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The role of irisin in postmenopausal osteoporosis

Luo Yunyao

Sichuan University, China

Osteoporosis is a major healthcare burden that affects mainly postmenopausal women and is characterized by compromised bone strength and increased risk of fragility fracture. Exercise has a positive effect on prevention of postmenopausal osteoporosis fractures. Irisin, a novel myokine that was first reported in 2012, has been proposed to mediate the beneficial metabolic effects of exercise on bone tissue. Some studies have shown that irisin can promote osteoblast proliferation and differentiation, inhibit osteoclast differentiation and increase bone mass. This study aims to evaluate the effects of irisin on bones of ovariectomized (OVX) mice, to explore a possible treatment for postmenopausal osteoporosis. Thirty-six mice were randomly assigned to three groups: OVX with r-irisin, OVX with saline and sham with saline. After 5 weeks of injection, they were sacrificed, and the trabecular bone structure of the femur, bone strength of the tibia and serum parameters were assessed. Treatment with r-irisin prevented trabecular bone loss and enhanced bone strength in the bone metaphysis of the OVX mice. The r-irisin-treated OVX mice exhibited a significant increase in bone mineral density, bone volume to tissue volume ratio, connection density, and trabecular number compared to those of the saline-treated OVX mice, which showed increased bone stiffness. Consistently, OVX mice treated with r-irisin showed decreased bone resorption markers such as osteoclasts and increased osteogenic markers such as osteoblasts. Moreover, r-irisin treatment significantly increased serum osteocalcin levels compared to saline-treated OVX mice. Therefore, our study extended the understanding of the role of irisin in bone metabolism and revealed the possibility of therapeutic application of irisin for postmenopausal osteoporosis.

Biography

Luo yunyao has been learning a PhD in Gynecology and has been a member of the Joint Laboratory for Reproductive Medicine of Sichuan University–The Chinese University of Hong Kong since 2016. She mainly studies various female infertility, reproductive endocrine diseases including: menstrual disorders, amenorrhea, polycystic ovary syndrome, menopause and menopausal syndrome, abnormal sexual differentiation, children gynecological diseases. Her current research is focus on the osteoporosis in postmenopausal women and in order to search for the specific protein for therapeutic application of in postmenopausal osteoporosis.

595255749@qq.com