

Cherry Juice Viewed as Palliation for Sore Muscles

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BURLINGTON, Vt., June 21 — A tart cherry juice blend drunk before and after bouts of strenuous exercise appears to ease the pain of sore muscles, according to a small crossover study.

In light of numerous antioxidant and anti-inflammatory agents identified in tart cherries, a team headed by Declan Connolly, Ph.D., of the University of Vermont here, and colleagues, tested the efficacy of the proprietary cherry-apple juice mix in a randomized, placebo-controlled, crossover study.

In the first phase of the trial, reported online by the *British Journal of Sports Medicine*, 14 male college students drank 12 ounces of a cherry juice blend or a placebo mixture twice a day for eight consecutive days.

The cherry-juice brew was made by mixing freshly prepared tart cherry juice (equivalent to 50 to 60 cherries) with commercial apple juice, the researchers said. The placebo drink was prepared from a mix of unsweetened black-cherry Kool-aid.

On the fourth day, the students performed 40 (2 x 20) maximal eccentric contractions of the elbow flexor, using a modified preacher curl apparatus. Each contraction lasted about three seconds, with a 12-second rest between actions. Isometric elbow flexion strength, pain, muscle tenderness, and relaxed elbow angle were assessed each day before and after exercise.

The protocol in the crossover trial was repeated two weeks later, switching participants from cherry juice to placebo and vice versa. The opposite arm was used in the second phase to avoid the repeated-bout protective effect, the researchers said.

Loss of strength and pain were significantly less in the cherry juice versus the placebo trial (time by treatment: strength $P < 0.001$; pain $P = 0.017$), the researcher reported.

Loss of strength during elbow flexion (averaged across three test angles) over the four days after exercise was 22% for the placebo drinkers versus only 4% for those quaffing cherry juice ($P < 0.0001$), the

researchers said.

Average pain scores, using a verbal rating system, came in at 3.2 for the placebo drinkers and 2.4 for those drinking cherry juice ($P=0.051$). Pain also peaked at 24 hours for the cherry-juice drinkers, but continued to increase for the next 48 hours for the placebo drinkers. In fact, the researchers said, strength even improved 6% above baseline at 96 hours for those drinking cherry juice.

Cherry juice, however, had no effect on range of motion, measured by the relaxed elbow angle, and muscle tenderness (measured by a standard muscle myometer). Results were similar in the two groups, the researchers reported.

"To our knowledge, this is the first study to examine the effect of the consumption of cherries or a cherry product on symptoms of exercise-induced muscle damage," Dr. Connolly wrote.

The lack of effect on muscle tenderness and range of motion indicates that either these symptoms reflect different aspects of the injury response or the measurements were insensitive to real differences in the two drinks.

In explaining the cherry juice's possible mode of action, the researchers wrote that the initial damage response of the exercise contractions is a mechanical disruption of myofibrils and injury to the cell membrane, often leading to a local inflammatory response. Leukotrienes attract neutrophils to the injury site, resulting in free radical production.

It is possible, they said, that the anti-inflammatory and the antioxidant effects of cherry juice mediated the secondary response and avoided the spread of myofibrillar disruption. This possibility could be examined in future work, they suggested.

The results of this study have important practical applications for athletes, as performance after damaging exercise bouts is primarily affected by loss of strength and pain, Dr. Connolly said.

"Consumption of cherry juice is much more convenient than many of the treatments that have been

presented in the literature," the researchers concluded.

The study was funded by Cherrypharm, Inc., of West Hartford, Conn., the company that provided the proprietary ratio for the drink. The authors each acknowledged 2.5% equity in Cherrypharm.

Action Points

Explain to patients who develop pain and loss of strength after a strenuous workout that this small crossover study touts cherry juice, mixed with apple juice, as a palliative brew.

Note that the blended drink described in this small study included the equivalent of 50 to 60 fresh cherries mixed with apple juice.

Primary source: British Journal of Sports Medicine

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Connolly, Declan A. J., et al *British Journal of Sports Medicine* 2006; doi.10.1136/bjism.2005.025429.