

论著

## 不同种 (株) 利什曼原虫毒力相关基因的表达差异

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收稿日期 修回日期 网络版发布日期 接受日期

摘要

目的 观察不同种 (株) 利什曼原虫前鞭毛体和无鞭毛体的毒力相关基因表达情况。方法 制备杜氏利什曼原虫、婴儿利什曼原虫、热带利什曼原虫、硕大利什曼原虫和墨西哥利什曼原虫等5种7株利什曼原虫前鞭毛体和无鞭毛体的总RNA, 采用半定量RT-PCR法, 以 $\alpha$ -微管蛋白基因和3-磷酸甘油醛脱氢酶基因 (*GAPDH*) 作为阳性对照, 根据GenBank公布的GDP甘露糖焦磷酸酶基因 (*GDPMP*)、A2抗原相关蛋白基因 (*A2rel*)、脂磷酸多糖合成蛋白1基因 (*LPG1*)、脂磷酸多糖合成蛋白2基因 (*LPG2*)、动基体膜蛋白11基因 (*KMP-11*)、胱氨酸蛋白酶C基因 (*CPC*)、亲水性酰化表面蛋白B1基因 (*HASPB1*)、胱氨酸蛋白酶2基因 (*CPB2*)、胱氨酸蛋白酶B2.8基因 (*CPB2.8*) 和热激蛋白100基因 (*CLP b*) 等毒力相关基因的核苷酸序列, 设计特异性引物进行RT-PCR扩增, 分析以上各基因在各种 (株) 前鞭毛体和无鞭毛体中的表达情况。结果 各毒力基因在不同种 (株) 利什曼原虫的前鞭毛体和无鞭毛体中的表达明显不同, *HASPB1*基因在7个种 (株) 利什曼原虫的无鞭毛体和杜氏利什曼原虫前鞭毛体中均表达, *GDPMP*、*LPG1*、*LPG2*、*CPB2.8*、*CPB2*、*A2rel*和*CLP b*基因分别在特定种 (株) 的前鞭毛体和/或无鞭毛体中表达, *CPC*基因仅在杜氏利什曼原虫SC10株和硕大利什曼原虫无鞭毛体内表达, *KMP-11*基因在7个种 (株) 利什曼原虫前鞭毛体或无鞭毛体内均不表达。结论 毒力相关基因的表达存在种特异性和期特异性。

关键词

[利什曼原虫](#) [毒力相关基因](#) [表达](#)

分类号

## Virulence-associated Gene Profiling of Different *Leishmania* spp.

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Abstract

Objective To investigate the expression level of virulence-associated genes in promastigotes and amastigotes of different *Leishmania* spp.. Methods Total RNA was extracted from the promastigotes and amastigotes of *Leishmania donovani*, *L. infantum*, *L. tropica*, *L. major* and *L. mexicana*, and relevant strains. According to the reported gene sequences in GenBank, primers were designed in relation to the virulence-associated genes [GDP-mannose pyrophosphorylase (*GDPMP*), 3'a2rel-related protein (*A2rel*), beta-galactofuranosyl transferase (*LPG1*), lipophosphoglycan biosynthetic protein (*LPG2*), kinetoplast membrane protein 11 (*KMP-11*), *cpc* gene for cysteine proteinase (*CPC*), hydrophilic acylated surface protein (*HASPB1*), cathepsin L-like cysteine protease (*CPB2*), cathepsin L-like cysteine proteinase *lmcpb2.8* (*CPB2.8*), Mr 100 000 heat shock protein (*CLP b*)], and control genes ( $\alpha$  tubulin gene and *GAPDH*). Semi-quantitative RT-PCR was performed to detect expression level of these genes in promastigotes and amastigotes of different *Leishmania* spp. Results There was a significant difference in the expression profiles of the genes among the promastigotes and amastigotes of different *Leishmania* spp. The *HASPB1* was detected in the amastigotes of all strains and promastigotes of *L. donovani*, the *GDPMP*, *LPG1*, *LPG2*, *CPB2.8*, *CPB2*, *CPC*, *A2rel* and *CLP b* were expressed in the promastigotes and/or amastigotes of the specific *Leishmania* spp, respectively. None of the stains carried the *KMP-11* gene, whereas the amastigotes of *L. donovani* SC10 strain and *L. major* 5ASKH strain possessed *CPC*. Conclusion The expression profile of the virulence-associated genes shows species-specific and stage-specific differences.

Key words [FONT-FAMILY: 'Times New Roman'](#) [mso-bidi-font-size: 12.0pt](#) [mso-font-kering: 1.0pt](#) [mso-ansi-language: EN-US](#) [mso-fareast-language: ZH-CN](#) [mso-bidi-language: AR-SA](#) [Leishmania](#))">mso-fareast-font-family: 宋体">[Leishmania](#) [Virulence-associated gene](#) [Expression](#)

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