

综述

链球菌致热外毒素SpeB致病性研究进展

张波,李学如,江南屏,任瑶瑶

西南交通大学生命科学与工程学院, 四川成都610031

摘要:

链球菌致热外毒素B (Streptococcal exotoxin B, SpeB) 是A群链球菌(group A Streptococcus, GAS)以酶原形式分泌到胞外后形成的活性巯基蛋白酶。其能降解宿主胞外基质、免疫球蛋白和补体成分以及GAS自身表面黏附素M蛋白、F1蛋白、C5a肽酶和其他一些分泌蛋白,破坏宿主防御系统,帮助细菌逃避免疫清除,协助GAS最初感染部位的扩散和入侵宿主深层组织 [1]。因此, SpeB被认为是GAS的重要致病因子,在GAS引起的严重侵袭性感染过程中起重要作用。本文就SpeB结构与表达调控、免疫逃逸和致病性等方面的研究进展作一介绍,以期为临床诊断治疗和研究A群链球菌感染提供一定的参考。

关键词: 链球菌致热外毒素B; A族链球菌; 感染; 免疫; 病原菌

Advances in pathogenesis of streptococcal exotoxin B in Streptococcus pyogenes

ZHANG Bo, LI Xue ru, JIANG Nan ping, REN Yao yao

School of Life Science and Engineering, Southwest Jiaotong University, Chengdu 610031, China

Abstract:

Keywords:

收稿日期 2011-10-10 修回日期 2012-12-29 网络版发布日期

DOI:

基金项目:

通讯作者: 李学如

作者简介: 张波 (1988-), 女 (汉族), 江苏省连云港市人, 硕士研究生, 主要从事生物化学与分子生物学研究。

作者Email: xueruli@sina.com

参考文献:

- [1] Chiang Ni C, Wu J J. Effects of streptococcal pyrogenic exotoxin B on pathogenesis of Streptococcus pyogenes [J]. J Formos Med Assoc, 2008, 107(9): 677-685.
- [2] Bessen D E. Population biology of the human restricted pathogen [J]. Infect Genet Evol, 2009, 9(4): 581-593.
- [3] Corroll R K, Musser J M. Musser from transcription to activation: how group A Streptococcus, the flesh eating pathogen, regulates SpeB cysteine protease [J]. Mol Microbiol, 2011, 81(3): 588-601.
- [4] Stockbauer K E, Magoun L, Liu M, et al. A natural variant of the cysteine protease virulence factor of group A Streptococcus with an arginine glycine aspartic acid (RGD) motif preferentially binds human integrins  $\alpha v \beta 3$  and  $\alpha I I b \beta 3$  [J]. Proc Natl Acad Sci USA, 1999, 96(1): 242-247.
- [5] 李学如, 李尧, 王艳, 等. 酪素平板法检测临床分离A族链球菌致热外毒素B活性研究 [J]. 中华检验医学杂志, 2009, 32(6): 699-700.
- [6] Aziz R K, Pabst M J, Jeng A, et al. Invasive M1T1 group A Streptococcus undergoes a phase shift in vivo to prevent proteolytic degradation of multiple virulence factors by SpeB [J]. Mol Microbiol, 2004, 51(1): 123-134.
- [7] Walker M J, Hollands A, Anderson Smith M L, et al. DNase Sda1 provides selection pressure for a switch to invasive group A streptococcal infection [J]. Nat Med, 2007, 13(8): 981-985.
- [8] Thulin P, Johansson L, Low D E, et al. Viable group A streptococci in macrophages during acute soft tissue infection [J]. PLoS Med, 2006, 3(3): e53.
- [9] Tsai W H, Chang C W, Lin Y S, et al. Streptococcal pyrogenic exotoxin B induced apoptosis in A549 cells is mediated through  $\alpha v \beta 3$  integrin and Fas [J]. Infect Immun, 2008, 76(4): 1349-1357.
- [10] Viera N T, Romero M J, Montero M K, et al. Streptococcal erythrogenic toxin B induces apoptosis

扩展功能

本文信息

Supporting info

PDF (777KB)

[HTML全文]

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

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

链球菌致热外毒素B; A族链球菌; 感染; 免疫; 病原菌

本文作者相关文章

PubMed

and proliferation in human leukocytes [J] . Kidney Int, 2001, 59(3):950-958.

[11] Kuo C F, Lin Y S, Chuang W J, et al. Degradation of complement 3 by streptococcal pyrogenic exotoxin B inhibits complement activation and neutrophil opsonophagocytosis [J] . Infect Immun, 2008, 76(3):1163-1169.

[12] Shiseki M, Miwa K, Nemoto Y, et al. Comparison of pathogenic factors expressed by group A Streptococci isolated from patients with streptococcal toxic shock syndrome and scarlet fever [J] . Microb Pathog, 1999, 27(4): 243-252.

[13] Kuo C F, Luo Y H, Lin H Y, et al. Histopathologic changes in kidney and liver correlate with streptococcal pyrogenic exotoxin B production in the mouse model of group A streptococcal infection [J] . Microb Pathog, 2004, 36(5):273-285.

[14] Kansal R G, McGeer A, Low D E, et al. Inverse relation between disease severity and expression of the streptococcal cysteine protease, SpeB, among clonal M1T1 isolates recovered from invasive group A streptococcal infection cases [J] . Infect Immun, 2000, 68(11): 6362-6369.

[15] Cunningham M W. Pathogenesis of group A streptococcal infections and their sequelae [J] . Adv Exp Med Biol, 2008, 609(1):29-42.

[16] Batsford S R, Mezzano S, Mihatsch M, et al. Is the nephritogenic antigen in post streptococcal glomerulonephritis pyrogenic exotoxin B (SPE B) or GAPDH? [J] .Kidney Int, 2005, 68(3):1120-1129.

[17] Luo Y H, Kuo C F, Huang K J, et al. Streptococcal pyrogenic exotoxin B antibodies in a mouse model of glomerulonephritis [J] . Kidney Int, 2007, 72(6): 716-724.

[18] Aziz R K, Edwards R A, Taylor W W, et al. Mosaic prophages with horizontally acquired genes account for the emergence and diversification of the globally disseminated M1T1 clone of Streptococcus pyogenes [J] . J Bacteriol, 2005, 187(10):3311-3318.

本刊中的类似文章