

Brief Report

Effects of ingestion of green tea catechin for one week on the energy metabolism during aerobic exercise in middle-aged male runners

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ABSTRACT

【Aim】

The objective of the present study was to assess the effects of ingestion of green tea catechin (GTC) for 1 week on energy metabolism during aerobic exercise in middle-aged male runners.

【Methods】

In a crossover design, 10 middle-aged male runners (age, 52.1 ± 6.2 yr; BMI, 23.2 ± 2.3 kg/m²) were instructed to consume GTC or a control (CON) beverage; the participants were asked to consume either GTC (GTC 637.5 mg/500 mL/day) or CON daily for 6 days prior to the experiment. On the day of the experiment, the participants visited the laboratory after fasting overnight. After a 30-min rest period, the participants were instructed to consume the assigned test beverage within one hour (four divided consumptions every 15 min). Thereafter, they performed cycling exercise at 40% of the ventilatory threshold (VT) (40% VO₂@VT) for 30 min and at 70% VT (70% VO₂@VT) for 30 min. The oxygen uptake and exhaled CO₂ concentration were measured at rest, 15 min after the test beverage was consumed, 28-30 min after the start of the exercise, and 58-60 min after the start of the exercise, by the Douglas-bag method.

【Results】

The respiratory quotient was significantly lower in the GTC trial, as compared to the CON trial, for both exercise at 40% VO₂@VT and that at 70% VO₂@VT ($p < 0.05$). Moreover, the energy expenditure for exercise at 40% VO₂@VT was significantly higher in the GTC trial than in the CON trial ($p < 0.05$).

【Conclusion】

GTC ingestion for 1 week possibly increased the fat oxidation during low intensity exercise, such as walking and jogging in middle-aged male runners.

Keywords: endurance exercise, catechin, supplement, fat oxidation, energy expenditure