



Hoodia, Coleus & Green Tea: *Botanicals to Promote Weight Loss*

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Literature Education Series On Dietary Supplements

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There are many herbs and botanicals which are promoted for weight loss. Unfortunately, a good many of them do not have any real research or history of traditional use to support the claims. However, *Hoodia*, *Coleus* and green tea are different. Data suggests that these botanicals can reduce appetite and increase energy, promote lipolysis in fat cells (the breakdown of fat), and promote thermogenesis and fat oxidation (burn fat), respectively. Following is a review of these three botanicals and the role that they might play in a healthy weight loss program. Since, currently, *Hoodia* is probably the most popular of these botanicals for weight loss, and since it has the least amount of *published* research on it, we'll review it first and with most detail.

Hoodia

As a succulent, *Hoodia* have long been used as thirst quenchers and appetite suppressants; and are themselves adept at storing moisture during long dry spells in their native habitats. One of the earliest recorded accounts of *Hoodia*'s effectiveness was reported by Wynberg¹:

“This is the real ghaap [*Hoodia*] of the natives, who use it as a substitute for food and water. The sweet sap reminds one of licorice and, when on one occasion thirst compelled me to follow the example of my Hottentot guide, it

saved further suffering and removed the pangs of hunger so efficiently that I could not eat anything for a day after having reached the camp.” Marloth (1855-1931)

The most popular species currently used in dietary supplements is *Hoodia gordonii*. *Hoodia*'s rise to fame in western culture is a result of stories about how the San tribe of southern Africa Bushmen would consume this plant when they went on hunts; and how the *Hoodia* was able to both suppress their appetite and give them the energy they needed to push on. According to Cairns, the San hunters find that *Hoodia*, “when eaten even in small quantities, causes the sensation of hunger to cease.”²

Habeck³ reports that it wasn't long before South Africa's Council for Scientific and Industrial Research (CSIR) started to investigate the plant's effects. With animal research they demonstrated that an extract from the plant was highly effective in reducing weight. In 1997, the CSIR approached Phytopharm (Godmanchester, UK), a company developing drugs derived from plants, to collaborate in the development of the active ingredient, P57, into a prescription drug. Subsequently, Phytopharm signed a licensing agreement with Pfizer, who will market P57 in the rest of the world. However, Archer and Victor⁴ indicate that marketing of the drug is not expected before 2008. Meanwhile, CSIR is holds a U.S. patent⁵ on the process for obtaining the *Hoodia* extract, a process for synthesizing the P57 compound, and the use of the extracts and compound as a medicine for having appetite suppressant activity.

Naturally, with all of the *Hoodia* excitement being generated, it wasn't long before

consumers started asking for *Hoodia* products, and manufacturers were only too happy to provide them. The *Hoodia* craze was born, along with its own set of problems.

Real vs. Fake *Hoodia*

Now let's take a look the issue of fake *Hoodia*; a very big problem facing consumers who want to purchase *Hoodia* supplements. In a conversation with Frank Jaksch, President and CEO of the analytical laboratory ChromaDex, he stated "One of the first problems with *Hoodia* products the industry needs to solve is quality.

If a product labeled as a '*Hoodia*' product does not even contain *Hoodia* it is pretty easy to say that it most likely will not produce the desired effect. We have been testing *Hoodia* products for several years in our laboratory and based on the data we have gathered a consumer purchasing a *Hoodia* product has less than a 50% chance of purchasing a product that actually contains *Hoodia*."

Since it's hard to tell which *Hoodia* products are real and which are fake, it's best to purchase some products from a brand that you trust. Furthermore, if the price is too cheap the product may not contain real *Hoodia*; which can be an expensive ingredient.

Hoodia Research

An interesting aspect of *Hoodia*'s popularity is that there is actually little published *in-vivo* research on this botanical, and no *published* human clinical research; although there is some unpublished data. A review of research follows.

To determine the effects of *Hoodia* feeding on appetite, energy (calorie) intake, and body weight, Tulp et al⁶ studied groups of lean and obese rats. Within 48 hours both lean and obese *Hoodia* fed rats voluntarily decreased their food intake by less than 50%, and blood glucose was decreased by 15%, compared to the control group. Although initially the body weight of obese rats were twice those of lean rats, after 2-3 weeks of *Hoodia* feeding their weight decreased to near normal level; while the body weight of the lean *Hoodia* fed rats only decreased 29% during the same time. Gonadal fat pads (a means of measuring body fat mass) decreased by more than 50% compared to normally fed rats. During the research no

adverse effects were observed in *Hoodia* fed rats.

In the CSIR-owned U.S. patent, a description of other *Hoodia* studies on rats is given. In a three-day study, rats were given various doses of *Hoodia*. There was also a control group. The results were that rats treated in all dose groups, showed a significantly reduced average gain of body weight over the total study period, and many actually lost body weight. Likewise, average food intakes for all the treatment groups were reduced over the study period.

According to Habeck⁷, in December 2001 Phytopharm announced the completion of a proof-of-principle study of P57 in humans. During this double-blind, placebo-controlled trial, 60 patients participated in an assessment of safety, tolerability and pharmacokinetics of ascending single doses and of repeated dosing in healthy overweight volunteers, as well as the effects of calorie intake in overweight men who took the compound or placebo twice daily for 15 days. The reported results were that men in the treatment group achieved a 30% reduction in calorie intake, accompanied by a significant reduction in body fat content by 1 kg (that's 2.2 lbs of actual fat, not just overall weight). However, since this research was not published, there are no further details of the study such as doses used, etc.

In a study⁸ conducted at Bucks County Clinical Research Inc., in Morrisville, Pennsylvania, seven overweight subjects were given 400 mg of *Hoodia* twice daily (one hour prior to lunchtime and one hour prior to dinner) with a minimum of 8 ounces of water. The subjects also took a multivitamin with breakfast, and were instructed not to change their daily dietary habits or activity levels. The results were that subjects lost an average of 3.3% of their body weight, for a median weight loss of 10 pounds over a period of 28 days.

Hoodia's mechanism of action

Since *Hoodia* is not a stimulant like caffeine or ephedrine, how does it exert its appetite suppression properties? Specifically, what is it's mechanism of action? This question was addressed in research conducted by MacLean and Luo.⁹ MacLean and Luo found that P57 increases the content of ATP (the "energy

currency” of the body) by 50-150% in rat hypothalamus. MacLean and Luo concluded that with growing evidence of metabolic or nutrient-sensing by the hypothalamus, ATP may be a common currency of energy sensing, which in turn may trigger the appropriate neural, endocrine and appetite control responses.

The increase in ATP may also help explain Hoodia’s endurance-enhancing effects in Sans tribesman during traditional hunts.

Coleus

Coleus (*Coleus forskohlii*) is an herb used in Ayurvedic medicine. Its active principle is a diterpene known as forskolin. The medicinal uses of *Coleus* include various types of cardiovascular disease, glaucoma, asthma and digestive insufficiency.¹⁰ With regard to weight loss, *Coleus* has been shown to promote lipolysis (the breakdown of fat in the fat cells) and weight loss.

In one study¹¹, six obese women were given 250 mg *Coleus* (standardized for 10% forskolin), twice daily for eight weeks. The women were asked to maintain previous daily physical exercise and eating habits. In other words, don’t change anything, just take the *Coleus*. The results were an average weight loss of 9.17 lbs, almost an 8% reduction in percentage body fat, and a 4.23% increase in percentage of lean mass (i.e., lean muscle). No side effects were seen in this study.

In a double-blind, randomized study¹², 30 overweight and obese men were given the same dose of *Coleus* as in the previous study, or a placebo, for 12 weeks. The results were: 1) a significant decrease in body fat percentage (11.23%) in the *Coleus* group, but only a 1.73% decrease in placebo group; 2) almost a 6% increase in lean mass in *Coleus* group, while the placebo group had less than half the increase; 3) almost 17% increase in total testosterone and a 3.47% increase in free testosterone in the *Coleus* group, with a decrease in placebo group. Again, there were no side effects.

In a third study¹³ (double blind, randomized) lasting 12 weeks, 19 *mildly* overweight women were given the same dose of *Coleus* as in the previously cited studies. In this study, the results were different. Neither the *Coleus* group

nor the placebo group lost weight, although the *Coleus* group did experience less hunger and less fatigue. In addition, subjects taking the *Coleus* were successful at preventing weight gain.

In considering the three studies, it appears that 250 mg of *Coleus* (standardized for 10% forskolin) given twice daily is effective in the treatment overweight and obese individuals, but not *mildly* overweight individuals. So only use *Coleus* if you have substantial weight you need to lose, not just those last five or ten pounds.

Green tea

Much has been written elsewhere about the value of green tea (*Camellia sinensis*) from a health perspective. Therefore, this article will only briefly review the weight loss properties of this herb. To begin with, the active principles in green tea are its catechins and caffeine. Research has demonstrated that green tea is capable of stimulating thermogenesis and promoting fat oxidation; in other words, it helps burn body fat.

In one three-day study¹⁴, subjects given green tea providing 270 mg catechins and 150 mg caffeine daily experienced a significant increase in energy expenditure (i.e., calories burned). In a three-month study¹⁵, subjects given the same dose of green tea decreased their body weight by 4.6% and their waist circumference by 4.48%. In another three-month study¹⁶, subjects given the same dose of green tea found that after their initial weight loss, they were able to maintain their weight loss and continue losing weight.

Conclusion

Research and/or a history of traditional use lend support to *Hoodia*, *Coleus* and green tea’s potential as weight loss botanicals. This being said, it should also be stated that long-term successful weight loss has only been proven to occur with an ongoing program of dietary modification and exercise.

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