

Continued Consumption of Beverage Containing Black Vinegar Reduces Fatigue after Exercise

Confirmed in a human clinical study

ITO EN, LTD. (president: Daisuke Honjo; head office: Shibuya-ku, Tokyo) has confirmed that the continued consumption of black-vinegar-based beverages alleviates fatigue after exercise in a human clinical study. Details of the study results will be presented at the 73rd Annual Meeting of the Japanese Society of Physical Fitness and Sports Medicine in Fukui City on Friday, September 7.

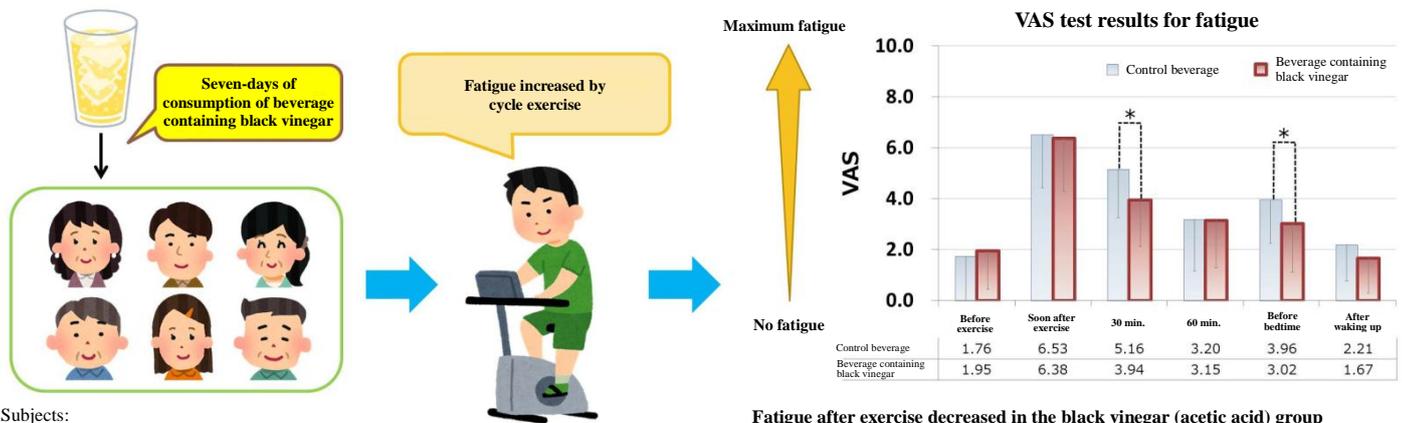
○ Scientific verification of black vinegar’s effect of reducing fatigue

Vinegar, including black vinegar, is a traditional fermented food that is used as seasoning in a wide variety of food. Recently, consumers have become more interested in the health effects of vinegar, enjoying diluted vinegar as a beverage to lessen fatigue in daily life or after exercise. However, it has not been sufficiently scientifically verified whether vinegar can decrease tiredness. ITO EN performed a clinical study using a beverage containing black vinegar to scientifically verify whether the acetic acid in the test beverage (beverage containing black vinegar) effectively alleviated fatigue after exercise.

○ Confirmed reduction of fatigue after exercise following seven continuous days of consumption of a beverage containing black vinegar

Results of the clinical study showed that seven continuous days of consumption of the test beverage significantly reduced fatigue for 30 minutes after exercise and before bedtime compared to the control* beverage (see the figure below). Interestingly, stiff shoulders, one of the endpoints, also decreased before sleep and after waking up on the following day, suggesting a connection to the test beverage.

The amount of acetic acid in the test beverage corresponds to about one tablespoon of black vinegar (approx. 15 cc). Many consumers are expected to easily drink that amount of vinegar and benefit from beverages containing black vinegar to stay healthy. ITO EN will continue to research the mechanism of the confirmed fatigue alleviating effect, elucidate the health effect of beverages containing black vinegar or fruit vinegar and offer a variety of proposals about the consumption of such beverages.



Subjects:
Twenty six healthy men and women between the ages of 30 years old to 45 years old

Fatigue after exercise decreased in the black vinegar (acetic acid) group
 - VAS indicates the degree of subjective symptoms. The scale of symptoms is indicated on the horizontal line.
 - * Significance level: p < 0.05

For inquiries concerning this clinical trial, contact Public Relations, Public Relations Department of ITO EN, Ltd.
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About testing methods

The clinical study was carried out as a randomized, double-blind, crossover, comparative study with the control beverage to evaluate how acetic acids in a vinegar-based beverage affected fatigue after exercise.

Subjects were comprised of 26 healthy men and women between the ages of 30 years old to 45 years old, who had not exercised habitually for the past year, and did not usually consume vinegar-based beverages. The test beverage was prepared using black vinegar with 660 mg of acetic acid per batch. The control beverage was prepared by removing acetic acid from black vinegar and others, decreasing the amount of acetic acid to 60 mg under reduced pressure. Subjects consumed one test beverage or control beverage (200 ml) per day for seven days. On Day 7, subjects underwent an exercise test using a bicycle ergometer. The test investigated how subjects recovered from fatigue on the test day and the following day after the fatigue had been increased.

The Visual Analogue Scale (VAS) was used to assess eight endpoints soon after exercise, 30 minutes after exercise, 60 minutes after exercise, before sleeping on the test day, and after waking up on the following day: fatigue, sluggishness, muscle fatigue in legs, muscle pain in legs, stiffness of shoulders, mental fatigue, exhilaration and vitality.

The study results confirmed that seven days of continued consumption of beverages containing 660 mg of acetic acid reduced fatigue after exercise.

*: Control:

Generally refers to counterfeitdrug. The clinical study used a control beverage with the same appearance and flavor as the test beverage.