조골세포에서 인슐린 수용체의 세포핵으로의 이동과 타이로신 인산화

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Insulin induces nuclear translocation of insulin receptor and tyrosine phosphorylation of nuclear proteins in osteoblast

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In the present study, we explored to determine if insulin has any effect on the nuclear translocation of insulin receptor and tyrosine phosphoryaltion of nuclear proteins in the UMR-106 cells. Significant amount of insulin receptors and IRS-1 proteins were detected in the nucleus. IRS-1 and PI_3-Kinase appeared to translocate to the nucleus in a time dependent manner. Tyrosine phosphorylation of a number of proteins including 180 KDa, 85 KDa protein in the nucleus was significantly stimulated by insulin, suggesting IRS-1 and PI_3-Kinase was activated in the nucleus by insulin treatment. In addition, p70 S6 Kinase, a downstream target of PI_3-Kinase was transiently appeared in the nucleus by insulin and its activity was stimulated by insulin. These results suggest that the insulin signaling system containing insulin receptor, IRS-1, PI_3-Kinase and p70 S6 Kinase operates in the nucleus of osteoblast cells. The nuclear insulin-mediated tyrosine phosphorylation may play an essential role in the gene expression, differentiation and growth of osteoblast cells.