



ISSN 1673-5234

QK2241441

CN 11-5457/R

中国病原生物学杂志

ZHONGGUO BINGYUAN SHENGWUXUE ZAZHI

2022年9月第17卷第9期

(总第189期)

Sep. 2022 Vol. 17, No. 9

国家卫生健康委员会 主管
中华预防医学会 主办
山东省寄生虫病防治研究所



JOURNAL OF PATHOGEN BIOLOGY

中文核心期刊（基础医学类）
中国科学引文数据库（CSCD）来源期刊
中国科技核心期刊
中国生物医学类核心期刊
RCCSE中国核心学术期刊
科技期刊世界影响力指数(WJCI)报告收录期刊
中国科技论文统计源期刊
《中国学术期刊综合评价数据库》来源期刊
《中国核心期刊（遴选）数据库》收录期刊

ISSN 1673-5234



9 771673 5234 10

中华预防医学会系列杂志

SERIAL JOURNAL OF CHINESE PREVENTIVE MEDICINE ASSOCIATION

9

2022

中国病原生物学杂志

JOURNAL OF PATHOGEN BIOLOGY

月刊 2006年1月创刊

第17卷第9期(总第189期)

2022年9月30日出版

主管

国家卫生健康委员会

主办

中华预防医学会
100021,北京市朝阳区华威里25号
山东省寄生虫病防治研究所
272033,山东省济宁市太白楼中路11号

编辑

中国病原生物学杂志编辑委员会

主编

庄辉

常务副主编

黄勇

编辑部主任

王利磊

出版

《中国病原生物学杂志》社
272033,山东省济宁市太白楼中路11号
电话:0537-2342934
E-mail: cjpb@vip.163.com
byswx@vip.163.com
http://www.CJPB.org.cn

印刷

济宁市火炬印务有限公司

发行

国内:山东省济宁市报刊发行局
国外:中国国际图书贸易总公司

订购

全国各地邮政局
邮发代号:24-81

邮购

《中国病原生物学杂志》编辑部
山东省济宁市太白楼中路11号
邮编:272033
电话:0537-2342934

定价

每期25.00元,全年300.00元

中国标准连续出版物号

ISSN 1673-5234
CN 11-5457/R

本刊刊出的所有文章不代表中华预防医学会和本刊编委会的观点,除非特别声明。

本刊如有印装质量问题,请向本刊编辑部调换。

目次

论著

- 人呼吸道合胞病毒感染致小鼠急性肺损伤动物模型的建立..... 杨筱萌 罗语思 郭名扬等(993)
- 基于免疫信息学技术的结核分枝杆菌多表位疫苗构建..... 曹钰婷 吴雪晗 宁钰等(999)
- 乙型肝炎病毒 HBx 蛋白诱导肝细胞泛素连接酶 RNF5 抑制 STING/IFN- β 信号通路的研究..... 杨凯 潘颖 宇芙蓉等(1005)
- 基于 sacB 负筛选标记的 Targetron 质粒分析系统构建..... 崔古贞 花登雄 鲍江舰等(1010)
- 鸟分枝杆菌 MAV-4563 蛋白的生物信息学分析..... 马枫茜 陈瑞枫 丁寿鹏等(1015)
- 幽门螺杆菌 HtrA 的表达、纯化及结晶尝试..... 田新利 林玲辉 李娜等(1020)
- 粪肠球菌介导的细粒棘球绦虫重组 Efs-Eg95-EgA31 疫苗的构建、鉴定及表达..... 李文桂 欧兴坤 何爱琳(1025)
- 曼氏迭宫绦虫异柠檬酸脱氢酶的基因克隆、蛋白表达及其在裂头蚴阶段的转录水平检测分析..... 梁鹏 张园元 符瑞佳等(1030)
- 华支睾吸虫 HMGB1 同源分子的识别及其进化研究..... 王婷 杨庆利 冷静等(1035)
- 5 种 RDTs 检测间日疟原虫和卵形疟原虫效果评价及影响因素研究..... 许艳 王龙江 陈春梅等(1040)
- EdU 标记多房棘球蚴成体干细胞方法的建立..... 曹珊菱 郭小腊 郑亚东等(1045)
- ### 调查研究
- 儿童呼吸道病毒感染病原学特征分析..... 贾松伟 刘宇 张义堂(1048)
- 感染性眼内炎临床特征及危险因素分析..... 周天球 张俊芳(1053)
- 2017-2020 年黔东南地区手足口病病原构成及监测分析..... 单竹周 裴峰锋 胡维等(1057)
- 安徽省颍上县野鼠体外寄生虫及恙虫病东方体感染调查..... 赵蕾 朱海 章乐生等(1061)

实验研究

一种稳定型绿色消毒剂抗菌作用的研究

..... 高秀伟 姜 红 任孝敏等(1064)

临床研究

妊娠合并 HR-HPV 感染者阴道分泌物病原菌分布及对 HPV 阴转的影响

..... 黄永群 程 虹 陈壮荣等(1068)

口腔颌面部间隙感染病原菌分布及耐药性分析

..... 高燕飞 张 敏 刘振丽等(1072)

miR-451a 调控 TLR4 信号通路参与结核分枝杆菌感染机制的研究

..... 曹 建 张媛梅 黄红梅等(1077)

慢阻肺患者鲍曼不动杆菌感染肺泡巨噬细胞凋亡机制的研究

..... 张 阳 焦雨佼 巩翠珂等(1082)

VAP 患者感染病原菌的调查和 PCT、CRP 水平的变化及诊断价值

..... 夏 进 陈 培 王 丹等(1086)

MHD 患者院内感染的病原学特征及 SII、PLR、IL-33 检测对感染的预测

..... 杨 荆 樊文星 毕丹青(1090)

淋巴造血系统恶性肿瘤患者鲍曼不动杆菌耐药性分析

..... 郝秀乔 宋博宁 冯 蕾等(1095)

妊娠合并霉菌性阴道炎患者阴道微生态、血清炎性因子水平与妊娠结局的

相关性分析 马 艳 谢 灿 游 璐(1099)

间质性肺病合并肺部感染的病原学特征分析

..... 赵 静 杨 婷 杜小琴等(1103)

综 述

单细胞转录组测序技术及其在寄生虫学研究中的应用

..... 杨清清 韩秀敏 汪 伟(1106)

社区获得性肺炎血清标志物研究进展

..... 邹丽敏 段义农(1111)

寄生蠕虫脂肪酸结合蛋白免疫学研究进展

..... 李 想 叶 彬(1115)

期刊基本参数 CN11-5457/R * 2006 * m * A4 * 96 * zh+en * P * ¥25.00 * 1000 * 28 * 2022-09

本期责任编辑 王利磊

JOURNAL OF PATHOGEN BIOLOGY

Monthly

Established in January 2006

Volume 17, Number 9

30 September 2022

Responsible Institution

National Health Commission of the People's Republic of China

Sponsor

China Preventive Medicine Association
Shandong Institute of Parasitic Diseases

Editing

Editorial Board of Journal of Pathogen Biology
No. 11 Taibailou Zhonglu, Jining, Shandong 272033, P. R. of China
Tel: +86 537 2342934
E-mail: cjpb@vip.163.com
byswx@vip.163.com
http://www.CJPB.org.cn

Editor-in-Chief

ZHUANG Hui

Associate Editor-in-Chief

HUANG Yong

Managing Director

WANG Li-lei

Publishing

Publishing House of Journal of Pathogen Biology
Published monthly on the 30th of every month

Printing

Jining Huoju Books and Magazine Printing Center

Subscriptions

Domestic/Local Post Office
Foreign: China International Book Trading Corporation
P. O. Box 399, Beijing, China

Mail-Order

Editorial Office of Journal of Pathogen Biology
No. 11 Taibailou Zhonglu, Jining, Shandong 272033, P. R. of China
Tel: +86 537 2342934

CSSN

ISSN 1673-5234
CN 11-5457/R

CONTENTS

ORIGINAL ARTICLES

- Establishment of an acute lung injury mouse model induced by human respiratory syncytial virus**
..... YANG Xiao-meng, LUO Yu-si, GUO Ming-yang, et al (993)
- Designing a multi-epitope vaccine against *Mycobacterium tuberculosis* by immunoinformatics approach**
..... CAO Yu-ting, WU Xue-han, NING Yu, et al (999)
- Hepatitis B virus X protein inhibits STING/IFN- β signaling pathway through up-regulation of ubiquitin ligase RNF5 in hepatocytes**
..... YANG Kai, PAN Ying, YU Fu-rong, et al (1005)
- Construction of Targetron plasmid analysis system based on sacB negative screening marker**
..... CUI Gu-zhen, HUA Deng-xiong, BAO Jiang-jian, et al (1010)
- Bioinformatics analysis of *Mycobacterium avium* MAV-4563 protein**
..... MA Feng-qian, CHEN Rui-feng, DING Shou-peng, et al (1015)
- Expression, purification and crystallization trials of *Helicobacter pylori* HtrA** TIAN Xin-li, LIN Ling-hui, LI Na, et al (1020)
- Construction, identification and expression of *Enterococcus faecalis* based recombinant Efs-Eg95-EgA31 vaccine of *Echinococcus granulosus*** LI Wen-gui, OU Xing-kun, HE Ai-lin (1025)
- Gene cloning, protein expression and transcription analysis at sparganum development stage of isocitrate dehydrogenase from *Spirometra mansoni***
..... LIANG Peng, ZHANG Yuan-yuan, FU Rui-jia, et al (1030)
- Identification and evolution of HMGB1 homologous molecules of *Clonorchis sinensis*** ... WANG Ting, YANG Qing-li, LENG Jing, et al (1035)
- Evaluation of five RDTs for detecting *Plasmodium vivax* and *Plasmodium ovale* and analysis of influencing factors**
..... XU Yan, WANG Long-jiang, CHEN Chun-mei, et al (1040)
- EdU labeling method for population of neoblasts in *Echinococcus multilocularis*** ... CAO Shan-ling, GUO Xiao-la, ZHENG Ya-dong, et al (1045)

INVESTIGATION STUDY

- Pathogenic characteristics of respiratory tract infection virus in children** JIA Song-wei, LIU Yu, ZHANG Yi-tang (1048)
- Clinical characteristics and risk factors of infectious endophthalmitis**
..... ZHOU Tian-qiu, ZHANG Jun-fang (1053)
- Pathogenic spectrum and surveillance analysis of Hand, Foot and Mouth disease in Qiandongnan area of Guizhou province, China, 2017-2020** SHANG Zhu-zou, PEI Feng-feng, HU Wei, et al (1057)

Investigation on ectoparasitic mites and Orientia tsutsugamushi infection in wild mice in

Yingshang County ZHAO Lei, ZHU Hai, ZHANG Le-sheng, et al(1061)

EXPERIMENTAL STUDY

Study on the antibacterial effect of a stable green disinfectant

..... GAO Xiu-wei, JIANG Hong, REN Xiao-min, et al(1064)

CLINICAL STUDY

The distribution of pathogens in pregnant patients with HR-HPV infection and its effect on

HPV negative conversion HUANG Yong-qun, CHENG Hong, CHEN Zhuang-rong, et al(1068)

Distribution and drug resistance of pathogenic bacteria in oral and maxillofacial space infection

..... GAO Yan-fei, ZHANG Min, LIU Zhen-li, et al(1072)

The study of miR-451a regulating the expression of TLR4 signaling pathway in *Mycobacterium tuberculosis* infection and participating in the pathogenesis of pulmonary tuberculosis

..... CAO Jian, ZHANG Yuan-mei, HUANG Hong-mei, et al(1077)

Study on apoptosis mechanism of alveolar macrophages infected with *Acinetobacter baumannii* in

patients with chronic obstructive pulmonary disease ZHANG Yang, JIAO Yu-jiao, GONG Cui-ke, et al(1082)

The types of pathogenic bacteria and the changes of PCT and CRP levels in patients with VAP

and their diagnostic value XIA Jin, CHEN Pei, WANG Dan, et al(1086)

Etiological characteristics of nosocomial infection in patients with MHD and the predictive value

of SII, PLR, and IL-33 assays for infection YANG Jing, FAN Wen-xing, BI Dan-qing(1090)

Pathogenic analysis of *Acinetobacter baumannii* infection in patients with lymphohematopoietic

malignancies HAO Xiu-qiao, SONG Bo-ning, FENG Lei, et al(1095)

Correlation analysis of vaginal microecology, serum inflammatory factor levels and pregnancy

outcomes in patients with mycotic vaginitis during pregnancy MA Yan, XIE Can, YOU Lu(1099)

Etiological analysis of interstitial lung disease complicated with pulmonary infection

..... ZHAO Jing, YANG Ting, DU Xiao-qin, et al(1103)

REVIEWS

Single-cell RNA sequencing and its application in parasitological research

..... YANG Qing-qing, HAN Xiu-min, WANG Wei(1106)

Research progress on serum markers of community-acquired pneumonia

..... ZOU Li-min, DUAN Yi-nong(1111)

Advances in immunological researches on fatty acid-binding proteins of parasitic helminthes

..... LI Xiang, YE Bin(1115)

by detection of *Fasciola gigantica* circulating fatty acid binding protein[J]. Parasitol, 2016, 143(11):1369-1381.

- [28] 赵巍, 吴海玮. 日本血吸虫中国大陆株重组脂肪酸结合蛋白(Sj-FABPc)的特性和抗原表位的分析[J]. 中国人兽共患病学报, 2000, 16(6):6-8.
- [29] 赵巍, 苏川. 日本血吸虫(中国大陆株)FABPc重组抗原高效融合表达, 纯化及免疫学活性鉴定[J]. 中国人兽共患病学报, 2000, 16(5):43-45.
- [30] Yang D, Chen L, Yue X, et al. Expression and immunolocalisation of TpFABP as a candidate antigen for the serodiagnosis of rabbit *Taenia pisiformis* cysticercosis[J]. Parasite, 2013, 20(1):53.
- [31] 朱晓华, 石佑恩, 宁长修, 等. 白细胞介素-12在日本血吸虫脂肪酸结合蛋白诱导小鼠保护性免疫力中的佐剂作用[J]. 中国寄生虫学与寄生虫病杂志, 2005, 23(3):150-154.
- [32] 李春艳, 余龙江, 刘智, 等. 日本血吸虫 DNA 多价疫苗 pVIVQ2SjFABP-23 的构建及其保护性免疫[J]. 中国人兽共患病学报, 2006, 22(2):122-126.
- [33] 李建国, 张阳德, 李罗丝, 等. 日本血吸虫 DNA 多价疫苗 SjGST-FABP/pcDNA3 的构建及其保护性免疫研究[J]. 中国现代医学杂志, 2007, 17(14):1709-1712.
- [34] Tang CL, Zhang RH, Liu ZM, et al. Effect of regulatory T cells on the efficacy of the fatty acid-binding protein vaccine against *Schistosoma japonicum*[J]. Parasitol Res, 2019, 118(2):559-566.
- [35] Ramos CR, Figueredo RC, Pertinhez TA, et al. Gene structure and M20T polymorphism of the *Schistosoma mansoni* Sm14 fatty acid-binding protein. Molecular, function, and immunopro-

tection analysis[J]. J Biol Chem, 2003, 278(15):12745-12751.

- [36] Tendler M, Brito CA, Vilar MM, et al. A *Schistosoma mansoni* fatty acid-binding protein, Sm14, is the potential basis of a dual-purpose anti-helminth vaccine[J]. Proc Natl Acad Sci U S A, 1996, 93(1):269-273.
- [37] Fonseca CT, Pacífico LGG, Barsante MM, et al. Co-administration of plasmid expressing IL-12 with 14-kDa *Schistosoma mansoni* fatty acid-binding protein cDNA alters immune response profiles and fails to enhance protection induced by Sm14 DNA vaccine alone[J]. Microbes Infect, 2006, 8(9-10):2509-2516.
- [38] Vicente B, Lopez-Aban J, Rojas-Caraballo J, et al. The combination of the aliphatic diamine AA0029 in ADAD vaccination system with a recombinant fatty acid binding protein could be a good alternative for the animal schistosomiasis control[J]. Exp Parasitol, 2015(154):134-142.
- [39] Vicente B, Lopez-Aban J, Rojas-Caraballo J, et al. Protection against *Schistosoma mansoni* infection using a *Fasciola hepatica*-derived fatty acid binding protein from different delivery systems[J]. Parasit Vectors, 2016, 9(1):216.
- [40] Ruiz-Jimenez C, Espino A. Interaction of *Fasciola hepatica* fatty acid binding protein with TLR-2: A preliminary study to understand the immunomodulation mechanisms that exert *F. hepatica* on the immune system (LB287)[J]. Faseb J, 2014:28.
- [41] Chabalgoity JA, Harrison JA, Esteves A, et al. Expression and immunogenicity of an *Echinococcus granulosus* fatty acid-binding protein in live attenuated *Salmonella* vaccine strains[J]. Infect Immun, 1997, 65(6):2402-2412.

【收稿日期】 2022-04-22 【修回日期】 2022-07-06

(上接 1114 页)

- [49] Yu Z, Jing H, Hongtao P, et al. Distinction between bacterial and viral infections by serum measurement of human neutrophil lipocalin (HNL) and the impact of antibody selection[J]. J Immunol Methods, 2016(432):82-86.
- [50] 范冬梅, 卢杨, 杨圆圆, 等. 可溶性肿瘤坏死因子相关的凋亡诱导配体与 5-Fu 联用对肝癌细胞的抑制作用[J]. 中国肿瘤, 2017, 26(11):904-909.
- [51] Mbita Z, Hull R, Dlamini Z. Human immunodeficiency virus-1 (HIV-1)-mediated apoptosis: new therapeutic targets [J]. Viruses, 2014, 6(8):3181-3227.
- [52] Oved K, Cohen A, Boico O, et al. A novel host-proteome signature for distinguishing between acute bacterial and viral infection [J]. PLoS One, 2015, 10(3):e0120012.
- [53] 苏晓茹, 潘峰, 郑高明, 等. 血清 α 1-酸性糖蛋白和触珠蛋白在肺结核中的水平测定及结果分析[J]. 中国卫生检验杂志, 2019, 29(12):1469-1471, 1474.
- [54] 蔺晨, 郭芳, 季维娜, 等. 社区获得性肺炎患者的外周血 TNF- α 、sTREM-1、 α 1-APG 水平[J]. 山东大学学报(医学版), 2015, 53(02):61-64, 70.
- [55] 叶莉莉, 谢波. 可溶性尿酸酶受体(suPAR)在重症感染及多种疾病中的研究进展[C]//中华医学会第二届重症心脏全国学术大会暨第三届西湖重症医学论坛、2015 年浙江省重症医学学术年会论文集, 2015:281-285.
- [56] 朱晓红, 汤建磊, 郑琦涵. 社区获得性肺炎患者血清 suPAR、sTREM-1 的临床意义[J]. 岭南急诊医学杂志, 2021, 26(5):478-480.
- [57] Luster AD, Unkles JC, Ravetch JV. Gamma-interferon transcriptionally regulates an early-response gene containing homolo-

gy to platelet proteins[J]. Nature, 1985, 315(6021):672-676.

- [58] Wawrocki S, Seweryn M, Kielniewowski G, et al. IL-18 and related function proteins associated with tuberculosis severity and screening for active TB among patients with non-mycobacterial community-acquired pneumonia (CAP) [J]. Saudi J Biol Sci, 2020, 27(11):3035-3045.
- [59] 陆世娟, 蒋志红, 陈同排, 等. 干扰素诱导蛋白-10 在新生儿病毒感染性肺炎中的表达及临床意义[J]. 实用临床医药杂志, 2017, 21(24):135.
- [60] Yamazaki T, Hokibara S, Shigemura T, et al. Markedly elevated CD64 expressions on neutrophils and monocytes are useful for diagnosis of periodic fever, aphthous stomatitis, pharyngitis, and cervicofacial adenitis (PFAPA) syndrome during flares[J]. Clin Rheumatol, 2014, 33(5):677-683.
- [61] 农贤刚, 程卫萍. 中性粒细胞 CD64 和血清 sTREM-1 在老年社区获得性肺炎中的诊断价值探讨[J]. 中国免疫学杂志, 2016, 32(6):871-874.
- [62] Lee J H, Park M A, Han S W, et al. An increase in mean platelet volume during admission can predict the prognoses of patients with pneumonia in the intensive care unit: A retrospective study [J]. PLoS One, 2018, 13(12):e0208715.
- [63] 刘凯, 蒙冲, 刘礼荣. CURB-65 评分联合中性粒细胞与淋巴细胞比值和血小板与淋巴细胞比值对社区获得性肺炎患者病情评估及预后预测的价值[J]. 临床内科杂志, 2021, 38(10):699-701.
- [64] 费明明, 童飞, 陶小根, 等. 中性粒细胞/淋巴细胞比值对新型冠状病毒肺炎患者疾病分型的诊断价值[J]. 中华危重病急救医学, 2020, 32(5):554-558.

【收稿日期】 2022-04-15 【修回日期】 2022-07-02