



### 小鼠树突细胞成熟前后的形态及其微丝蛋白的适应性改变

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#### Adaptive changes of morphology and filament-actin of dendritic cells during maturation

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摘要

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**摘要** 目的 研究树突细胞 (DC) 成熟前后的形态及其微丝蛋白的适应性变化。方法 经重组小鼠粒细胞-巨噬细胞集落刺激因子、白细胞介素-4 诱导小鼠骨髓单核细胞为未成熟树突细胞, 培养至第6 天时, 用脂多糖 (LPS) 诱导成熟树突细胞 (mDC), 在倒置相差显微镜和荧光显微镜下观察并前后对比分析细胞在成熟前后的表面突起和内部微丝蛋白的变化。结果 mDC 高表达CD11c、MHC-II 和CD86。成熟前的DC 体积较小, 随着细胞的成熟, 直径逐渐增大。成熟过程中, DC 表面突起逐渐增多、变粗且变长, 呈怒张状, 在第7 天达到高峰, 以后突起逐渐松弛变软, 最后又回复至短细、稀疏状态。微丝蛋白主要集中于细胞膜和触突上, 其平均荧光强度

在LPS 刺激24 h 后最高, 48 h 后明显降低; 细胞内F-肌动蛋白在成熟过程中逐渐减低, LPS 刺激16 h 后达高峰, 以后细胞内又重新出现F-肌动蛋白的表达, 且与细胞膜、突起间基本均匀一致。结论 树突细胞体积增大, 突起增多增长, 密度加大, 旨在尽可能地增大细胞的表面积, 最大限度地发挥DC 提取、抗原呈递的功能; 细胞核增大, 暗示细胞核在抗原的处理、加工过程中发挥着重要的作用。

**关键词:** 树突细胞 脂多糖 细胞骨架 微丝蛋白

**Abstract:** Objective To investigate the adaptive changes of morphology and cytoskeleton of the dendritic cells (DC) before and after lipopolysaccharide (LPS) -induced maturation. Methods The murine bone marrow mononuclear cells were induced into immature dendritic cells (imDC) with granulocyte -macrophage colony -stimulating factor (GM-CSF) and interleukin (IL) -4, after 6 days imDC were further induced into matured DC (mDC) with LPS for 48 hours. These DC morphology was observed under fluorescent microscope and inverted phase contrast microscope (IPCM), and the changes of cytoskeleton between imDC and mDC were compared. Results mDC expressed higher level of CD11c, MHC-II, CD86 compared with imDC via flow cytometry. After LPS stimulation, the DC became a little bigger. The external dendrites had obvious changes from thin, short (imDC) to thick, long (mDC), finally thin, short again. Filament-actin (F-actin) was mainly focused on cytomembrane and dendrites. The mean fluorescence of F-actin in cytomembrane and dendrite was the highest after 24 hours stimulated with LPS, but decreased apparently after 48 hours stimulated with LPS, and this time the F-actin in cytoplasm became sparse and fragmentary. Conclusion During the maturation, DC became more and more large with number, length and consistence of surface processes improved gradually, which helps to augment surface of cell and play the important role of translation and presentation of antigen. Gradually largened nucleolus suggested that it maybe play a very important role in the translation and presentation of antigen. Within the progress of maturation, cytoskeleton, such as F-actin, gave a closed cooperation via gradually increased number.

**Keywords:**

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