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Green Tea and Catechins

Every day, there's another study on caffeine, coffee, or tea. One time it's good for you—the next thing you read seems to contradict yesterday's news. How do you know what to do? I can't answer the question completely, but I can talk about some recent research on the phytonutrients in tea called catechins. While catechins have been researched for many things, these researchers focused on weight loss and blood lipids in this study.

The Catechin Study

Researchers recruited 132 overweight and obese subjects for a clinical trial (1); 107 completed the trial which is very good subject retention, considering exercise was involved. They divided the subjects into two groups. The experimental group was given a beverage that contained 39 mg of caffeine and 625 mg of various catechins from green tea. The control group got an identical-tasting beverage with the same amount of caffeine but no catechins.

The subjects were asked to do two things besides drink their drink every day. First, they were told not to change their diet and second, they were supposed to get 180 minutes of moderate-intensity exercise every week such as walking for 45 minutes four days a week; it didn't matter how the combination worked out as long as they got 180 minutes a week. One more thing: the subjects had to workout under supervision at least three days a week. That's important because what people say in a survey and what they actually do can be two different things.

They did an extensive amount of testing on the subjects to see if there were differences in weight loss—that's the obvious—but also body fat, abdominal fat, subcutaneous fat (the fat that's under the skin), and measures of serum lipids. They tested all subjects at the beginning and again after 12 weeks.

The Results
There was a trend toward more weight loss in the catechin group, but it was not statistically significant at the level the researchers set. While there was no change in overall fat mass between the two groups, the experimental group did see a decrease in abdominal fat, subcutaneous fat, and also had decreased serum triglycerides—all in just 12 weeks.

While the subjects were given an extract that had various catechins in it, the key catechin, based on prior research, was epigallocatechin-3-gallate (EGCG). The extract contained about one-third EGCG, which means that subjects got just over 200 mg EGCG every day. But how do EGCG and the other catechins do what they do? Let's take a look.

Mechanisms

Green tea extracts have been studied for at least a decade because people who drink green tea seem to have less heart disease and cancer, and they weigh less. It could be that there are other factors at play, but I want to examine how catechins can do what they do. Fortunately, a recent review paper has examined this question in detail.

In the small intestine, catechins seem to inhibit key enzymes that help us absorb fat and certain types of carbohydrates; that means we'll absorb less fat. What doesn't get into the bloodstream can't get to our liver and can't be stored as fat. While not explicitly stated, it may be that taking the catechins with a meal may help block

absorption because that's when fat and carbohydrates are present. More research has to be done and it doesn't mean you get to eat more fat and carbs, but absorption of even 25 fewer calories per day would add up over time.

In the liver, catechins appear to inhibit lipid synthesis; that means your liver won't make fat from remnants of carbohydrates or protein. In addition, it seems to stimulate your body to use more fat as a fuel. Using more fat could have an overall effect of decreasing appetite, but that hasn't been tested.

Here's something that could explain the results in the first study. Catechins seem to cause muscle to use fat as a fuel; that could explain why the subjects lost more body fat than the group drinking the control drink. Finally, catechins seem to reduce fat cells' ability to make fat from other sources as well.

Many of these studies are test-tube studies or studies in animals to see how the mechanisms work. That's the way of science: look at parts and see if it comes together. Much research has to be done, but green tea extracts appear to be safe and there's no reason not to start taking them now while scientists work out the details.

The Bottom Line

If you're in the process of eating less and moving more—and remember, exercise was a part of the whole process—then drinking green tea or beverages with green tea phytonutrients such as catechins in them would seem to be beneficial. How much? If you're going to use EGCG, look for 100 to 200 mg per day; with mixed catechins, aim for 250 to 500 mg per day.

No supplement whether in pill, beverage, or just drinking the green tea itself is going to be effective all by itself to help you lose weight. But if you're smart about eating less and moving more, green tea and its extracts seem to be just what you need to give you an edge in losing weight and fat.

What are you prepared to do today?

Dr. Chet

References:
1. J Nutr. 2009;139(2):264-70.
2. J Nutr. 2010;140:446-453.