

Abstract

Short-Term Effects of Fruit Juice Enriched with Vitamin D3, n-3 PUFA, and Probiotics on Subjective Appetite and Blood Pressure: A Randomized Controlled Clinical Trial in Healthy Adults [†]

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Abstract: Introduction: Mixed fruit juices (FJ) may have several benefits on subjective appetite. They may curb hunger and provide sustained energy throughout the day. This study aimed to determine the effects of consuming a mixed commercial FJ (apple, orange, grape, pomegranate; FJ-control) and the same FJ fortified either with 2 probiotics strains (108 cfu/mL *Lactocaseibacillus casei* Shirota and *Lactocaseibacillus rhamnosus* GG), 50 µg vitamin D3, 8.33 g n-3 polyunsaturated fatty acids, or with the combination of all of these biofunctional ingredients (vitamin-D3-n-3-probiotics), on subjective appetite and blood pressure (BP). Methods: Clinically healthy volunteers participated in this randomized, double-blind, crossover, controlled trial. In total, 11 healthy and normotensive volunteers (25 ± 2 years; 6 males; BMI = 23 ± 1 kg/m²) were randomly assigned to receive the 5 types of FJs, all containing 50 g available carbohydrates. Participants rated their hunger, desire to eat, perceived fullness, thirst, preoccupation with food, and pleasure of eating on visual analog scales (VAS) at baseline and up to 180 min after consumption of each test FJ. BP was measured at the beginning and end of each drink test session. Results: The FJ with vitamin-D3 significantly increased hunger compared with the FJ-control. The FJ with vitamin-D3 significantly increased desire for food compared to the FJ with n-3, FJ combination, and FJ-control. The FJ with n-3 significantly increased fullness compared to the FJ with vitamin-D3 and the FJ with probiotics. The FJ with vitamin D3 significantly increased thirst compared to the FJ combination, n-3, probiotics, and FJ-control. All FJs were pleasurable. The FJ with vitamin-D3 and n-3 significantly increased systolic BP compared to the other FJs, without differences between the other FJs. The FJ with vitamin-D3 significantly increased diastolic BP, without differences between the other FJs. Discussion: FJs affected subjective satiety and BP acutely. Consumption of the FJ with vitamin-D3 increased systolic and diastolic BP, hunger, desire to eat, and thirst acutely; whereas consumption of the FJ with n-3 increased systolic BP and fullness acutely. All these effects were observed when these biofunctional ingredients were consumed alone, but not when ingested in combination (FJ with vitamin-D3, n-3, and probiotics), which needs to be further investigated.

Keywords: fruit juice; vitamin D3; n-3 PUFA; probiotics; subjective appetite



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