

拉伸作用对成骨细胞粘附、铺展、粘弹性的影响

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采用四点弯曲梁实验装置(自行研制)对离体培养的大鼠成骨细胞,施以拉伸应变影响,通过微管吸吮系统、显微摄录、计算机图像系统了解细胞的粘附、铺展行为和细胞的粘弹性变化,认识细胞形态、粘附力及变形性对机械刺激的反应。发现(1)机械拉伸2h成骨细胞与基底粘附力以及细胞单位面积粘附力较对照组明显升高,但加载后期与对照无明显差异;(2)成骨细胞粘弹性较对照组略低;(3)加载24h(500 $\mu\epsilon$)实验组细胞增殖比对照组快。机械拉伸有利于成骨细胞生长,并可通过粘附、铺展调整、削减应变影响。

THE EFFECTS OF THE MECHANICAL STRAIN ON THE ADHESION AND PROJECTIVE AREA AND VISCO-ELASTICITY OF OSTEOBLAST

A four point bending setup was employed to study the response of culture osteoblasts' morphology, adhesion force between the cells and attached surface, and the cellular deformability to mechanical stretch. The osteoblasts from young rats were cultured on a flexible board which might be bent so that the cells were stretched. The morphological parameters were obtained using a microscope-image system. The adhesion force and deformability of the cells was measured by micropipette-aspirating system. The results were shown as follows: (1) After stretched for two hours, the adhesion force and adhesion force per unit area are higher than control group, but no distinct change was observed if stretched for more hours as compared with control. (2) Visco-elasticity of the osteoblast is lower than the control group. (3) The proliferation of the cells is faster than the control after stretched for 24 hours.

关键词

成骨细胞(Osteoblasts); 应变(Strain); 细胞粘附(Cellular Adhesion and Spread); 粘弹性(Visco-elasticity); 生长(Proliferation)