



成骨细胞在两种胶原支架材料上的生长特征

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Growth of Osteoblasts Following Culture on Two Collagen Scaffolds

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摘要

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摘要 目的 探讨成骨细胞在两种可吸收胶原膜上的生长特征, 对比成骨细胞在两种材料内部的黏附、迁移和增殖。方法 将MC3T3-E1成骨细胞系以一定密度接种于BME-10X[®]和Bio-Gide[®]胶原膜, 于体外共培养, 光镜下观察细胞在两种材料的附着和迁移范围, CCK-8试剂盒检测细胞增殖, 扫描电镜观察细胞与材料黏附的超微结构。结果 MC3T3-E1成骨细胞在两种材料上均能黏附、迁移、增殖, 细胞在BME-10X[®]膜有孔层和无孔层表面的增殖差异无统计学意义 ($P>0.05$), 在Bio-Gide[®]膜疏松层和致密层的增殖差异具有统计学意义 ($P<0.05$)。结论 BME-10X[®]和Bio-Gide[®]胶原膜均有良好的生物相容性, Bio-Gide[®]膜的双层结构可阻止细胞向致密层生长。

关键词: 成骨细胞 生物相容性 引导组织再生 牙周组织工程

Abstract: Objective To explore the growth of osteoblasts following culture on two absorbable collagen scaffolds. Methods MC3T3-E1 osteoblast cell line was inoculated on two collagen scaffolds (BME-10X[®] and Bio-Gide[®]) and co-cultured in vitro. The adhesion and migration of cells were detected by optical microscope. Cell proliferation was detected using CCK-8 reagent kit. The ultrastructure of the adhesion between cells and scaffolds were observed using electronic microscopy. Results MC3T3-E1 osteoblast cell line could adhere, migrate, and proliferate on both two membranes. The proliferation of cells showed no significant difference between porous layer and nonporous layer of BME-10X[®] ($P>0.05$), while the rate of proliferation was significantly different between loose layer and dense layer of Bio-Gide[®] ($P<0.05$). Conclusion Both BME-10X[®] and Bio-Gide[®] have good biocompatibility with MC3T3-E1 osteoblast cell line, and the double-layer structure of Bio-Gide[®] can prevent the cells to grow into the dense layer.

Keywords: osteoblasts biocompatibility guided tissue regeneration periodontal tissue engineering

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