Protocol Number: 07-AT-0089

Active Accrual, Protocols Recruiting New Patients

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Title:
An Exploratory Study to Evaluate the Ability of Epigallocatechin Gallate to Simultaneously Improve Metabolic and Cardiovascular Actions of Insulin in Healthy, Obese, Hypertensive, or Diabetic Subjects

Number:
07-AT-0089

Summary:
This study will examine whether epigallocatechin gallate (EGCG), a major component of green tea, affects how the body responds to insulin in healthy and obese people, people with high blood pressure (HBP), and people with type 2 diabetes. Insulin is not as effective in people who are overweight, have HBP or diabetes. This condition is known as insulin resistance. Laboratory studies suggest that green tea or EGCG treatment lowers blood pressure, lowers blood sugar and increases blood flow. This study will see if EGCG improves insulin resistance or insulin's effects on blood flow in people with insulin resistance.

Healthy normal weight or overweight people, people with HBP and people with type 2 diabetes between 21 and 65 years of age may be eligible for this study. Participants are randomly assigned to take EGCG or a placebo (inactive dummy pill) in two 4-week treatment phases with a 2-week period of no study medication before each treatment phase. After the first 4-week treatment, patients on placebo are switched to EGCG and those on EGCG are switched to placebo. In addition to treatment, participants undergo the following procedures during the study period:

-Screening, including medical history, physical examination and blood and urine tests, and finger-stick blood sugar measurement for patients with diabetes

-Complete a dietary and physical activity questionnaire and consult with a dietitian

-Blood and urine tests

-At-home and clinic blood pressure monitoring

-Blood sugar checks for patients with diabetes

-Glucose clamp test to measure how the body responds to insulin. This test is done three times during the study. A needle is placed in a vein in each of the subject's arms, one for sampling blood and the other for infusing insulin, glucose and potassium. Glucose and insulin levels, electrolytes, lipids, fatty acids, cytokines and

epicatechin are measured.

-Forearm blood flow measurement with microbubbles and ultrasound. Before beginning the glucose clamp test, a test of how well the blood vessels relax is done. A device that measures the size of the artery in the upper arm is placed above the elbow. Blood flow in the muscle of the forearm is measured by ultrasound using a small infusion through a vein of microbubble contrast agent consisting of gas-filled bubbles the size of red blood cells. The contrast agent is infused over a 7- to 9-minute period at the beginning of the glucose clamp test and again 2 hours after the beginning of the test.

Sponsoring Institute:
National Center for Complementary and Alternative Medicine (NCCAM)

Recruitment Detail
Type: Participants currently recruited/enrolled
Gender: Male & Female

Referral Letter Required: No

Population Exclusion(s): Children

Eligibility Criteria:

INCLUSION CRITERIA:

HEALTHY SUBJECTS:

Men and women in good general health with no significant underlying illnesses who are between the ages of 21-65 years of age with HbA(1C) less than 6.5%, fasting blood glucose less than 100 mg/dL, blood pressure less than 120/80, and BMI between 20-25 kg/m(2). Subjects should have never smoked tobacco or not smoked within the previous year.

OBESE SUBJECTS:

Men and women in good general health with no significant underlying illnesses except obesity who are between the ages of 21-65 years of age with HbA(1C) less than 6.5%, fasting blood glucose less than 110 mg/dl, blood pressure less than 140/90, and BMI between 30-40 kg/m(2).

HYPERTENSIVE SUBJECTS:

Men and women between the ages of 21-65 years of age who are in good general health except for mild to moderate hypertension with seated blood pressure between 140/90 and 160/100 mm of Hg while off of anti-hypertensive medications (average over 3 visits).

TYPE 2 DIABETIC SUBJECTS:

Men and women between the ages of 21-65 years of age in good general health except for type 2 diabetes controlled with diet and/or oral hypoglycemic agents (except thiazolidinediones) with a HbA(1c) between 6-9% and C-peptide levels greater than 0.8 ng/ml.

EXCLUSION CRITERIA:

ALL SUBJECTS:

Subjects will be excluded from our study if they are pregnant , breastfeeding or if they plan pregnancy prior to the end of the study.

In addition, subjects will be excluded if their age is greater than 65 yrs, BMI greater than or equal to 40 kg/m(2), or have liver disease (including liver transaminase levels greater than twice the upper limit of normal), pulmonary disease, renal insufficiency (serum creatinine greater than 2.0 mg/dl), coronary heart disease, heart failure (New York Heart Association heart failure Class III or IV), peripheral vascular disease, coagulopathy, major depressive disorder, actively smoking or used tobacco within the last year, history of cancer, in treatment for any form of cancer, positive tests for HIV, hepatitis B or C, or take systemic corticosteroids, thiazolidinediones (within 3 months), insulin, or anticoagulants, use food supplements that cannot be discontinued, regular intake of 8 or more cups of tea per week within 3 months prior to study entry, regular alcoholic beverage intake of more than two drinks per day (a drink corresponds to approximately 12 ounces of beer, 4 ounces of table wine, and between 1 and 1.5 ounces of 80-proof spirits), poor compliance during run-in period or regular use of medications that affect insulin sensitivity, blood pressure or vascular function and that cannot be discontinued.

In addition, history of any other medical disease, laboratory abnormalities, or psychological conditions that would make the subject (based upon the principal investigator's judgment) unsuitable for study enrollment.

Subjects with known hypersensitivity to octafluoropropane, recent eye surgery, or with known cardiac shunts will also be excluded from participating because of potential adverse effects from microbubble contrast agent.

Subjects will be excluded if they are unable to give informed consent for all procedures.

Children are excluded from this study because children do not typically take EGCG and do not typically have hypertension or type 2 diabetes mellitus.

DIABETIC SUBJECTS:

In addition to the above general exclusion criteria, we will exclude diabetic subjects with type 1 diabetes mellitus, poorly controlled diabetes (HbA1c greater than 9.0%), random blood glucose greater than 300 mg/dL, symptomatic hyperglycemia (symptoms of dehydration or acidosis), the presence of hypertension, proliferative retinopathy, or diabetic neuropathy.

HYPERTENSIVE SUBJECTS:

In addition to the above general exclusion criteria, we will exclude hypertensive subjects if they have diabetes.

Special Instructions:

Currently Not Provided

Keywords:

Green Tea
Insulin Resistance
Endothelial Dysfunction
Nitric Oxide
Inflammation

Recruitment Keyword(s):

Obesity
Overweight
Diabetes Type 2
High Blood Pressure
Healthy Volunteer
HV

Condition(s):

Hypertension
Obesity
Type 2 Diabetes
Insulin Resistance

Investigational Drug(s):

Epigallocatechin Gallate (EGCG)

Investigational Device(s):

None

Intervention(s):

Drug: Epigallocatechin Gallate (EGCG)

Supporting Site:

National Center for Complementary and Alternative Medicine, Office of Dietary Supplements

Contact(s):

Patient Recruitment and Public Liaison Office
Building 61
10 Cloister Court
Bethesda, Maryland 20892-4754
Toll Free: 1-800-411-1222
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Electronic Mail:prpl@mail.cc.nih.gov

Citation(s):

Jemal A, Ward E, Hao Y, Thun M. Trends in the leading causes of death in the United States, 1970-2002. JAMA. 2005 Sep 14;294(10):1255-9.

Must A, Spadano J, Coakley EH, Field AE, Colditz G, Dietz WH. The disease burden associated with overweight and obesity. JAMA. 1999 Oct

27;282(16):1523-9.

Fox CS, Coady S, Sorlie PD, Levy D, Meigs JB, D'Agostino RB Sr, Wilson PW, Savage PJ. Trends in cardiovascular complications of diabetes. JAMA. 2004 Nov 24;292(20):2495-9.

If you have:

- Questions about participating in a study, please contact the Patient Recruitment and Public Liaison Office, CC.
- Technical questions regarding the Clinical Center web site, please contact the Department of Networks and Applications, CC.

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