



CoffeeGenic, a Life Extension product featuring Applied Food Science's Green Coffee Antioxidant



From Garden of Life, fucoThin Green contains Svetol a green coffee bean extract from Naturex

Green Coffee Bean Extract and the “Dr. Oz Effect”

The green coffee bean is the dark chocolate of 2013

By Jenny Neill

The health and wellness value of the average American’s favorite morning beverage has been studied and debated for decades. A generation ago, physicians were trained to see coffee as contributing to health problems, and to counsel patients against drinking it. Caffeine, like many stimulants, was linked to insomnia and high blood pressure and thus was cast as an evil that could worsen a number of serious conditions. More recent findings, however, suggest that a cup of joe may actually reduce the risk of certain diseases. To understand why, food and nutrition scientists have since designed experiments that look at how specific biologically active compounds found in coffee cherries work within us.

How exactly did the coffee bean rehabilitate its medical image? It all started with efforts to explain findings that regular coffee drinkers were at lower risk for diabetes than abstainers. Green coffee bean extract, initially used to isolate specific phytochemicals in lab studies, gained greater attention as a viable dietary supplement. As scientific understanding about the extract advanced, one of its polyphenols with antioxidant properties took center stage—and, eventually, was shown to have positive effects on how the human body manages insulin.

Chlorogenic acid is turning up in a variety of products. Garden of Nature has been using Svetol made by Naturex in its products for years now and just introduced a new one to their weight loss line at the beginning of 2013. Life Extension sells CoffeeGenic, a weight management product formulated with Green Coffee Antioxidant (GCA), an ingredient manufactured by Applied Food Sciences. Even Starbucks, a company that is not making weight loss claims, has a line of beverages with green coffee extract.

But it was not until Dr. Ahmet Oz, the popular physician and TV personality, trumpeted this “good news” on his nationally syndicated show that demand for green coffee products skyrocketed.

Why the craze?

Phenolic compounds, especially antioxidants, have been studied for decades. But it was how oversight of the “nutriceutical” category shifted towards the end of the 20 century that set the stage. An important antecedent to this weight loss supplement fad in the United States was the passage of the Dietary Supplement Health and Education Act of 1994. This law cleared a path for much speedier entry to market for products not intended for therapeutic use by treating them more like food than like drugs.

Now, companies need only notify the Food and Drug Administration (FDA) of their intent to sell a new dietary ingredient. If no major issues crop up during the specified review period, the FDA lists it and the filer may legally offer it for sale. This differs from the requirements of Canada and the European Union where proof of safety must be examined before permission to go to market is granted.

Nutrition researchers and coffee professionals have long believed that phytochemicals unique to this brewed beverage are good for us. Animal experiments suggest there might be health benefits. Potential uses found in the lab, however, do not always prove out in humans. A string of studies found that drinking coffee daily reduced the risk of diabetes in a number of populations. The hunt to figure out what was having that effect took on new urgency as many food science firms jockeyed for first-come advantage. Patents were filed, new products hit the market, and most received a lukewarm reception from consumers. Chlorogenic acid emerged as the risk-reducing compound.

Then, a double-blind study reported in 2012 showed dramatic results in the relatively short study period. The overweight participants took a higher dose of a green coffee extract than what had been previously studied. Nearly all lost weight, with two-thirds no longer having a body-mass index considered to be obese. That result captured high-profile attention.

“Five years ago no one cared about it. Since Dr. Oz picked it up, everyone wants to be green coffee bean experts,” remarked Russ Anderson, president of the Anderson Global Group, an ingredients distribution company based in Irvine, Calif.

Dr. Michael Smith, host of the weekly Healthy Talk radio show on WWNN-AM in the greater Miami area, agreed: “You know chocolate became real popular in 2008 and 2009 for all those polyphenols. Well, the green coffee bean is the dark chocolate of 2013.”

The breakthrough

Most diets advocate eating certain types of foods or having meals at certain times of the day. Some dictate how much to ingest instead of what or when. Others prescribe more regimented programs of smoothies, shakes and supplements intended to support liver function and accelerate weight loss.

No matter how a weight-loss program is marketed, each approach requires dieters to make some changes to their daily caloric intake. Jay Bugai, national educator for Garden of Life, explains the physiological rationale for this: “If you think back to the idea or the premise of any carbohydrate-manipulating diet that there’s ever been—whether it’s low-carb or no-carb or ‘these carbs are good and these carbs are bad’—the ultimate goal is to provide a more stable blood sugar level and to control the storage hormone insulin.”

Insulin sensitivity is now believed to be the real reason why many who do lose weight are unable to keep it off. Green coffee bean extract affects how insulin works in the body, and it’s for this reason that physicians like Dr. Smith and Dr. Oz have spoken so optimistically about green coffee bean extract products.

But that optimism has critics. Danielle VenHuizen, a registered dietitian in Seattle, shared her concerns: “By extracting chlorogenic acid from coffee, we are losing that synergistic effect of the whole bean and its various components. In fact, anything in excess, including chlorogenic acid, while having positive effects in some aspects, may throw the body off in other ways that we are not yet aware of.”

Worse, in the rush to earn bigger profits, some companies have

Approximately 1.6 million pounds of green bean were used to meet the demand for this extract in 2012



Green coffee bean extract gained attention as a viable dietary supplement

experimented with using single-isomer extracts or even “spiking” with chlorogenic acid derived from other plants. Quality with this plant-derived supplement starts with the cherry.

From farm to formulation

Most manufacturing of green coffee bean extract takes place in India and China, and uses Robusta from Vietnam and Arabica or Robusta from India. The cherries undergo wet processing to remove skin and mucilage. Some still has parchment by the time it gets to an extraction facility.

From there, procedures will differ, depending on how production was specified by an ingredient distributor. A fairly standard approach involves using ethanol, though the selected solvent varies, depending on the intended use. Organic-compliant ingredients use “supercritical extraction” with liquid carbon dioxide instead.

The resulting yields are a major factor in determining how much making chlorogenic acid from green coffee costs. For example, manufacturers see yields of 250 kilos of powder from supercritical extraction, whereas with ethanol they get 500 kilos. Testing requirements also affect the cost of using a given extract. Anderson reported that “for green coffee bean extracts constructed around a 50% chlorogenic acid standard, the selling price is anywhere from US\$65 to 95 per kilo.”

Chris Fields, vice president of scientific affairs for Applied Food Sciences, reported that its supplier pays as much as 25% more than buyers who source for roasters. Her firm’s Green Coffee Antioxidant (GCA) was one that Dr. Oz lauded for its quality. Meeting those health benefit claims involves continuous testing to ensure quality, and that represents another cost factor.

While spiking often happens in the initial extraction process, sometimes adulteration occurs in the final stages of production. Applied Food Sciences found that some of their own customers were blending GCA with lower-grade extracts to meet a price-point target. But those changes had consequences. Spiking with chlorogenic acid from another plant or with an extract that has fewer isomers changes the effectiveness of the end product.

Fields explained: “The 5-isomer can be extracted from certain types of plants; honeysuckle’s one of them. If you use only this extract, you could still achieve a 50% chlorogenic acid level in your finished ingredient; however, you wouldn’t actually see the efficacy in the finished product. The other chlorogenic acid compounds—the ferulic, the p-coumaric acids, the di-isomers—also have significant benefits.”

Distributors and consumer product goods companies in the US that do not analyze samples regularly simply trust the word of their manufacturing partners. Watchdog organizations like ConsumerLabs.com attempt to fill this gap in quality assurance as consumers and some industry players continue to call for changes in how supplements are regulated or monitored.

Sizing the future market

A number of variables confound attempts to accurately estimate the volume of green coffee bean extract being sold globally. This ingredient is sold under different regulatory models in major markets, and can turn up in cosmetics, foods, beverages, and dietary supplements. Other confounding variables include the unethical practice of using harsh solvents for higher yields when manufactured, the questionable tactic of spiking with non-coffee extracts at the formulation stage, and the legal practice of blending it with other plant-based ingredients. No single association attempts to track how green coffee bean extract trades around the world.

The distributors contacted for this story held divergent opinions on whether to expect continued growth. Fields asserted, “I think there was a lot of demand for a lot of product very quickly, but I think that’s starting to wean off now.”

Anderson disagreed: “It’s going to keep growing as it catches on globally. I would look for steady increases for the years to come, because there’s lots of good research coming up about the chlorogenic acids, and the weight loss effect, and the diabetes impact.”

According to one source, approximately 1.6 million pounds of green bean were used to meet the demand for this extract in 2012. What that figure will turn out to be in 2013 is anyone’s guess. ☕



Danielle VenHuizen, R.D., owner of Food/Sense Nutrition in Seattle, Wash.