

论著

## 约氏疟原虫卵囊黑化与卵囊内游离钙关系的研究

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摘要

目的研究大劣按蚊蚊胃的约氏疟原虫卵囊黑化时卵囊内Ca<sup>2+</sup>的变化,探讨疟原虫感染不易感蚊种时卵囊黑化与囊内Ca<sup>2+</sup>的相互关系。方法以荧光染料Fluo-3/Am作卵囊内钙指示剂,应用共聚焦激光扫描显微镜(CLSM)观察不同时期约氏疟原虫卵囊内Ca<sup>2+</sup>分布、变化以及检测的实验条件。结果3μmol/LFluo-3/Am同时加入1μl/ml25%PluronicF-127在37℃恒温下,孵育约氏疟原虫卵囊60min即可达到最佳的负载效果。Fluo-3/Am浓度的提高和孵育时间延长只能增加背景染色,若降低孵育浓度和缩短孵育时间则难于达到最佳的负载效果。约氏疟原虫成熟卵囊的囊内Ca<sup>2+</sup>为(137.15±7.02)nmol/L,完全黑化卵囊为(18.44±1.75)nmol/L,并在囊壁出现明显的钙沉着。结论约氏疟原虫卵囊完全黑化时,囊内Ca<sup>2+</sup>明显减少,并有外排现象。

关键词 [约氏疟原虫](#) [卵囊](#) [黑化](#) [Ca<sup>2+</sup>](#) [共聚焦激光扫描显微镜\(CLSM\)](#)

分类号

## Study on the Relationship between Intracellular Free Calcium and Melanization in Oocysts of Plasmodium yoelii

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Abstract

Objective To study the change of intracellular free Ca<sup>2+</sup> in the oocyst when it melanized and to find out the relationship between the melanized oocyst and its intracellular level of free Ca<sup>2+</sup> in a Plasmodium-refractory strain of Anopheles dirus. Methods The distribution and experimental condition of the intracellular free Ca<sup>2+</sup> in oocyst of Plasmodium yoelii was measured with Ca<sup>2+</sup> sensitive dye Fluo-3/AM and Plutonic F-127 under confocal laser scanning microscope (CLSM) at different time. Results The best load condition was that the oocysts were incubated in 3 μmol/ml Fluo-3/AM adding 1 μl/ml 25% Pluronic F-127 for 60 min at 37 °C . Fluorescent imaging of oocysts was affected by an increase or decrease of the concentration of Fluo-3/AM and incubation time. The distribution of intracellular free Ca<sup>2+</sup> was heterogeneous in the oocysts. The mean value of Ca<sup>2+</sup> in the mature oocysts was (137.15 ±7.02) nmol/L (X±S) but was (18.44± 1.75) nmol/L in melanized oocysts with Ca<sup>2+</sup> sedimentation in the wall of oocyst. Conclusion The results suggest that the level of the intracellular free Ca<sup>2+</sup> in oocyst decreased and excreted during its melanization in a Plasmodium-refractory anopheline mosquito species.

Key words [Plasmodium yoelii](#) [oocyst](#) [melanization](#) [Ca<sup>2+</sup>](#) [CLSM](#)

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