中国寄生虫学与寄生虫病杂志 2005 23 (6): 388-391 ISSN: 1000-7423 CN: 31-1248/R

论著

恶性疟原虫感染的红细胞膜表面蛋白1模拟肽的筛选及鉴定

郝文波,李明,徐伟文,王萍,陈白虹

南方医科大学生物技术学院,广州 510515

收稿日期 修回日期 网络版发布日期 接受日期

摘要
目的 筛选恶性疟原虫感染的红细胞膜表面蛋白1（PfEMP?鄄1）的噬菌体表位模拟肽。 方法 细胞间粘附分子ICAM-1模拟12肽（KLYLIAEGSVAA）能模拟ICAM-1分子与疟原虫感染红细胞结合的功能，以展示该短肽的噬菌体为靶，采用差减筛选法（subtraction method）对噬菌体环7肽库进行3轮筛选，通过ELISA、竞争抑制试验鉴定获得的噬菌体短肽与ICAM-1之间的结合特性。对阳性克隆进行DNA及氨基酸序列分析并与PfEMP-1氨基酸序列进行同源性比较。 结果 ELISA筛选22个克隆有3个为阳性克隆，氨基酸序列分析显示2个克隆的展示的短肽序列为C-ITAVPVR-C，另1为C-DIMGGYN-C。同源性分析未发现2短肽序列与野生型MC株恶性疟原虫PfEMP-1的氨基酸序列有同源性。但竞争抑制试验显示3个阳性克隆均可与15.2单抗间互相竞争抑制与ICAM-1分子的结合。 结论 获得2种PfEMP-1噬菌体构象表位模拟肽，两短肽能与ICAM-1分子特异性结合。

关键词 恶性疟原虫 红细胞膜表面蛋白1 噬菌体随机肽库 表位模拟肽

分类号

Screening and Preliminary Identification of Mimetic Peptides of Plasmodium falciparum-Infected Erythrocyte Membrane Surface Protein 1

HAO Wen-bo,LI Ming,XU Wei-wen,WANG Ping,CHEN Bai-hong

Tropical Disease Department,the Southern Medical University, Guangzhou 510515,China

Abstract
Objective To screen and identify mimetic peptides of Plasmodium falciparum-infected erythrocyte membrane surface protein 1 in order to explore anti-adhesive agent against cerebral malaria. Methods Phage-borne peptide KLYLIAEGSVAA was used as panning targets to select target binders in a disulfide-constrained heptapeptides library. Three rounds of biopanning were carried out and then ELISA and competitive ELISA were used to evaluate the binding character between phage-borne peptides and ICAM-1. The insert DNA sequences of positive clones were determined and their amino acid sequences were deduced. Results After three-round panning, 22 clones were randomly chosen from the third panning and analyzed. Three clones showed positive interaction with ICAM-1, and two of them possessed the amino acid sequence C-ITAVPVR-C, the other one was C-DIMGGYN-C. These peptides specifically inhibited the binding of 15.2 antibody to ICAM-1 detected by competitive ELISA. Conclusion Two kinds of mimetic peptides of PfEMP-1 have been obtained, which can bind with ICAM-1 specifically.

Key words *Plasmodium falciparum* Erythrocyte membrane surface protein 1 Phage-displayed random peptide library Mimetic peptide

DOI:

通讯作者

作者个人主页 郝文波;李明;徐伟文;王萍;陈白虹