ANTIOXIDANT ACTIVITY AND INHIBITORY EFFECT ON THE DIFFERENTIATION OF OSTEOCLAST USING ONION DRINK

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Osteoporosis is an epidemically degenerative disease. Decreasing of bone mineral density (BMD) is associated with the elevation of oxidative stress. Onion, containing high levels of quercetin and its derivatives, was thought effective to bone metabolism. This study was focused on the effects of squeezed onion juice on the improvement of osteoporosis and antioxidation.

Human study was a randomized, placebo-controlled and double blind design. 24 subjects were involved in two groups respectively. Each subject took 100 mL of onion drink or placebo drink every day. One week before trial was run in period. Trial period was eight weeks and two weeks after trial were follow-up period. Anthropometric measurements and blood collection were obtained at initial, 2nd, 6th, 8th, and 10th week. BMD of postmenopausal female subjects were measured at initial and 8th week.

Invitro study, the differentiation of macrophage cell RAW 264.7 into osteoclasts induced by RANKL was used to evaluate the effect of onion juice. After eight weeks of intervention, use of onion juice decreased the activity of alkaline phosphatase and increased antioxidant activity and contents of GSH in plasma. BMD was found well improved. In vitro study showed that onion juice significantly decreased the formation of osteoclasts during differentiation. Removal of the phenolics in onion juice clearly showed that the phenolics of onion drink played an important role in inhibiting the differentiation.

In conclusion, onion drink showed clear antioxidation and improvement on osteoporosis.