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레반과 저칼슘식이가 난소적출로 골다공증을 유발한 흰쥐에 미치는 영향

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Aging is characterized by an age-dependent reduction in bone density. When the bone density is reduced to the level below the fracture threshold, the risk for fracture is greatly increased. The purpose of the present study is to examine what are the effects of the intake of low calcium and levan, high molecular weight fructose polymer, on the aged ovariectomized rat model of postmenopausal osteoporosis. The effects of ovariectomy (OVX) and fructan substitution on food intake, weight gain, and lumen pH, short-chain fatty acid production, mineral absorption, and osteoporosis were studied in three groups of rats: (1) Sham-operated rats ($N = 6$), (2) ovariectomized rats (OVX) ($N = 6$), (3) OVX rats supplemented with fructan (OVX + fructan) ($N = 6$). All of three groups were fed the low level of Ca (0.24%) and sacrificed at 6- and 12-week study periods. OVX was associated with an increase in body weight gain during a 12 weeks compared to sham-operated rats. In the cecum, fructan group showed higher wall and contents weight and lower pH than those of other groups, whereas organs (liver, spleen, kidney) weight did not differ in all groups. The level of serum alkaline phosphatase (ALP) activity in the fructan group was lower at 6 weeks in comparison with OVX-group, but slightly higher at 12 weeks. The levels of serum calcium and phosphorus in all groups were similar. The trabecular content and density were reduced by the ovariectomy and intake of low calcium diet. In fructan and sham groups, the trabecular content and density were higher than those of OVX-group, indicating that fructan might be the putative candidature for the prevention of bone loss.

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Mechanism of Hypocholesterolemic Effects of Green Tea Based on Cholesterol 7 α -hydroxylase Induction

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The present study was performed to identify the effects of green tea on cholesterol metabolism. Male Sprague-Dawley rats ($n=20$) were fed diets AIN-76 diet (control) or containing 4% green tea powder, 1.0% green tea catechin, or 0.5% epigallocatechin gallate (EGCG) for 7 weeks; 0.5% cholesterol was added to all diets. Body weight gain and food efficiency were unaffected by diets. Rats fed 4% green tea powder, 1.0% green tea catechin, or 0.5% EGCG diets showed significantly lower serum and liver cholesterol levels compared with the controls ($P<0.05$). The green tea catechin or EGCG diet up-regulated by 5 times the activity of cholesterol 7 α -hydroxylase (CYP7A1). Hepatic CYP7A1 mRNA level paralleled the increases in enzyme activity. These results suggest that the hypocholesterolemic effects of green tea may be due to the enhancement of CYP7A1 gene expression.