



Effect of Astragalus polysaccharides on ovariectomy-induced osteoporosis in mice

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ABSTRACT. Postmenopausal osteoporosis, a common type of osteoporosis in women, has become a serious public health issue. Astragalus polysaccharides (APS), possessing various pharmacological activities, are the active ingredients of Radix Astragali. It can be advantageous in the treatment of postmenopausal osteoporosis. In the present study, we evaluated the potential therapeutic effects of APS on postmenopausal osteoporosis by using a mice model induced by ovariectomy (OVX). Forty-eight female 6-week-old outbred ICR mice were randomly divided into six groups (N = 8): Sham group, OVX group, 17 β -estradiol (E2, 0.1 mg/kg)-treated OVX group, and APS (at three doses: 100, 200, and 400 mg/kg)-treated OVX groups. The effect of APS on the bone mineral density (BMD) was determined using dual-energy X-ray absorptiometry. The serum levels of receptor activator of nuclear factor kappa-B ligand (RANKL), osteoprotegerin (OPG), osteocalcin, and tumor necrosis factor (TNF)- α were measured using ELISA kits. The results revealed that APS exerted significant anti-osteoporotic activity by increasing the BMD considerably in a dose-dependent manner. APS treatment reduced the serum RANKL levels

considerably and increased the serum OPG levels, thereby lowering the ratio of RANKL/OPG. Furthermore, APS also markedly reduced osteocalcin and TNF- α concentration in OVX-induced postmenopausal osteoporosis mice model. These results showed that APS exerts a protective effect on bone loss in OVX mice. The molecular mechanism underlying this effect be the reduction of bone resorption and inhibition of osteoclastogenesis. Our findings suggest that APS may be a potential strategy for the prevention and treatment of postmenopausal osteoporosis.

Key words: Osteoporosis; Astragalus polysaccharides; Osteoprotegerin; Receptor activator of nuclear factor kappa-B ligand