Efficacy of Zotrim: a herbal weight loss preparation

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Abstract

A consumer survey was undertaken to test the efficacy of Zotrim, a herbal preparation commercially available as an over the counter weight loss aid. A total of 48 subjects completed a 28-day trial of Zotrim, taken in tablet form just prior to main meals. The results showed a self-assessed average weight loss of 2.3kg (0.6kg per week). Questionnaire data suggested that subjects ate less at meals and snacked less frequently. The overall findings supported an earlier placebo controlled clinical trial, and provided additional evidence that Zotrim delays gastric emptying and enhances feelings of fullness.

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Introduction

A token search of the Internet reveals a large selection of products which claim to facilitate the process of weight loss. Few are accompanied with appropriate scientific evidence. The desperation of many overweight people can make them particularly receptive to "quick fixes" such as pills, potions and even creams which appear to offer the desired results without the effort of changing one's diet or lifestyle. As the critical focus on the weight loss industry sharpens, the more reputable companies are attempting to distance themselves from the rest by funding research into the efficacy of their products. Such a case study is described here.

Zotrim is a herbal food supplement, available in tablet form and based on pioneering work by Danish physician, Dr Lasse Hessel. It contains active ingredients as extracts of the South American herbs Yerba maté (leaves of *Ilex paraguayensis*), Guarana (seeds of *Paullinia cupana*) and Damiana (leaves of *Turnera diffusa* var. *aphrodisiaca*). An earlier clinical trial (Andersen and Fogh, 2001) found that 24 healthy overweight subjects who were given the Zotrim formulation three times per day before meals sustained a mean weight loss of 5.1kg after 45 days. The 23 subjects who were given the placebo showed a mean weight loss of only 0.3kg. Neither group received dietary advice. A follow-up of 22 subjects in the Zotrim group after an additional 12 months of treatment revealed that the initial weight loss was maintained. Mean weight at the start of the follow-up was 73kg, while after 12 months, it was 72.5kg.

It is believed that Zotrim helps to reduce energy intake by delaying gastric emptying or by stimulating an early feeling of fullness. Andersen and Fogh (2001) reported the results of a parallel study which used ultrasound to investigate the rate of gastric emptying in seven volunteers following consumption of Zotrim versus a placebo. Gastric emptying after Zotrim was 53 per cent slower than after the placebo. A

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further study by Andersen (2002) examined the time to perceived fullness in 20 subjects taking Zotrim versus a lactose placebo 10-15 minutes before meals. Following the Zotrim tablets, average time to fullness was 35 minutes compared with 61 minutes following the placebo; a statistically significant difference.

While the average weight loss seen in the clinical trial was convincing, it is acknowledged that subjects were closely monitored by researchers during their experience with Zotrim. One might question whether unmonitored, free-living consumers would demonstrate a similar weight loss while using the product, thus, a study was implemented to test the efficacy of Zotrim in a completely unmonitored environment using a consumer survey.

Methodology

A professional consumer research company (Taylor Nelson Sofres) was instructed to monitor members of the public who had agreed to take part in a 28-day study of Zotrim. Participants were recruited by a combination of word of mouth and advertising in a local newspaper (the *Bucks Examiner*). Each person who contacted the project team was given a screening questionnaire to fill in which included questions on weight, height, dieting history, snacking habits, medication, general health and perceived body fatness. Completed questionnaires (n = 91) were examined and subjects who met the inclusion criteria (body mass index > 20, reported fair-to-good health) were posted a free 30-day supply of Zotrim to take at home (n = 75). Instructions were provided on how to take Zotrim (two tablets with a glass of water three times a day 15 minutes before main meals) but no dietary advice was offered.

A second questionnaire was completed by subjects after one week on the trial and probed compliance, fullness and perceived weight loss. At the end of the 28-day period, the subjects completed a third questionnaire which included questions on weight, compliance, alcohol and eating habits. Of the 75 starters, 50 returned both the questionnaires but two forms were incomplete, leaving a final sample of 48. The progress of participants was tracked throughout by Taylor Nelson staff, who used follow-up telephone contact to ensure that as many forms as possible were returned.

Results

The characteristics of the subjects are shown in Table I. Of those currently following a diet (n = 9; all women), the most popular regime was Weight Watchers, but other methods included a low fat diet, reducing snacks and cutting out alcohol. Mean BMI was 28.5 and was similar between men and women. The group included nine subjects (all women) with a BMI between 22 and 24.9. It was decided to include these people, despite their normal BMI, since Zotrim is available for general purchase and could hypothetically be bought and used by normal weight consumers. However, as described in the methods section, the line was drawn at respondents with an abnormally low BMI.

Subjects' views of their habitual diet are explored in Table II. Over half believed they were eating a healthy balanced diet, which is interesting given the dissatisfaction with their weight. The corollary - if they believed they had a poor diet - backed this up, since 58 per cent disagreed with the statement. Most subjects (69 per cent) reported snacking between meals, particularly in the afternoon and evening. Favourite snacks were crisps, biscuits,

Table I Characteristics of subjects

Age		Sex		BMI		Dieting	
17-34	17 (35)	Male	11 (23)	< 25	9 (19)	Yes	9 (19)
35-54	21 (44)	Female	37 (77)	25-30	26 (54)	No	39 (81)
> 55	9 (19)[a]			> 30	13 (27)		

Notes: [a] One person did not state their age; figures in parentheses are percentages

Table II Subjects' own view of diet

	A	B	C	D	E
Agree	26 (54)	33 (69)	17 (36)	30 (63)	13 (28)
Unsure	7 (15)	9 (19)	7 (15)	9 (19)	2 (4)
Disagree	11 (23)	5 (10)	21 (44)	8 (17)	28 (58)
Not stated	4 (8)	1 (2)	3 (6)	1 (2)	6 (10)

Notes: A = I eat a healthy balanced diet; B = I often snack between meals; C = I eat too much convenience food; D = I know I eat too much; E = I have a poor diet; figures in parentheses are percentages

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chocolate and fruit. However, subjects were fairly well split on whether or not they ate too much convenience food (36 per cent agreed, 44 per cent disagreed). In a hint as to what may have caused their excess body weight, 63 per cent of subjects admitted to eating too much food overall.

Table III gives the mean weight change for subjects in each of the BMI groups. Overall weight loss was 2.3kg (0.6kg per week). The average weight loss was similar in the medium and high BMI groups (around 2.5kg), while the weight loss in the normal BMI group was lower at 1.4kg. Compliance with the regime was fairly good. After the first week, the majority of subjects (n = 45) reported taking Zotrim as directed most or all of the time. Only three subjects said they took Zotrim some of the time. After four weeks, the number of compliant subjects had decreased to 39, those reporting taking Zotrim some of the time increased to seven, and three admitted not following the regime as directed.

In Table IV, perceived fullness one week after beginning the Zotrim study is shown. A total of 40 subjects (83 per cent) reported feeling fuller than usual after eating. Of these, the majority (75 per cent) believed that they were eating less in response to this. A total of 15 subjects reported feeling full after each meal, while the remaining 24 experienced increased fullness after only one or two meals during the day.

Taking this information further, Table V gives the subjects' perception of how long feelings of fullness persisted. Of those experiencing fullness (n = 40), one-third reported it lasting for 30-60 minutes while over 50 per cent reported the fullness lasting up to three hours. A significant minority (20 per cent) experienced fullness for more than three hours.

Table VI highlights one of the reasons why Zotrim may have influenced weight loss. When asked to compare snacking habits before and at the end of the trial, 69 per cent of subjects believed that they now snacked less than usual. A total of 10 per cent of subjects reported no change in snacking habits, while 13 per cent said they no longer snacked.

Table III Weight change over course of trial

Initial BMI	< 25	25-30	> 30	All
Mean weight loss (kg)	1.4	2.6	2.5	2.3

Table IV Reported feeling of fullness

Yes fullness (n = 40; 83%)				No fullness (n = 8; 17%)
At all meals	At 1-2 meals	Ate less as a response	No change in amounts eaten	
15 (38)	24[a] (60)	30 (75)	10 (25)	

Notes: [a] One person did not state when they felt full; figures in parentheses are percentages

Table V Length of time that feeling of fullness persisted

Yes fullness (n = 40; 83%)				No fullness (n = 8; 17%)
< 30 mins	30-60 mins	Up to 2 hours	Up to 3 hours	> 3 hours
0	12 (30)	13 (33)	7 (18)	8 (20)

Note: Figures in parentheses are percentages

Discussion

While it could be argued that self-reporting of dietary habits and weight has the potential for bias, this consumer study nevertheless supports earlier work on the efficacy of Zotrim (Andersen and Fogh, 2001) and a controlled trial on another Guarana-containing preparation (Boozer *et al.*, 2001). In the latter study, 48 overweight subjects were randomised to receive either a herbal supplement, containing Guarana and Ma Huang, or a placebo for eight weeks. Mean weight loss in the intervention group (-4.0kg) was significantly greater than in the placebo group (-0.8kg). Average body fat loss showed a similar trend (2.1kg vs 0.2kg).

The average weight loss in the present study (i.e. 0.6kg per week) is rather lower than would be expected from a calorie deficit diet but compares favourably with weight losses

Table VI Perceived change in snacking habits at end of trial

Never snack now	6 (13)
Snack less frequently than usual	33 (69)
Snack as frequently as usual	5 (10)
Not stated	4 (8)

Note: Figures in parentheses are percentages

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achieved by exercise interventions (Donnelly *et al.*, 2003) and low fat diets (Pirozzo *et al.*, 2003). It is gratifying that subjects with a higher initial BMI appeared to experience the greatest weight loss.

The Zotrim dose taken in this study (six tablets per day) is less than the maximum recommended dose of nine tablets per day. Usual advice included in the Zotrim packaging recommends both regular exercise and a low fat diet. Thus, it might be expected that a higher dose of Zotrim combined with regular exercise and a low fat diet could produce a greater weight loss than 0.6kg/week. This requires to be investigated in the next stage of research.

The most likely reason for the weight loss, given the absence of dietary advice in this particular trial, is a reduction in average daily energy intake due to a prolonged feeling of fullness. Nutritional intake was not measured due to the limitations of the study, but subjects reported eating less at meals and snacking less frequently. If true, this would have certainly contributed to a lower energy intake and a steady weight loss. Further work on Zotrim presented at the 3rd Health and Nutrition Conference (Baker and Leeds, 2002) supports this view. Subjects offered snack food while viewing television ate significantly less when given two tablets of Zotrim prior to the experiment than when they were given a placebo.

It is also likely that the significant caffeine content of Guarana (10 per cent according to ingredient specifications) contributed to a shift towards negative energy balance. Dulloo *et al.* (1989) observed that a 100mg bolus of caffeine increased resting metabolic rate (RMR) in both lean and post-obese volunteers by 3-4 per cent over 150 minutes, and improved the defective dietary-induced thermogenesis (DIT) observed in the post-obese subjects. Acheson *et al.* (1980) found a similar rise in DIT when caffeine was combined with a meal, which implies that caffeine-containing products have the potential to increase RMR and aid weight loss. Indeed, some commercially available anti-obesity drugs contain caffeine (Astrup and Lundsgaard, 1998). It is known that the uptake of caffeine from Guarana is the same as for preparations containing free caffeine (Bempong and Houghton, 1992). Thus Guarana should logically have the same impact on RMR as free caffeine, although it is accepted that direct evidence for this is lacking.

This consumer study supports earlier work which found that Zotrim aids weight loss, at least in part, by restricting average energy intake. It also suggests that favourable results can be reproduced without the comfort and control of a closely supervised clinical trial.

References

Acheson, K.J., Zahorska-Markiewicz, B., Pittet, P., Anantharaman, K. and Jequier, E. (1980), "Caffeine and coffee: their influence on metabolic rate and substrate utilization in normal weight and obese individuals", *American Journal of Clinical Nutrition*, Vol. 33, pp. 989-97.

Andersen, T. (2002), "Early sensation of gastric fullness following a herbal preparation used for weight loss", abstract presented to the 3rd Health and Nutrition Conference, London.

Andersen, T. and Fogh, J. (2001), "Weight loss and delayed gastric emptying following a South American herbal preparation in overweight patients", *Journal of Human Nutrition and Dietetics*, Vol. 14, pp. 243-50.

Astrup, A. and Lundsgaard, C. (1998), "What do pharmacological approaches to obesity management offer? Linking pharmacological mechanisms of obesity management agents to clinical practice", *Experimental Clinical Endocrinology and Diabetes*, Vol. 106 Suppl. 2, pp. 29-34.

Baker, G. and Leeds, A.R. (2002), "Energy intake from snacks while viewing television, and the effect on this of a herbal preparation", abstract presented to the 3rd Health and Nutrition Conference, London.

Bempong, D.K. and Houghton, P.J. (1992), "Dissolution and absorption of caffeine from Guarana", *Journal of Pharmacy and Pharmacology*, Vol. 44, pp. 769-71.

Boozer, C.N., Nasser, J.A., Heymsfield, S.B., Wang, V., Chen, G. and Solomon, J.L. (2001), "An herbal supplement containing Ma Huang-Guarana for weight loss: a randomized, double-blind trail", *Int. J. Obes.*, Vol. 25, pp. 316-24.

Donnelly, J.E., Hill, J.O., Jacobsen, D.J., Potteiger, J., Sullivan, D.K., Johnson, S.L., Heelan, K., Hise, M., Fennessey, P.V., Sonko, B., Sharp, T., Jakicic, J.M., Blair, S.N., Tran, Z.V., Mayo, M., Gibson, C. and Washburn, R.A. (2003), "Effects of a 16-month randomized controlled exercise trial on body weight and composition in young, overweight men and women: the Midwest Exercise Trial", *Archives of Internal Medicine*, Vol. 163, pp. 1343-50.

Dulloo, A.G., Geissler, C.A., Horton, T., Collins, A. and Miller, D.S. (1989), "Normal caffeine consumption: influence on thermogenesis and daily energy expenditure in lean and postobese human volunteers", *American Journal of Clinical Nutrition*, Vol. 49, pp. 44-50.

Pirozzo, S., Summerbell, C., Cameron, C. and Glasziou, P. (2003), "Should we recommend low-fat diets for obesity?", *Obesity Reviews*, Vol. 4, pp. 83-90.