

Low Dose Daily Prunes Preserve Hip Bone Mineral Density With No Impact on Body Composition in a 12-Month Randomized Controlled Trial in Postmenopausal Women: The Prune Study

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Objectives: Dietary consumption of prunes has favorable impacts on bone health, however, more research is necessary to improve upon study designs and refine our understandings and determine whether unfavorable fat gain occurs with long-term treatment. *Objectives:* 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 body composition.

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 body composition in postmenopausal women with a BMD T-score of < 0.0 and >−3.0 at any site.

Results: 235 women (age 62.1 ± 5.0 yr) were randomized into Control (n = 78), 50 g Prune (n = 79), or 100 g Prune (n = 78) groups. Compliance was $90.2 \pm 1.8\%$ and $87.1 \pm 2.1\%$ in the 50 g and 100 g Prune groups. Dropout was 22%; however, the dropout rate was 41% for the 100 g Prune group compared to other groups (10% Control; 15% 50 g Prune; ($p < 0.001$)). A group \times time interaction for total hip BMD was observed in Control vs 50 g Prune groups ($p = 0.030$), but not in Control vs 100 g Prune groups ($p = 0.194$). Prune consumption did not affect body mass in 50 g prune ($p = 0.837$) or 100 g prune ($p = 0.121$) groups compared to Control. A group \times time interaction for fat mass was observed in Control vs 100 g Prune groups ($p = 0.031$), but not in Control vs 50 g Prune groups ($p = 0.792$).

Conclusions: A 50 g dose of daily dose of prunes can prevent loss of total hip BMD in postmenopausal women, without increased fat mass seen with the larger dose. Given that there was high compliance and retention at the 50 g dosage over 12 months, we propose that the 50 g dose represents a valuable non-pharmacological treatment strategy that can be used to preserve hip BMD in postmenopausal women, without increasing body or fat mass.

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