

论著

## Sj26基因转染的树突状细胞对日本血吸虫感染的免疫保护机制研究

沈定文<sup>1</sup>, 罗金萍<sup>1</sup>, 李雍龙<sup>2</sup>, 刘文琪<sup>2</sup>, 龙小纯<sup>2</sup>

1 咸宁学院医学院, 咸宁 437100; 2 华中科技大学同济医学院病原生物学系, 武汉 430030

收稿日期 修回日期 网络版发布日期 接受日期

摘要

目的 探讨日本血吸虫Sj26基因转染的树突状细胞(DC)对日本血吸虫感染的保护性免疫作用机制。方法 BALB/c小鼠48只随机均分4组,于小鼠耳廓分别注射细胞悬液(浓度 $1 \times 10^6$ /ml)0.2 ml, A组注射Sj26基因转染的DC、B组注射质粒pcDNA3转染的DC、C组注射未处理的DC、D组注射RPMI-1640。共免疫3次,间隔2周。末次免疫后2周,每鼠经皮肤感染 $40 \pm 2$ 条尾蚴。分别于免疫前、末次免疫后第2周以及攻击感染后第6周采血,ELISA法检测血清IgG抗体、 $\gamma$ 干扰素(IFN- $\gamma$ )和白细胞介素-4(IL-4)水平,免疫印迹法(Western blot)检测血清特异性抗Sj26 IgG抗体,双夹心ELISA法检测脾淋巴细胞经伴刀豆球蛋白A(ConA)和可溶性虫卵抗原(SEA)刺激后培养上清中IFN- $\gamma$ 和IL-4含量。噻唑蓝法(MTT)检测脾淋巴细胞增殖情况。结果 A组血清IgG抗体水平(吸光度 $A_{491}$ 值),免疫后( $A_{491}=0.117$ )显著高于免疫前( $A_{491}=0.049$ ) ( $t=2.73, P<0.05$ ),也显著高于B组( $A_{491}=0.061$ )和C组( $A_{491}=0.058$ ) ( $t$ 值为2.48和2.56,  $P<0.05$ )。A组血清能特异识别血吸虫成虫抗原Mr 26 000蛋白。血清IL-4水平,各组免疫前、后均无明显变化。IFN- $\gamma$ 水平, A组血清免疫后为( $101.4 \pm 4.9$ )pg/ml,明显高于免疫前的( $15.0 \pm 1.9$ ) pg/ml ( $t=5.80, P<0.01$ ),亦高于免疫后的B组( $40.1 \pm 3.1$ ) pg/ml和C组( $35.6 \pm 1.2$ ) pg/ml ( $t$ 值为3.98和4.13,  $P<0.01$ )。脾淋巴细胞经ConA刺激诱生的IFN- $\gamma$ , A组( $171.2$  pg/ml)显著高于D组( $91.0$  pg/ml) ( $t=4.25, P<0.01$ )。经SEA刺激诱生的IFN- $\gamma$ , A组( $70.8$  pg/ml)显著高于D组( $49.7$  pg/ml) ( $t=2.83, P<0.01$ )。经ConA刺激诱生的IL-4水平, A组( $79.7$  pg/ml)明显低于D组( $125.2$  pg/ml) ( $t=4.40, P<0.01$ )。经SEA刺激诱生的IL-4, A组( $50.7$  pg/ml)明显低于D组( $70.5$  pg/ml) ( $t=2.62, P<0.05$ )。A组脾淋巴细胞经ConA和SEA刺激后的刺激指数分别为4.1和2.82,均高于其他各组(与D组比较,  $t=3.20, P<0.01$ 和 $t=2.15, P<0.05$ )。结论 Sj26基因转染的树突状细胞免疫小鼠主要诱导Th1型免疫应答。

关键词 [日本血吸虫](#) [树突状细胞](#) [Sj26基因](#) [基因转染](#) [保护性免疫](#)

分类号

## Studies on Mechanism of Protective Immunity Against Infection of *Schistosoma japonicum* Induced by Sj26 Gene Transfected Dendritic Cell

SHEN Ding-wen<sup>1</sup>, LUO Jin-ping<sup>1</sup>, LI Yong-long<sup>2</sup>, LIU Wen-qi<sup>2</sup>, LONG Xiao-chun<sup>2</sup>

1 Medical College of Xianning College, Xianning 437100, China; 2 Department of Pathogenic Biology, Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430030, China

Abstract

Objective To explore the mechanism of protective immunity against *Schistosoma japonicum* infection induced by Sj26 gene transfected dendritic cell (DC). Methods 48 BALB/c mice were divided randomly into 4 groups with 12 each. The mice were injected through auricle for three times with Sj26 gene transfected DC (Group A), pcDNA3 transfected DC (Group B), untreated DC (Group C) and RPMI-1640 (Group D) respectively, and challenged with  $40 \pm 2$  cercariae of *S. japonicum* per mouse 2 weeks after the last immunization. Sera from mice were examined for IgG antibody, IFN- $\gamma$  and IL-4 by ELISA. Western blot was used for detecting specific anti-Sj26 IgG antibody. The production of IFN- $\gamma$  and IL-4 in the supernatant of spleen cells stimulated with soluble egg antigen (SEA) and ConA was quantified by sandwich ABC-ELISA. The proliferation of spleen cells were measured with MTT method. Results IgG antibody increased significantly in the mice of group A at 2 weeks after the last immunization (absorbency  $A_{491}=0.117$ ), higher than that of group B ( $A_{491}=0.061$ ) and group C ( $A_{491}=0.058$ ) ( $P<0.05$ ). The Mr 26 000 antigen of *S. japonicum* was strongly recognized by sera from group A by Western blot. The level of IL-4 in mice of each group showed no

## 扩展功能

本文信息

▶ [Supporting info](#)▶ [PDF \(304KB\)](#)▶ [\[HTML全文\]\(OKB\)](#)▶ [参考文献\[PDF\]](#)▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)▶ [加入我的书架](#)▶ [加入引用管理器](#)▶ [复制索引](#)▶ [Email Alert](#)▶ [文章反馈](#)▶ [浏览反馈信息](#)

相关信息

▶ [本刊中包含“日本血吸虫”的相关文章](#)

▶ 本文作者相关文章

· [沈定文](#)· [罗金萍](#)· [李雍龙](#)· [刘文琪](#)· [龙小纯](#)

significant difference before and after immunization. The level of IFN- $\gamma$  in group A ( $101.4 \pm 4.9$  pg/ml) was significantly higher than that before immunization ( $15.0 \pm 1.9$  pg/ml) and that of group B ( $40.1 \pm 3.1$  pg/ml) and group C ( $35.6 \pm 1.2$  pg/ml) ( $P < 0.01$ ). The level of IFN- $\gamma$  in spleen cells from group A in response to ConA and SEA ( $171.2$  and  $70.8$  pg/ml, respectively) was higher than that of group D ( $91$  and  $49.7$  pg/ml, respectively) ( $P < 0.01$ ). The level of IL-4 in spleen cells from group A in response to ConA and SEA ( $79.7$  and  $50.7$  pg/ml, respectively) was lower than that of group D ( $125.2$  and  $70.5$  pg/ml, respectively) ( $P < 0.01$ ). The stimulating index of spleen cells from group A was  $4.1$  and  $2.82$  in response to ConA and SEA respectively, higher than that of other groups (compared with group D,  $P < 0.05$ ). Conclusion Sj26 gene transfected dendritic cell induces predominant Th1 type immune response which might play a role in protection against *S. japonicum* infection.

Key words [Schistosoma japonicum](#) [Dendritic cell](#) [Sj26 gene](#) [Gene transfection](#) [Protective immunity](#)

DOI :

---

通讯作者 李雍龙 [lylong@mails.tjmu.edu.cn](mailto:lylong@mails.tjmu.edu.cn)

作者个人主页 沈定文1;罗金萍1;李雍龙2;刘文琪2;龙小纯2