

论文

2型猪链球菌锌转运蛋白A对小鼠免疫保护作用

李先富¹, 潘秀珍^{1,2}, 韩明月^{1,2}, 刘文静^{1,2}, 王长军^{1,2}, 唐家琪¹

1. 南京军区军事医学研究所流行病微生物研究所, 江苏南京210002;
2. 南京师范大学生命科学学院

摘要:

目的 研究猪链球菌(*Streptococcus suis*, *S. suis*)锌转运蛋白A(ZnuA)对小鼠接种致死量2型猪链球菌(*S. suis* 2)菌株的免疫保护作用,为进一步研究*S. suis* 2亚单位疫苗奠定实验基础。方法 采用聚合酶链反应(PCR)检测znuA基因在不同血清型*S. suis*中的分布情况;蛋白免疫印迹(western blot)检测ZnuA在*S. suis* 2的表达,利用流式细胞术对ZnuA进行细胞定位,动物实验研究ZnuA蛋白的免疫保护作用。结果 除血清型17、21和30型菌株及荷兰分离株T15菌株外,其他30个血清型*S. suis*菌株、7996菌株以及3株*S. suis* 2型国内分离菌株基因组中均扩增到目的条带;*S. suis* 2菌体蛋白与兔抗ZnuA蛋白的血清能发生特异性反应;兔抗ZnuA血清标记*S. suis* 2的荧光强度明显较高;ZnuA重组蛋白免疫组小鼠死亡率较低。结论 ZnuA是一种具有免疫保护作用的蛋白,可作为*S. suis*的亚单位疫苗候选分子。

关键词: 2型猪链球菌 锌转运蛋白A 免疫保护作用

Immunoprophylaxis of ZnuA from *Streptococcus suis* 2 in mice

LI Xian-fu¹, PAN Xiu-zhen^{1,2}, HAN Ming-yue^{1,2}

Department of Microorganism, Research Institute for Military Medicine of Nanjing Military command, People's Liberation Army, Nanjing 210002, China

Abstract:

Objective To test the immunoprophylaxis of ZnuA in *Streptococcus suis* 2(*S. suis*)and to provide experimental evidence for the study of sub-unit vaccine.Methods Based on the sequence of ZnuA of the Chinese strain 05ZYH33 of *S. suis* 2,the primers were designed and the target DNA fragment was amplified using the genomic templates of different serotypes of *S. suis*.Western blot was performed to detect the expression of ZnuA of *S. suis* 2.An assay based on flow cytometry(FCM)was developed to detect the localization of ZnuA on the surface of *S. suis* 2.An animal test was done to study the immunoprotection of ZnuA.Results The target DNA fragment was amplified in most serotypes of *S. suis* (except strains SS17,21,30 and isolated strain T15).Fluorescence-activated cell sorting(FACS)analysis and western blot showed that ZnuA localized on the surface of *S. suis*.Immunization with purified ZnuA could protect BALB/c mice against the challenge with a highly virulent *S. suis* 2 strain 05ZYH33.Conclusion ZnuA could protect BALB/c mice against the challenge of a highly virulent *S. suis* 2 strain 05ZYH33,which suggests that ZnuA may be a candidate for the development of antibacterial protein sub-unit vaccine.

Keywords: *S. suis* 2 ZnuA immunoprophylaxis

收稿日期 2010-07-09 修回日期 网络版发布日期

DOI: 10.11847/zgggws2012-28-01-17

基金项目:

国家自然科学基金(30730081;81071317;30972638);江苏省自然科学基金(BK2010113;BK2010114;BK2010025;BK2009042)

通讯作者: 潘秀珍,E-mail: panxiuzhen_2004@163.com

作者简介:

参考文献:

- [1] Staats JJ,Feder I,Okwumabua O,et al.Streptococcus suis: past and present[J].Vet Res commun,1997,21(6):381-407.
- [2] Gottschalk M,Segura M,Xu J.Streptococcus suis infections in humans: the Chinese experience and the situation in North America [J].Anim Health Res Rev,2007,8(1):29-45.

扩展功能

本文信息

▶ Supporting info

▶ PDF(KB)

▶ [HTML全文]

▶ 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

▶ 引用本文

▶ Email Alert

▶ 文章反馈

▶ 浏览反馈信息

本文关键词相关文章

▶ 2型猪链球菌

▶ 锌转运蛋白A

▶ 免疫保护作用

本文作者相关文章

▶ 李先富

▶ 潘秀珍

▶ 韩明月

▶ 刘文静

▶ 王长军

▶ 唐家琪

PubMed

▶ Article by LI Xian-fu

▶ Article by PAN Xiu-zhen

▶ Article by HAN Ming-yue

▶ Article by

▶ Article by

▶ Article by

[3] Tang JQ,Wang CJ,Feng YJ,et al.Streptococcal toxic shock syndrome caused by Streptococcus suis serotype 2[J].PLoS Medicine, 2006,3(5):e151.

[4] 韩明月,潘秀珍,邵珠卿,等.2型猪链球菌中国强毒株znuA基因的原核表达及免疫学活性分析[J].免疫学杂志,2010,26 (3):220-223.5] Chen C,Tang J,Dong W,et al.A glimpse of streptococcal toxic shock syndrome from comparative genomics of S.suis 2 Chinese isolates[J].PLoS One,2007,2(3):e315.

[6] Gottschalk M,Xu J,Calzas C,et al.Streptococcus suis:a new emerging or an old neglected zoonotic pathogen?[J].Future Microbiol,2010,5(3): 371-391.

[7] Straw BE,D'Allaire S,Mengeling WL,et al.Diseases of swine Ames[M].IA: Iowa State University,2005,769-783.

[8] Huang YT,Teng LJ,Ho SW,et al.Streptococcus suis infection[J]. Journal of Microbiology,Immunology and Infection,2005,38(5): 306-313.

[9] Shao Z,Pan X,Li X,et al.HtpS,a novel immunogenic cell surface exposed protein of Streptococcus suis,confers protection in mice[J]. FEMS Microbiol Lett,2011,314(2): 174-182.

[10] Feng Y,Pan X,Sun W,et al.Streptococcus suis enolase functions as a protective antigen displayed on the bacterial cell surface[J].J Infect Dis,2009,200(10): 1583-1592.

[11] Ge J,Feng Y,ji H,et al.Inactivation of dipeptidyl peptidase IV attenuates the virulence of Streptococcus suis serotype 2 that causes streptococcal toxic shock syndrome[J].Curr Microbiol,2009,59 (3):248-255.

[12] Pan X,Ge J,Li M,et al.The orphan response regulator CovR:a globally negative modulator of virulence in Streptococcus suis serotype 2[J].J Bacteriol,2009,191(8): 2601-2612.

[13] Liu L,Cheng G,Wang C,et al.Identification and experimental verification of protective antigens against Streptococcus suis serotype 2 based on genome sequence analysis[J].Curr Microbiol,2009,58 (1):11-17.

本刊中的类似文章

1. 廖辉, 陈红娜, 王长军, 潘秀珍, 唐家琪.2型猪链球菌菌毛蛋白编码基因SSU0474生物学特性分析[J]. 中国公共卫生, 2013,29(4): 524-527

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反馈标题	<input type="text"/>	验证码	<input type="text"/> 1361