*SWACSM Abstract*

# The Effect of Quercetin on Bone Turnover Markers, Inflammatory Markers, and Bone Mineral Density in Postmenopausal Women: A Double-Blind Placebo-Controlled Investigation

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ABSTRACT

Maintaining optimal bone health prevents major bone disorders (e.g., osteoporosis) and prolongs longevity. Quercetin is a plant-based flavonoid that is suggested to have anti-inflammatory effects and may improve bone health. **PURPOSE**: To investigate the effects of quercetin supplementation over 90-days on prominent bone turnover markers (BTMs), inflammatory markers, bone mineral density (BMD), body composition, and physical functioning in postmenopausal women. **METHODS**: Thirty-three healthy, nonosteoporotic, postmenopausal women (59.2±7.0 years) participated in a double-blind, placebo-controlled investigation. Participants were randomized into one of two supplement groups: 1) 500 mg of quercetin (QUE) once daily or 2) 500 mg of methylcellulose (placebo; PLB) once daily. Pre- and post-testing visits included assessments of BTMs (i.e., osteocalcin [OC], procollagen type-I N-terminal propeptide [PINP], and type-I collagen cross-linked C-terminal telopeptide [CTX]), inflammatory markers (i.e., interleukin [IL]-6, tumor necrosis factor-alpha [TNF-$\alpha$], and C-reactive protein [CRP]), BMD measurements, body composition measurements (i.e., body fat percentage), and physical function. **RESULTS**: The QUE group increased OC (p=0.016; *d*=0.89), PINP (p=0.030; *d*=0.64), and CTX (p=0.023; *d*=0.91) levels and decreased IL-6 (p=0.045; *d*=0.73) and TNF-$\alpha$ (p=0.021; *d*=0.90) levels compared to PLB. CRP (p=0.448; *d*=0.34), BMD, body composition, and physical function remained unchanged. **CONCLUSION**: The results indicate that QUE may maintain optimal bone health by mediating bone formation and decreasing pro-inflammatory cytokines.