

论文

鸡蛋清溶菌酶对头孢他啶诱导铜绿假单胞菌内毒素释放的抑制作用

梁爱华;薛宝云;梁日欣;王金华;王丹

中国中医研究院 中药研究所, 北京 100700

摘要:

目的研究鸡蛋清溶菌酶 (lysozyme, LZM) 对头孢他啶 (ceftazidime, CFT) 诱导的铜绿假单胞菌内毒素释放的影响。方法在肉汤或稀释血液培养的铜绿假单胞菌液中加入LZM、CFT或LZM/CFT, 作用一定时间后, 测定培养上清液中的内毒素浓度; 将细菌培养上清液加入到巨噬细胞RAW 264.7中或注射入小鼠体内, 测定其炎性因子(NO和TNF-α)诱生能力。结果在肉汤培养和血液培养中, CFT引起铜绿假单胞菌迅速溶解和释放大量的内毒素到培养上清液中, 其上清液在体外培养的巨噬细胞上和小鼠体内可诱导大量NO和TNF-α产生。而LZM与CFT联合使用能阻止细菌溶解, 降低细菌内毒素释放, 减少炎性因子NO和TNF-α的产生。结论LZM与CFT联合使用能抑制内毒素大量释放, 减轻内毒素血症。

关键词: 鸡蛋清溶菌酶 内毒素 肿瘤坏死因子 抗生素

Inhibitory effect of egg white lysozyme on ceftazidime-induced release of endotoxin from *Pseudomonas aeruginosa*

LIANG Ai-hua ; XUE Bao-yun; LIANG Ri-xin; WANG Jin-hua; WANG Dan

Abstract:

AimTo investigate the inhibitory effect of egg white lysozyme (LZM) on ceftazidime (CFT)-induced release of endotoxin from *Pseudomonas aeruginosa*. Methods *P. aeruginosa* PAO1 was inoculated in nutrition broth or diluted rabbit blood free of antibiotics in the presence or absence of LZM and incubated at 37 °C on a water bath shaker. β-Lactam antibiotic, CFT, was added to cultures at 3.5 h (nutrition broth culture) or 5 h (diluted rabbit blood culture) after inoculation. After 3 h of CFT treatment, the supernatants from different bacterial cultures were prepared by centrifuge and the concentrations of endotoxin in the supernatants were measured. The bacterial supernatants were also added to a murine macrophage cell line RAW 264.7 or intravenously injected into carrageenin-sensitized mice. Tumor necrosis factor-α (TNFα) and nitric oxide (NO) concentrations in RAW 264.7 supernatants or in mouse sera were tested. ResultsCFT treatment alone obviously inhibited the growth of *P. aeruginosa* PAO1 accompanied by strong and rapid bacteriolysis and released relatively high concentration of endotoxin from bacteria both in nutrition broth and in diluted rabbit blood cultures. The bacterial supernatant from CFT treatment alone yielded high concentrations of TNFα both in RAW 264.7 cells and in mice and high level of NO in RAW 264.7 cells. Treatment with the combination of LZM and CFT evidently blocked the lysis of bacteria and reduced the release of endotoxin without decreasing bactericidal activity of CFT. TNFα and NO productivity of the supernatants prepared from the LZM/CFT combinative treated bacterial cultures were significantly decreased both in RAW 264.7 cells and in mice indicating that the inflammatory activity was reduced. ConclusionLZM can effectively prevent CFT-induced bacteriolysis, endotoxin release and subsequent proinflammatory factor production but without decreasing bactericidal activity of CFT, resulting in the disassociation of bactericidal activity and bacteriolysis. Thus, LZM might be important for preventing endotoxemia in Gram-negative sepsis with the treatment of antibiotics.

Keywords: endotoxin tumor necrosis factor-α antibiotics egg white lysozyme

收稿日期 2002-11-28 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者: 梁爱华

作者简介:

参考文献:

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(180KB)
- ▶ [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

- ▶ 鸡蛋清溶菌酶
- ▶ 内毒素
- ▶ 肿瘤坏死因子
- ▶ 抗生素

本文作者相关文章

- ▶ 梁爱华
- ▶ 薛宝云
- ▶ 梁日欣
- ▶ 王金华
- ▶ 王丹

PubMed

- ▶ Article by
- ▶ Article by
- ▶ Article by
- ▶ Article by
- ▶ Article by

本刊中的类似文章

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" value="9607"/>

Copyright 2008 by 药学学报