Green Tea Increase Metabolism, May Aid In Weight Loss

Green tea extract has been the focus of several weight loss studies recently. In addition to its healthful benefit of strong antioxidant activity and its leptin is a protein produced by fats that appear to play an important role in how the body manages fat storage through brain signals. Years ago it was thought by scientists that lower leptin levels would increase appetite. Current research has now found that it does just the opposite and decreases appetite. There is clear evidence that green tea's polyphenols (EGCG) are a factor in depressing leptin as well as affecting other hormone levels important in regulating appetite.

Green tea is now holding promise in many areas of weight loss. Besides affecting leptin levels, green tea also increases noradrenaline levels. Noradrenaline is a chemical neurotransmitter in the nervous system that plays a major role in activation of brown fat tissue (BAT), which is the only metabolically active fat in the human body. Activation of brown fat by increased noradrenaline levels is significant because it burns calories from the white fat located around our waistline, hips and thighs.

In a study reported on in the American Journal of Clinical Nutrition, it was found that green tea extract resulted in a significant increase in energy expenditure (a measure of metabolism), plus also had a significant effect on fat oxidation. While some of the effects were originally theorized to be due to the caffeine content of green tea, the researchers discovered that the tea actually has properties that go beyond those that would be explained by the caffeine.

Green tea appears to speed up calorie burning, including fat calorie burning. The green tea extract may play a role in the control of body composition. Researchers studied the effects of green tea on 10 healthy young men, average age 25, who ranged from lean to mildly overweight. For 6 weeks, the men took two capsules at each meal: green tea extract plus 50 milligrams of caffeine; 50 milligrams of caffeine; or a placebo (inactive capsule).

The study participants were on a weight maintenance diet of about 13% protein, 40% fat, and 47% carbohydrates, a "typical Western diet." Three times during the study, the men spent 24 hours in a special room where the investigators measured their respiration and energy expenditure. Energy expenditure, the number of calories used during a 24-hour period, was higher for men taking green tea extract than for those taking caffeine or placebo. They also found evidence that men taking the green tea extract used more fat calories than those taking the placebo.

There was no difference between the caffeine users and the placebo users in terms of either overall calorie burning or fat calorie burning. The researchers therefore conclude that the increased calorie burning in the green tea group cannot be explained by caffeine intake alone. The investigators suggest that the caffeine interacted with natural substances in green tea called flavonoids to alter the body's use of norepinephrine, a chemical transmitter in the nervous system, and increase the rate of calorie burning. The researchers point out that, unlike some diet products, green tea does not contain high doses of caffeine, and it did not affect the heart rate in the study participants.
The researchers indicated that their findings have substantial implications for weight control. A 4% overall increase in 24-hour energy expenditure was attributed to the green tea extract, however, the research found that the extra expenditure took place during the daytime. This led them to conclude that, since thermogenesis (the body's own rate of burning calories) contributes 8-10% of daily energy expenditure in a typical subject, that this 4% overall increase in energy expenditure due to the green tea actually translated to a 35-43% increase in daytime thermogenesis.

Of critical importance to thyroid patients is the fact that none of the research subjects reported any side effects, and no significant differences in heart rates were noticed. In this respect, green tea extract is different from some of the prescription drugs for obesity, and herbal products like ephedra, which can raise heart rates and blood pressure, and are not recommended for many individuals, in particular, those with thyroid disease who may be particularly sensitive to stimulants.

**Reference**
Efficacy of a green tea extract rich in catechin polyphenols and caffeine in increasing 24-h energy expenditure and fat oxidation in humans1,2,3 Abdul G Dulloo, Claudette Duret, Dorothee Rohrer, Lucien Girardier, Nouri Mensi, Marc Fathi, Philippe Chantre and Jacques Vandermander.