CoffeeSLENDER and Its Role in Weight Management

Introduction

This document outlines the scientific evidence that supports the claim that CoffeeSLENDER® can assist the slimmer towards achieving their target weight, as part of a healthy eating and exercise programme.

This document starts by discussing the medically controlled studies on Human volunteers using both Svetol®, the active ingredient, and CoffeeSLENDER itself that demonstrates that when used as per the manufacturer's instructions they do indeed show significantly greater weight loss than would be seen when dieting alone.

As the document continues, it goes on to outline the general scientific background data that lends support to the fact that coffee, or at least some of its constituents, may have some effect on weight loss.

This is followed by looking more closely at the scientific studies into the biochemical mechanisms that may cause this weight loss.

Finally, it concludes with the key findings, followed by comprehensive references to the studies, the full details of which can be found at well known scientific publishers.

Background

Coffee contains many substances that can have an effect on the body. Caffeine is probably the best known, and it is one of the main reasons that coffee is the world's favourite drink, with around 2 billion cups consumed every day.

However, coffee also contains other active substances, and these have been the subjects of many scientific studies. In particular, coffee contains substances called polyphenols. Polyphenols are antioxidants, and are thought by some to help protect against some common health problems.

One polyphenol is of particular interest – chlorogenic acid. This substance is found in many plants, but is found in high levels in green (or un-roasted) coffee beans.

Svetol, the active ingredient in CoffeeSLENDER, contains chlorogenic acid. Svetol, CoffeeSlender and chlorogenic acid have been studied in some detail to see what effects they have on weight loss. These studies are covered in this document.

CoffeeSLENDER is an instant coffee containing 200mg of Svetol per 2,200mg in a base of conventional instant coffee powder. It has been subjected to trials in human volunteers to evaluate its ability to aid weight loss. The scientific basis for this beneficial effect is based on quoted studies with CoffeeSLENDER, with Svetol alone, with chlorogenic acid and with coffee.

Human Studies

Weight Loss

Two double blind, controlled studies and one open label study in human volunteers have been done with Svetol and one double blind study with CoffeeSLENDER.

In what might be considered a pivotal study, Dellalibera et al (1) published the results of a double-blind, placebo controlled study followed the effects of 200mg Svetol or a placebo twice daily for 60 days.

Overweight volunteers with a BMI>25 were divided into two groups with 30 in the Svetol group and 20 in the placebo group. Changes in body weight, BMI and body muscle/fat mass ratios (MM/FF) were determined. All participants were instructed to consume a bland low calorie diet and a self-evaluation of the volunteers' physical appearance was elicited before and at the end of the study.

Mean weight loss in the subjects in the Svetol group was 4.97±0.32 kg and in the control group 2.45±0.37 kg. This difference was significant ($p<0.001$), MM/FM ratios was increased significantly ($p=0.05$) and BMI similarly decreased. No significant amelioration of self-reported physical appearance was reported by the volunteers over the test period. No adverse effects were reported by the authors.

This study provides convincing support for the claims that Svetol 200mg twice daily, is effective in aiding weight reduction in overweight individuals. The improvement in MM/FF ratios demonstrated that the weight loss reported was due to a reduction in fat mass rather than loss of body water.

In an open unblinded study Marshall-Blum et al (2) measured the effects of 200mg Svetol three times daily in overweight volunteers over a six week period. Weight loss, serum glucose after one hour loading with sugar and body composition were the primary end points, blood pressure and quality of life were secondary outcome measures. A follow up period with no test material given was also performed.

A mean weight loss of over 3lbs (approx. 1.5kg) was reported and 59% of those given Svetol were found to show a positive reduction in serum glucose after loading when compared with the non- Svetol period.

Thom (3) has performed a controlled, double blind study with Svetol in 50 healthy volunteers. 30 took 2 x 200mg capsules of Svetol daily for 8 weeks and 20 were given matching placebos All were given a diet plan to follow although no measure of compliance were used.

The mean weight loss of the test group was 5.0 kg compared with 2.5 kg for the placebo group. This difference was significant ($p<0.05$). No subject stopped taking either material due to adverse effects.

A new clinical trial carried out by Norwegian scientists (4) on CoffeeSLENDER and published in the November 2007 edition of the Journal of International Medical Research further support the studies on Svetol. There were two parts to the clinical trial.

In the first part of the clinical trial a study was performed on 12 healthy volunteers with different coffee products containing glucose that showed that CoffeeSLENDER induces a reduction in the absorption of glucose of 6.9% compared to intake of the control beverage (glucose solution). With normal instant coffee or decaffeinated instant coffee no such effects were seen with the same single doses. Blood glucose was measured for 2 hours at regular intervals after intake and the areas under the absorption curve (AUC) were compared. It was concluded that CoffeeSLENDER has the ability to reduce the absorption of glucose significantly compared to normal instant coffee or decaffeinated instant coffee.

In the second part of the clinical trial a study was carried out in order to investigate the effect intake of CoffeeSLENDER may have on body weight in 30 overweight and obese people. The study was carried out as a comparative, randomized, double-blind study against normal instant coffee. The duration of the study was 12 weeks. The average weight loss in the CoffeeSLENDER group was 5.4 kg while the group taking normal instant coffee had an average weight reduction of 1.7 kg. No statistically significant difference in weight was detectable in the instant coffee group. There was a statistically significant difference in favour of the active group with respect to weight reduction. The quality of the weight reduction was excellent as 82 % of the weight loss was due to fat loss as measured with body composition measurements.

The tolerability in the double-blind study was excellent as none of the participants in either of the two groups reported any side-effects that could be related to the treatment they received.

The results from the placebo controlled studies and the open studies demonstrate that Svetol containing chlorogenic acid, can induce a significant degree of weight loss at intakes commensurate with normally expected consumption of CoffeeSLENDER. The double-blind study on CoffeeSLENDER supports the claim that the product is effective as a weight management product.

The Link between Coffee and Weight Control

Historically, coffee consumption has been linked to weight control and control of blood sugar levels.

In 1968 Feinberg et al (5) published a report on an experimental study of the effect of coffee consumption on - amongst other parameters – blood sugar levels. The test subjects consumed controlled levels of glucose with and without instant coffee. The study demonstrated that consumption of coffee caused a significant reduction of the blood sugar levels when compared with the same intake of glucose without coffee.

Naismith et al (6) followed up with experimental studies published 1970 where the effect on blood sugar levels of consumption of coffee and caffeine-free coffee was investigated vs. a control period. During the test periods with consumption of coffee, as well as caffeine-free coffee, blood sugar levels were significantly lower than during the control period – without altering insulin levels. Their conclusions were therefore that coffee consumption contributed to the lowering of blood sugar levels, and that this effect could not be due to caffeine, or to caffeine alone.

Biochemical Studies
In view of the evidence in the literature that coffee consumption may affect carbohydrate metabolism investigators have studied the effects on enzymes involved in glucose metabolism.

Welsch et al (7) used membrane vesicles from the brush border of rat intestine to examine the effects of phenolic compound on sodium dependent D-glucose transport. They found that chlorogenic acid reduced the uptake of glucose supporting the view that this effect could reduce glucose absorption in the intact animal and explain how chlorogenic acid reduces postprandial hyperglycemia (ie increased blood sugar levels after a meal).

Arion et al (8) found that chlorogenic acid could inhibit glucose-6-phosphatase in isolated rat hepatic microsomes.

Chlorogenic acid was found by Hemmerle et al (9) to inhibit hepatic glucose-6-phosphate translocase in perfused rat livers. This indicating a potential effect on gluconeogenesis and glycogenolysis by reducing hepatic glucose output and lipid synthesis.

A recent paper from China Li et al (10) showed that chlorogenic acid could inhibit fatty acid synthase.

Taken together these findings could account for some of the effects on the conversion of glucose to fat by the liver and adds to mechanistic support to the claims for Svetol being of benefit in weight control.

Animal Studies
Studies in normal laboratory animals may provide some evidence of potentially beneficial effects in man but extrapolation to humans must be treated with caution.

Shimoda, Seki and Aitani (11) studied the effect of a green coffee bean extract (GCBE) and some of its constituents including chlorogenic acid and caffeine on body weight and lipid levels in laboratory mice.

Groups of 7 mice were fed GCBE at 0.5% and 1% of diet or chlorogenic acid at 0.15% and 0.3%. for 14 days. Both groups of the mice fed GCBE gained significantly ($p < 0.05$) less weight over the test period, but those fed chlorogenic acid gained less weight than the controls but failed to reach statistical significance.

Total epididymal and peri-renal fat masses were significantly lower than controls in the 0.5% GCBE group but not in the higher dose GCBE nor both chlorogenic acid groups.

In the latter three groups the fat gain was substantially less than the controls, this was probably due to the small group sizes. Further groups of 7 mice were fed GCBE and chlorogenic acid hepatic triglyceride (TG) accumulation measured after 13 days. Chlorogenic acid but not GCBE reduced significantly hepatic TG levels.

Additional studies in which mice were loaded with olive oil and serum TG levels measured over 6hr. GCBE but not chlorogenic acid significantly ($p<0.01$) reduced serum TG levels.

These studies suggest how GCBE and chlorogenic acid might act to reduce weight gain in humans.

Obesity frequently leads to hypertension (high blood pressure) and Type 2 diabetes with consequent adverse effects on vascular function. Chlorogenic acid has been shown to improve vascular tone in hypertensive rats (12,13,14), this effect if confirmed in humans could be of benefit in overweight and obese individuals.

Recently Lafay et al have shown that chlorogenic acid is absorbed unchanged from the stomach and intestine of rats. (15,16).

Effects on Glucose Metabolism

A further study on the effects of coffee and chlorogenic acid as decaffeinated coffee on glucose tolerance and g.i. hormone release in healthy volunteers has been published by Johnston et al. (17).

All three studies using Svetol found a reduction in glucose uptake following a glucose load. Similar results were obtained using CoffeeSLENDER.The studies of Johnston et al (17) suggest that this effect on glucose uptake may be due to chlorogenic acid affecting the release of insulinotropic polypeptide hormones. These findings in humans are supported by the animal experiments cited earlier.

To further substantiate the suggestion that chlorogenic acid in coffee can have a beneficial effect on blood sugar levels when consumed as a part of the diet, a recent study (18) assessed the effects of coffee and tea consumption on glucose tolerance in middle-aged Japanese men. In this study, the relationship between daily intakes of green tea or coffee and glucose tolerance status was measured by the oral glucose tolerance test (OGTT). More than 3,400 men participated in the study in which fasting glucose was measured before and 2 hours after administration of an oral glucose load. A self-administered questionnaire was used to establish daily levels of dietary coffee and green tea consumption over the past year. The results showed that those individuals who consumed the highest levels of coffee per day had lower fasting glucose levels (by 1.5%) and lower post-test glucose concentrations (4.3% lower) than those who did not consume coffee on a daily basis. In this study, green tea consumption was not associated with any benefits on glucose concentrations.

Conclusions

The above documentation attest to the inhibitory effect of chlorogenic acid on the uptake and transportation of glucose into the blood stream and consequently on blood sugar levels.

Furthermore, there are several studies of the effect of chlorogenic acid - especially Svetol- and CoffeeSLENDER on weight loss. The results may be explained by the ability of chlorogenic acid to inhibit the uptake and transportation of glucose into the blood stream.

It is, however, important to acknowledge that Svetol and/or CoffeeSLENDER alone are not the final solution to weight management. It is therefore equally important to combine the intake of CoffeeSLENDER with physical exercise and controlled calorie intake to achieve your target weight.

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