

研究简报

细胞吞噬表面电荷不同的硅纳米颗粒的研究

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收稿日期 2006-1-10 修回日期 网络版发布日期 2006-11-5 接受日期

摘要 本文以HepG细胞、L-02细胞和MCF-7细胞为代表, 利用异硫氰酸罗丹明荧光SiNPs的荧光信号同步指示作用, 研究了细胞对表面带正电荷的氨基化SiO₂荧光纳米颗粒(PSiNPs)和表面带负电荷的SiO₂荧光纳米颗粒(NSiNPs)的吞噬情况, 并考察了SiNPs浓度、培育时间及培养基中的血清对细胞吞噬表面电荷不同的SiNPs颗粒的影响。

关键词 [SiO₂纳米颗粒](#) [表面电荷](#) [细胞吞噬](#)

分类号 [0657](#)

Studies on the Cellular Uptake of SiNPs with Different Surface Charges

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Abstract The uptake of silica nanoparticles(SiNPs) with positive surface charge and negative surface charge by HepG cells, MCF-7 cells and L-02 cells were investigated by using the RITC doped in SiNPs as a synchronous fluorescent signal indicator. The experimental results show that the uptake of SiNPs by the three kinds of cells were all a concentration-, charge-, time-, and serum-dependent endocytic process. To the same kind of SiNPs, the uptake by the three kinds of cells all enhanced with increasing of the SiNPs concentration and incubation time and gradually reached saturation. However, the effect of serum was different to the uptake of SiNPs with different surface charge. The results display that serum existed in culture medium decreased the cellular uptake of NSiNPs. While the serum existed in culture medium would not affect the cellular uptake of PSiNPs. These results provide a theoretical foundation for the further modification of SiNPs, which could improve the stability of SiNPs in the medium and made it be well applied to biomedicine.

Key words [Silica nanoparticles\(SiNPs\)](#) [Surface charge](#) [Cellular uptake](#)

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