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The acute effects of tart cherry juice on uric acid and markers of cardiovascular disease risk in healthy individuals: a cross-over randomised controlled trial

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Cherries are high in polyphenolic compounds purported to exert anti-inflammatory and urate-lowering effects[(1)]. Studies have reported beneficial acute effects of cherry juice[(2)] or cherries[(3)] on urate metabolism and markers of inflammation. However, these studies failed to include a control group, so their conclusions need to be interpreted cautiously. The aim of this study was to investigate the acute effects of a serving of tart cherry juice on serum uric acid (sUA), urinary urate, c-reactive protein (CRP), blood pressure (BP), and arterial stiffness, when compared to a water control. In a randomised, open-label, cross-over study, 12 healthy adults (7 males) who were non-smokers (age 41 (SD 11.1) y, BMI 26.4 (SD 4.3) kg/m^2) consumed 250 mL tart cherry juice (30 mL Montmorency tart cherry concentrate diluted with 220 mL water) and a water control (250 mL) at least 7 days apart; order of consumption was random. Participants followed a low-phenol diet for 48 hours before each visit and throughout each 24-hour measurement period. High-intensity physical activity was avoided for 3 days before each visit. Measures of sUA, urinary urate and creatinine (colorimetric assays), serum CRP (ELISA), central and brachial BP, augmentation index (AIx), and pulse wave velocity ([PWV] Vicorder®) were taken at baseline and over 5 hours post-drink consumption. Participants fasted during this time. Follow-up measurements were taken after 24 hours. Percentage change from baseline was calculated for each timepoint and differences between drink interventions were assessed using two-way repeated measures analysis of variance.There were statistically significant fluctuations in sUA ($F_{5,55} = 3.529$, $p = 0.008$, $\eta p^2 = 0.243$), CRP ($F_{2,22} = 4.488$, $p = 0.023$, $\eta p^2 = 0.290$), brachial systolic BP ($F_{5,55} = 5.360$, $p < 0.001$, $\eta p^2 = 0.328$), brachial diastolic BP ($F_{5,55} = 5.908$, $p < 0.001$, $\eta p^2 = 0.349$), central systolic BP ($F_{5,55} = 3.403$, $p = 0.009$, $\eta p^2 = 0.236$), central diastolic BP ($F_{5,55} = 5.908$, $p < 0.001$, $\eta p^2 = 0.349$), and creatinine-adjusted urinary urate ($F_{4,44} = 11.656$, $p < 0.001$, $\eta p^2 = 0.514$) over the measurement period. However, there were no statistically significant main effects of drink type or drink by time interactions for any of these variables (all $p > 0.05$). PWV and AIx were not significantly altered over time or by the intervention (all $p > 0.05$). In conclusion, compared with a water control, the consumption of a single serving of tart cherry juice did not alter uric acid, CRP, or markers of vascular function in healthy adults. There were statistically significant changes in BP, markers of urate metabolism and inflammation over the 24-hour measurement period. These diurnal fluctuations must be considered when interpreting the results of previous uncontrolled studies that reported beneficial effects of cherry consumption.

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