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Green tea and vitamin E enhance exercise-induced benefits in body composition, glucose homeostasis, and antioxidant status in elderly men and women

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Objective: To investigate the effects of green tea plus vitamin E in addition to exercise on body composition and metabolic and antioxidant parameters in healthy elderly individuals.

Design: Interventional randomized controlled prospective trial.

Methods: For 12 weeks, 22 elderly men and women (age: 71.1 ± 1.2 years; body mass index: 28.3 ± 0.5 kg/m²) [mean \pm SE] undertook 30 minutes of moderately intense walking 6 d/wk. They were randomly assigned to ingest either green tea plus vitamin E (GTVE; 3 cups and 400 IU, respectively; n=11) or placebo (n=11). Data on anthropometrics, fasting insulin and glucose levels, physical fitness, dietary intake, safety parameters, and biomarkers of oxidation status were recorded and analyzed at the start and end of the study.

Results: Though dietary intake was unchanged, improved exercise capacity was followed by a significant reduction in body weight and fasting insulin levels in all participants. Additional consumption of GTVE resulted in a twofold increase in serum vitamin E (from 20.4 to 40.6 μ mol/L, $p < 0.001$) and a decrease of men's and women's waist circumferences (from 100.8 and 95.7 to 96.9 and 85.0 cm, $p < 0.05$ and $p < 0.01$, respectively) and fasting glucose levels (from 5.30 to 4.98 mmol/L, $p < 0.01$). Plasma protein carbonyls dropped (from 0.93 to 0.77 nmol/mg protein, $p < 0.05$), whereas erythrocyte catalase activities increased (from 26.7 to 29.7 U/g hemoglobin, $p < 0.05$) in the GTVE group only. Oral peroxidase activities were increased in both groups.

Conclusions: A daily dose of GTVE in healthy elderly men and women may improve exercise-induced benefits in body composition and glucose tolerance and may also lower oxidative burden.

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