Raisins And Blood Pressure: A Randomized, Controlled Trial
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Abstract: “The CAMELOT study supported the cardiovascular benefits of mildly reducing blood pressure (BP) in borderline hypertensive patients. Raisins are high in potassium content, and have fiber, polyphenols, phenolic acid, tannins, and antioxidants which may help account for their often-cited, yet unproven BP lowering effects.”

Background

In the 2 year CAMELOT study, baseline BP was 129±78 mm/Hg. At study end, BP increased 0.70±6.0 mm/Hg with placebo group, decreased 4.8±2.5 mm/Hg with amlodipine, and decreased 4.9±2.4 mm/Hg with enalapril. Both amlodipine and enalapril reduced cardiovascular events, with amlodipine significantly so. [1]

Raisins are higher in potassium than the common comparator snacks used in this study.

Methods

Abstract: “This 12 week randomized controlled study compared the BP effects of 3 times a day raisins versus equicaloric alternative snacks in 46 men and women with pre-hypertension.”

Inclusion Criteria at screening:
- Generally health men/women > 18 years
- Blood pressure <160 and < 120 mmHg systolic or <100 and > 80 mmHg diastolic
- Body mass index (BMI): 25.0 to 34.9 kg/m².

Exclusion Criteria at screening:
- Potassium above upper range of normal
- Creatinine level > 1.5 times the upper range of normal.

Results

Abstract: “Baseline mean systolic BP (SBP) was 133 mm/Hg; mean diastolic BP (DBP) was 82 mm/Hg. Compared to snacks, raisins significantly reduced SBP at weeks 4, 8, and 12, ranging from -4.8 to -7.2% or -6.0 to -10.2 mmHg (p values <0.05). Within group analysis demonstrated raisins significantly reduced SBP at all study visits, with changes ranging from -4.8 to -8.2 mmHg (p values < 0.05). Compared to snacks, raisins reduced mean DBP at all study visits with changes ranging from -2.5 to -6.4% or -2.6 to -5.0 mmHg; none of these differences were statistically significant. Within group analysis demonstrated raisins significantly reduced mean DBP at all study visits, with changes ranging from -2.4 to -5.2 mmHg (p values < 0.05). Snacks did not significantly reduce SBP or DBP at any study visit.”

Conclusions

Abstract: “Routine consumption of raisins 3 times a day may significantly lower blood pressure, especially when compared to common alternative equicaloric snacks.”

References


Study Design

Baseline Demographics

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Baseline blood pressure at randomization

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<td>Systolic blood pressure (mm/Hg)</td>
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<td>Diastolic blood pressure (mm/Hg)</td>
<td>134.84</td>
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Funding and disclosures

Funding: This study was funded by the California Raisin Marketing Board (CRMB).

Disclosures: Harold Bays, Kathy Schmitz, Amber Christian, and Michelle Ritchey serve in clinical research at L-MARC Research Center, which received a grant from the CRMB to conduct the study. Harold Bays MD has served as a consultant, advisor and speaker for pharmaceutical companies. James Anderson MD serves as a consultant to the CRMB, and as an advisor to nutraceutical companies.