疫保护性](#) [佐剂](#)

分类号

The Adjuvant Effect of IL-12 on Protective Immunity of *Schistosoma japonicum* Fatty Acid Binding Protein (Sj14FABP)

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Abstract

Objective To study the immune protection of *Schistosoma japonicum* fatty acid binding protein (Sj14FABP) DNA vaccine enhanced by IL-12. Methods The recombinant plasmids pVIVO2-Sj14FABP and pVIVO2-IL12-Sj14FABP were constructed respectively, and were prepared on a large scale after identification. 48 male BALB/c mice were divided into 4 groups randomly. In group A, B, C, and D, each mouse was injected intramuscularly with 100 μl 0.9% NaCl, 100μg pVIVO2, 100μg pVIVO2-Sj14FABP and 100 μg pVIVO2-IL12-Sj14FABP respectively. 30 days after immunization each mouse was challenged with 40±2 cercariae of *S. japonicum*. On day 45 after challenge, all mice were sacrificed to count the number of recovered adult worms and the hepatic eggs. Sera from mice were used to detect IgG antibody. The production of IL-2, IL-4 and IFN-γ in the supernatant of spleen cells was observed by means of sandwich ABC-ELISA. Results The recombinant plasmids pVIVO2-Sj14FABP and pVIVO2-IL12-Sj14FABP were constructed. The worm reduction rate in group C and D was 24.11% and 39.4%, as well as liver egg reduction rate of 27.2% and 32.8% respectively. The level of IL-2 and IFN-γ in group D increased significantly, while IL-4 secretion decreased ($P < 0.01$). 30 days after immunization, no higher titer of IgG antibody was shown in all groups. Furthermore, no significant difference on the level of IgG was found among the groups ($P > 0.05$). Conclusion Sj14FABP DNA vaccine induces partial protective immunity in BALB/c mice. IL-12 drives the immune response toward a Th1 direction, and enhances the protective immune effect of the vaccine.

Key words [Schistosoma japonicum](#) [Fatty acid binding protein](#) [IL-12](#) [DNA vaccine](#) [Immune protection](#) [Adjuvant](#)

DOI:

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