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**“The Effects of Native and Synthetic Estrogenic Compounds as well as Vitamin D Less-calcemic Analogs on Adipocytes Content in Rat Bone Marrow”**

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**Abstract**

**Background:** We demonstrated previously that phytoestrogens and vitamin D analogs like estradiol-17beta ( $E_2$ ) modulate bone morphology in rat female model. Aim: We now analyze the effects of phytoestrogens,  $E_2$ , SERMs and the lesscalcemic analogs of vitamin D: JKF1624F2-2 (JKF) or QW1624F2-2 (QW) on fat content in bone marrow (BM) from long bones in ovariectomized female rats (OVX).

**Materials and Methods:** OVX rats were injected with treatments known to affect bone formation, 5 days per week for 2.5 month for analysis of fat content in BM.

**Results:** In OVX young adults there is a decreased bone formation and a 10 folds increase in fat cells content in BM. Treatment with  $E_2$ , raloxifene (Ral) or Femarelle (DT56a) resulted in almost completely abolishment of fat cells content. Daidzein (D) decreased fat cells content by 80%, genistein (G) or biochainin A (BA) did not change fat cells content and carboxy BA (cBA) had a small but significant effect. JKF or QW did not affect fat cells content, whereas combined treatment of JKF or QW with  $E_2$  resulted in complete abolishment of fat cells content. These changes in fat cells content are inversely correlated with changes in bone formation.

**Conclusions:** Our results demonstrate that adipogenesis induced by OVX is a reversible process corrected by hormonal treatments. The awareness of a relationship between fat and bone at the marrow level might provide a better understanding of the pathophysiology of bone-loss as well as a novel approach to diagnosis and treatment of post-menopausal osteoporosis.