



# HerbClip™

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**File: ■ Green Tea (*Camellia sinensis*)**  
**■ Hypertension**  
**■ Insulin Resistance**

**HC 061357-485**

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**RE: Green Tea Supplementation Improves Cardiovascular Risk Factors**

Bogdanski P, Suliburska J, Szulinska M, Stepien M, Pupek-Musialik D, Jablecka A. Green tea extract reduces blood pressure, inflammatory biomarkers, and oxidative stress and improves parameters associated with insulin resistance in obese, hypertensive patients. *Nutr Res.* 2012;32(6):421-427.

Obesity, hypertension, oxidative stress, chronic low-grade inflammatory response, endothelial dysfunction in cardiovascular disease, and progression of insulin resistance are all interrelated. Green tea (*Camellia sinensis*) extract and its catechin epigallocatechin-3-gallate (EGCG) have anti-inflammatory and antioxidant effects, which may improve insulin resistance and associated cardiovascular risk factors. Hence, the purpose of this randomized, double-blind, placebo-controlled, parallel-design study was to evaluate the effect of green tea extract on insulin resistance and associated cardiovascular risk factors in obese patients with hypertension.

Patients (n = 56, aged 30-60 years) were recruited from the outpatient clinic at Poznań University of Medical Sciences; Poznań, Poland. The chosen subjects had a body mass index (BMI)  $\geq 30$  kg/m<sup>2</sup>, stable body weight, and well-controlled arterial hypertension (systolic blood pressure [SBP] < 160 mmHg and/or diastolic blood pressure [DBP] < 100 mmHg with stable treatment for  $\geq 6$  months). Patients were excluded for having secondary hypertension; secondary obesity (medical condition that causes weight gain); diabetes; history of coronary artery disease; stroke; congestive heart failure; malignancies; history of use of any dietary supplements within 3 months before the study; current need for modification of antihypertensive therapy; abnormal liver, kidney, or thyroid gland function; clinically significant inflammatory process within respiratory, digestive, or genitourinary tract, or in the oral cavity, pharynx, or paranasal sinuses; history of infection in the month before the study; and nicotine or alcohol abuse.

Patients received placebo or 379 mg green tea extract (containing 208 mg EGCG; Olimp Labs; Dębica, Poland) for 3 months. They were instructed to maintain their current diet and exercise. BMI, waist circumference, blood pressure, and blood samples were taken at baseline and after 3 months of treatment. Blood was analyzed for insulin resistance (homeostasis model assessment of insulin resistance [HOMA-IR]), high-sensitivity C-

reactive protein (hs-CRP), tumor necrosis factor-alpha (TNF- $\alpha$ ), total antioxidant status, total cholesterol, low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, triglycerides (TGs), creatinine, and fasting glucose. Every 14 days and also 3 days before the laboratory tests, dietary intake was determined via dietary intake interviews (24-hour recall).

There were no significant differences between groups at baseline. Compared with baseline, 3 months of treatment with green tea extract significantly reduced SBP ( $P = 0.004$ ), DBP ( $P < 0.001$ ), total cholesterol ( $P = 0.009$ ), LDL cholesterol ( $P = 0.011$ ), TGs ( $P = 0.004$ ), glucose ( $P = 0.016$ ), insulin ( $P < 0.001$ ), HOMA-IR ( $P = 0.009$ ), TNF- $\alpha$  ( $P < 0.001$ ), and CRP ( $P < 0.001$ ), and there were significant increases in HDL cholesterol ( $P < 0.001$ ) and total antioxidant status ( $P < 0.001$ ). In contrast, the placebo group did not have any significant changes compared with baseline. However, when comparing the change from baseline between the 2 treatment groups, there was a significant difference between the green tea group and the placebo group for SBP ( $P < 0.001$ ), DBP ( $P < 0.001$ ), total cholesterol ( $P < 0.001$ ), LDL cholesterol ( $P = 0.022$ ), HDL cholesterol ( $P = 0.023$ ), TGs ( $P < 0.001$ ), insulin ( $P = 0.005$ ), HOMA-IR ( $P = 0.004$ ), TNF- $\alpha$  ( $P < 0.001$ ), CRP ( $P < 0.001$ ), and total antioxidant status ( $P < 0.001$ ). Both BMI and waist circumference did not change significantly during the study.

The authors conclude that 3 months of treatment with green tea extract had significant influence on cardiovascular risk factors such as insulin resistance, blood pressure, inflammation, and oxidative stress in this patient population. The findings of this study are supported by preclinical studies in animals. Additional studies are needed to evaluate the longer-term effects of green tea extract, and a study with a larger number of participants is needed to confirm the findings.

—Heather S. Oliff, PhD

The American Botanical Council has chosen not to include the original article.

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