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AGE-RELATED BONE LOSS: POSSIBLE PROTECTION OR DELAY BY BLACKCURRANTS

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Although several animal and cell studies have indicated that blackcurrant anthocyanins exert anti-oxidative and anti-inflammatory properties, which could potentially improve bone mass, the effect of blackcurrant on bone health has not been reported yet. Thus, this study was aimed to evaluate the effect of blackcurrant anthocyanins on bone mass in an estrogen deficiency mouse model. Fourteen-week old C57BL/6J mice (n=54) were ovariectomized or sham operated. The ovariectomized mice were divided into two groups, basal diet (OVX) or basal diet with 1% anthocyanin rich blackcurrant extract (OVX+BC) and sacrificed at 4, 8, and 12 weeks. Femoral bone mineral density (BMD) and trabecular bone volume (TBV) by DXA and micro-CT respectively and serum bone markers were measured. Ovariectomy significantly reduced BMD and TBV at all-time points ($p<0.05$). Blackcurrant supplementation attenuated ovariectomy induced bone loss measured by BMD and TBV at 8 weeks ($p=0.055$ and $p=0.057$) and the effect was more pronounced at 12 weeks ($p=0.053$ and $p<0.05$). Ovariectomy and blackcurrant treatment did not alter serum biomarkers of bone formation and resorption. Bone marrow cells extracted from OVX mice significantly induced osteoclast like cell (OCL) formation compared to cells from sham controls ($P<0.05$). Blackcurrant treatment decreased the number of TRAP (+) OCL compared with OVX mice at 8 and 12 weeks ($P<0.05$). Furthermore, blackcurrant supplementation reduced bone resorption activity when measured by resorption pit assay, compared with OVX group ($P<0.05$). These results demonstrate that blackcurrant may be effective in mitigating osteoclast - induced postmenopausal bone loss.

Biography

Ock K Chun is an Associate Professor of Nutritional Sciences at the University of Connecticut. She received Postdoctoral training at Cornell University (2002-2003) and Michigan State University (2003-2006). She received a PhD in Public Health from the Seoul National University, Seoul, South Korea in 1999. She completed her B A in Food and Nutrition in Seoul National University, Seoul, South Korea in 1988. She is serving as an Editorial board member of reputed journals and reviewer of 10 journals. In 2008 she became Assistant Professor in the Department of Nutritional Sciences at the University of Connecticut and Associate Professor in 2014.

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