

# 壳聚糖和明胶材料对血管平滑肌细胞的作用

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壳聚糖是一种具有发展前景的生物材料。研究了不同脱乙酰度壳聚糖、明胶及壳聚糖与明胶共混材料对血管平滑肌细胞生长的促进作用。在不同材料上培养细胞, 采集培养后第1天和第5天的图像, 在培养24、72、120 h时做MTT实验。此外, 还用酶联免疫检测(ELISA)方法测量了材料吸附细胞外基质蛋白的数量, 探讨细胞外基质蛋白在血管平滑肌细胞与材料相互作用中所起的作用。结果表明脱乙酰度高的壳聚糖材料能较好地促进血管平滑肌细胞的粘附、铺展和生长, 可能是一种具有一定应用前景的血管组织工程研究用材料。

## CULTIVATION OF VASCULAR SMOOTH MUSCLE CELLS ON CHITOSAN AND GELATIN FILMS

Chitosan, a positively charged polysaccharide, has shown to be a structural material of promise for a number of tissue engineering applications. The role of the degree of deacetylation (DD) on some biological properties of chitosan films was investigated in vitro. The potential of chitosan, gelatin, and gelatin-chitosan complex materials for controlling the proliferation of vascular smooth muscle cells (VSMC) was also evaluated. Material films were seeded with VSMC for culture up to 7 d. In 1 and 5 d culture, phase contrast microscopic images of the cells on each surface were digitally captured. Cell growth was evaluated by the MTT assay at 24, 72 and 120 h. The results indicate that all materials were biocompatible with VSMC and VSMC proliferation increased when the DD of chitosan films increased. In conclusion, DD plays a profound role in VSMC cell adhesion and proliferation.

### 关键词

壳聚糖(Chitosan); 脱乙酰度(Degree of deacetylation); 细胞外基质蛋白(Extracellular matrix proteins); 血管平滑肌细胞(Vascular smooth muscle cell); 明胶(Gelatin)