

EFFECT OF NICOTINE AND ESTROGEN ON INTERLEUKIN-6 RELEASE FROM OSTEOBLASTS

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Smoking may interfere with the effects of estrogen leading to increases in bone resorptive cytokines such as interleukin-6 (IL-6). Our present study investigates the effect of nicotine and 17 β estradiol on IL-6 production by mice calvaria osteoblasts. Osteoblastic enriched cells were isolated by sequential collagenase digestion of neonatal mouse calvaria. A specific immunoassay for IL-6 was used to measure the cytokine levels in the media after 24 hours of incubation of the cells with these agents. ANOVA and Fisher's protected multiple comparison were utilized for statistical analyses. It was found that nicotine concentrations of 100 μ g/ml significantly increased ($P=0.0001$) IL-6 release by osteoblasts compared to negative controls. On the other hand, 17 β estradiol at concentrations of 10^{-7} M inhibited significantly ($P=0.0001$) IL-6 release compared to negative controls. In conclusion, these results suggest that nicotine and estradiol have opposing effects on IL-6 production by osteoblastic cells. These effects may explain, in part, the observation of diminished benefit of hormone replacement therapy on bone loss in postmenopausal women who smoke.

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