

題名:Effects of static magnetic fields on proliferation and differentiation of osteoblast-like cells

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摘要:The aim of this study was to test the differentiative effects of osteoblasts after treatment with a static magnetic field (SMF). MG63 osteoblast-like cells were exposed to a 0.4-T SMF. The differentiation markers were assessed by observing the changes in alkaline phosphatase activity and electron microscopy images. Membrane fluidity was used to evaluate alterations in the biophysical properties of the cellular membranes after the SMF simulation. Our results show that SMF exposure increases alkaline phosphatase activity and extracellular matrix release in MG63 cells. On the other hand, MG63 cells exposed to a 0.4-T SMF exhibited a significant increase in fluorescence anisotropy at 6 h, with a significant reduction in the proliferation effects of growth factors noted at 24 h. Based on these findings, the authors suggest that one of the possible mechanisms that SMF affects osteoblastic maturation is by increasing the membrane rigidity and reducing the proliferation-promoting effects of growth factors at the membrane domain.