The Effect of Tart Cherry Juice Blend on Reducing Eccentric Exercise-Induced Muscle Soreness

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Tart cherries contain a high level of phytonutrients purported to have antioxidant and anti-inflammatory effects. Limited research has investigated their potential to attenuate the symptoms of delayed onset muscle soreness (DOMS) caused by inflammation resulting from strenuous eccentric exercise.

PURPOSE: To assess the effect of tart cherry juice (TCJ) on DOMS by evaluating muscle pain, muscle tenderness, thigh girth, knee range of motion, and quadriceps strength following eccentric exercise.

METHODS: Recreationally active males and females (N=29, Age=25.3±6.9 yrs, Height=1.7±0.1 m, Weight=70.1±9.2 kg, BMI=23.3±1.9 kg/m^2) participated. Baseline data collection measured the right quadriceps muscle for pain, muscle tenderness, thigh girth, passive knee flexion range of motion, and isokinetic knee extension strength. An isokinetic eccentric fatigue protocol of the right quadriceps occurred five days after baseline, and data collection was repeated 24h and 48h post-fatigue. Subjects consumed TCJ or a macronutrient-matched placebo twice per day for the study duration. A two-way mixed ANOVA was utilized to determine differences between groups at 24h and 48h post-fatigue (α=0.05).

RESULTS: Compared to baseline, both groups demonstrated increased pain assessed by a Visual Analog Scale (Baseline: 0.5±0.8mm; 24h: 17.1±17.1mm , $p<0.001$; 48h: 16.2±21.8mm, $p=0.002$), increased muscle tenderness to force (Baseline: 12.1±4.5kg; 24h: 9.0±3.6kg, $p<0.001$; 48h: 9.1±4.3kg, $p<0.001$), and decreased ROM (Baseline: 146.2±7.1°; 48h: 142.7±8.6°, $p=0.004$). No significant between group differences were demonstrated for the dependent variables at 24 or 48h post-fatigue ($p=0.156$-0.636).

CONCLUSIONS: Symptoms of DOMS were elicited in both groups at 24h and 48h post-fatigue. Consistent with previous literature, no differences in muscle tenderness or ROM were noted between TCJ and placebo groups. Although previous research has found that TCJ improved muscle pain and strength compared to placebo, our results showed no significant differences; however, there was a trend for increased strength in the TCJ group at 24h post-fatigue. Future research should further examine the capability of TCJ to suppress symptoms of DOMS following various eccentric fatigue protocols.

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