

Title: PRUNES PRESERVE HIP BONE MINERAL DENSITY AND FRAX RISK IN A 12-MONTH RANDOMIZED CONTROLLED TRIAL IN POSTMENOPAUSAL WOMEN: THE PRUNE STUDY

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Abstract

Dietary consumption of prunes has favorable impacts on bone health, however, more research is necessary to improve upon study designs and refine our understandings.

Objective: Evaluate the effects of prunes (50g and 100g/day) on bone mineral density (BMD) in postmenopausal women during a 12-month dietary intervention. Secondary outcomes include effects on serum bone biomarkers.

Materials and Methods: Single center, parallel arm 12-month randomized controlled trial (RCT; NCT02822378) to test effects of 50g and 100g/day prunes vs. a Control group on BMD (dual-energy X-ray absorptiometry) (every 6 months) and bone biomarkers in postmenopausal women with a BMD T-score of <0.0 and >-3.0 at any site.

Results: 235 women (age 62.1±5.0yr) were randomized into Control (n=78), 50g Prune (n=79), or 100g Prune (n=78) groups. Compliance was 90.2±1.8% and 87.1±2.1% in the 50g and 100g Prune groups. Dropout was 22%; however, the dropout rate was 41% for the 100g Prune group compared to other groups (10% Control; 15% 50g Prune; (p<0.001)). A group×time interaction for total hip BMD was observed in Control vs 50g Prune groups (p=0.030), but not in Control vs 100g Prune groups (p=0.194). Total hip BMD decreased in the Control group at 6 and 12-month/post timepoints compared to baseline (both p<0.05), while the 50g Prune group preserved BMD at 6 and 12 months timepoints. While FRAX hip fracture risk worsened in the Control group at 6 months, FRAX score was maintained in the pooled (50g+100g) Prune groups.

Conclusions: A 50g dose of daily dose of prunes can prevent loss of total hip BMD and prevent increased hip fracture risk in postmenopausal women after just six months, which persisted to 12-months. Given that there was high compliance and retention at the 50g dosage over 12 months, we propose that the 50g dose represents a valuable non-pharmacological treatment strategy that can be used to preserve hip BMD in postmenopausal women and possibly reduce hip fracture risk.

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