

## A Dietary Supplement in Combination with an Education Plan and a Long-Term Follow-up Significantly Decrease Blood Pressure, Body Weight and Body Fat

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### Abstract

A 55 year old obese hypertensive woman with a body fat content of 53.7%, and a BMI of 46.9 kg/m<sup>2</sup> was seeking medical treatment at an outpatient obesity clinic in Oslo, Norway. Additionally, she suffered from borderline type 2 diabetes, osteoarthritis and did not desire bariatric surgery as a treatment for her morbid obesity. Being obese for most of her adult life, over the past decades she unsuccessfully tried a wide variety of over-the-counter diets that might have been in vogue at the time. After she was examined and diagnosed at the clinic, she was advised to follow a three-pronged treatment program consisting of education, close follow-up, and a dietary supplement. After 24 months of treatment with life style changes, she had lost 43 kg and the fat content in the body was reduced by 25.6%, down to 28.1%. In conclusion, the patient successfully returned to a normal body fat percentage for her age and gender with a normal blood pressure and no irregular blood sugar readings which was the goal of the treatment paradigm. In conclusion, a natural dietary supplement in combination with an education plan and a long-term follow-up can successfully be used to decrease weight and fat mass and decrease cardiovascular risk factors.

**Keywords:** Obesity; Hypertension; Blood pressure

### Introduction

Obesity is a chronic disease and with no simple cure. For years researchers have treated obesity with lifestyle changes and diet manipulations with limited success. Also, pharmaceutical companies have spent billions of dollars to develop and market prescription drugs to treat obesity, but these drugs were burdened by multiple side effects resulting in a low benefit to risk ratio for those that were marketed, except for orlistat that were withdrawn from the market [1]. Currently obese individuals have limited medical options that can include bariatric surgery and/or treatment offered by their physician or a nutritionist. Private weight loss centers are also available; however, they are often expensive to join. Treatments may also include several expensive over-the-counter (OTC) supplements that may result in a very limited benefit on weight loss that could cause a variety of unwanted side-effects.

Obesity is a very difficult disease to treat, given there are mechanistically multiple pathways leading to fat accumulation in the body [2]. Among the leading causative effects of excess fat accumulation in the body are inactivity, an unhealthy diet, and poor eating habits; however, genetics, family lifestyle, medical problems, certain medications, social and economic issues, age, pregnancy, quitting smoking and lack of sleep are also known causes. In recent years, there has been more focus on stress as a causal factor as stress leads to many hormonal changes in the body [3]. In order to succeed in a weight loss treatment, patients need to be treated under supervision to focus on the appropriate risk factors of the individual.

Obese individuals have a much higher risk of high cholesterol, high blood pressure, diabetes, cardiovascular disease, cancer, and osteoarthritis. A decrease in total weight of just 5% to 10% can significantly lessen risk for target organ damage. However, even a 5% weight loss can in many obese individuals prove difficult, even with an improved diet and regular exercise regimen [4].

### Case Study

The objective of this paper is to describe an interesting case report of successful weight loss in a morbidly obese individual. The methodology for induction of weight loss in this patient was as follows: a) A close patient follow-up with an obesity expert, b) A dietary supplement with white kidney bean extract, locust bean gum and green tea extract and c) An educational program targeting lifestyle changes.

### Patient

A 55 year old female with a history of obesity, hypertension, pre-diabetes type 2, and osteoarthritis presented for medical weight-loss management at our clinic. She was educated in nursing and held an acupuncture specialist diploma. As a young girl and teenager she was healthy and of normal weight, but became obese over the years remaining in that condition for most of her adult years. Over that period the patient attempted a number of dietary supplements and diet plans. In Norway, as in other countries of the world, a large number of dietary products were aggressively marketed with claims of significant weight loss with these different fad diets, including pineapple diets, fasting, chocolate diets and three days diet plans. Our patient had attempted many of these diets in past years and would cyclically lose

and gain weight back, gradually adding more and more weight than when she had started. These events resulted in negatively changing her metabolism. Each year she added additional weight; it became more and more difficult for her to lose weight when on these so-called fad diets. She claimed that all these diets made both her and her girlfriends obese and sick. She transmitted that she recollected losing 12 kg once after entering a one year course in weight loss and dieting, only to discover that when the course was over, she gained it all back within the next 3 months. She also consumed significant amounts of diet sodas recommended by the diet and slimming industry, and she had used energy bars for years to replace meals. Six years ago she had been diagnosed with hypertension and had been on medication since.

Prior to coming to our clinic, the patient had been sedentary the past 6 years due to her osteoarthritis in her ankle making walking difficult for her. Additionally, she had quit nursing and was running her own acupuncture business. As a result, at work she was mainly sedentary with little energy. Her diet consisted mostly of simple carbohydrates, and diet soda drinks and her daily meals were consumed standing in her office. After spending 10-12 h per day at work, she hardly had time to prepare meals at home. She was exhausted after a day's work and she did not sleep very well at night. Her life was more stressful than ever and she finally decided to seek help for her obesity and her high blood pressure in an obesity outpatient clinic.

#### Written consent form

The patient signed a written consent form to allow for this article to be published and she has read and acknowledged the data included.

#### Past medical history

The patient suffered from chronic ankle and foot pain as a result of her osteoarthritis that was treated using both painkillers and anti-inflammatory medications. Moreover, she was medicated for her hypertension and tested positive for markers of pre-diabetes but did not use medication for it. She was a former smoker (12-20 cigarettes a day for about 12 years; had been smoke-free in the last 4 years), with consumption of approximately 1-2 alcoholic beverages per week. She had a family history of heart disease, diabetes type 2 and obesity.

#### First meeting in the outpatient clinic

Her initial anthropometric measurements included a weight of 117 kg with a height of 158 cm; a body mass index (BMI) of 46.9 kg/m<sup>2</sup> which classified her as morbidly obese as measured by bioelectrical impedance analysis (BIA) [5] (Tanita Body Composition Analyzer BC-418). She had a fat percentage of 53.7% equalling 62.8 kg fat mass. Her blood pressure was 148/90 and she was medicated with ACE-inhibitors.

#### Management

On the first visit to the Obesity Clinic she admitted to being irritable and depressed with no or little energy. She was counseled about the amount of excess fat she was carrying and how that could easily lead to other diseases and more stress on her metabolism. She was further counseled on how her heart, lungs, and other organs had to work harder to keep her alive and how much that stressed her body as a whole. Most likely, her high blood pressure was a result of her high fat mass. She was given an individually designed diet list of food rich in

tryptophan to follow daily and her diet was tailored according to the patient's basal metabolic rate (BMR) measured by BIA. Importantly, she initiated trying out a dietary supplement consisting of white kidney bean, locust bean gum and green tea extract administered as one capsule 30 min before each meal. The natural combination has been shown to be safe in man for 5 years and had shown to increase fat loss in favor of fat free mass. The patient was introduced to "The Body in the Brain" Education Plan [6], a recently published book for the overweight and obese; a plan developed by the author that explained from visit-to-visit how the body functioned when it lost weight, added weight and kept a steady weight. The Body in the Brain Education Plan also explained and educated her in how her body's hormones relate to each other when different food compositions are digested. At each visit she was counseled on how to remain on this regimen for lifelong weight loss and weight stabilization. She was followed at the clinic with consultations at 2 week intervals, and then monthly thereafter. Each visit to the clinic consisted of a full body composition measurement with BIA with special emphasis on loss in fat mass and if necessary a diet modification according to changes in BMR including blood pressure taken 3 times on each arm.

#### Results

At the 2 week visit she had lost 2.3 kg of which 70% was fat loss. The next month she had lost another 4 kg of which 78% was fat loss. She lost weight almost every month thereafter and she was motivated for further weight loss as this three-pronged approach of diet consisting of counseling, education and natural supplementation worked for her. She started on daily walking trips in the morning. Her ankle was still painful, but with less body mass it was less strenuous and less painful for her to move. Within the first twelve months she had lost 29 kg and her blood pressure and blood sugar were within normal limits and she went off blood pressure medications. At twenty-four months she had lost an additional 14 kg weighing in at 74 kg of which 28.1% was fat. The patient transmitted that the diet that included foods rich in tryptophan had ameliorated her depression and she felt that her serotonin levels had increased as her mood improved. With the weight loss she slept better at night and had increased energy both at work and in her personal life.

"The Body in the Brain" Education Plan favors eating food rich in tryptophan and B6, e.g. shrimp, chicken, salmon, turkey and raw vegetables. Our patient enjoyed all the food items in the list she was originally given. She even added blueberries to her personal list, and ate blueberries every day as a snack together with water with lime and mint leaves. She grinded ginger, parsley and basil with squeezed fresh orange juice and drank it as an energy shot every morning. She had quit drinking diet sodas and reported that she used to be hungry after drinking diet sodas making her snack more frequently.

Our patient followed the plan daily, was highly motivated at all follow-ups and enjoyed her new eating habits. She even composed her own supporting meal plans and wrote a cookbook with recipes for others to follow. Today, four years later, she still is at a normal weight. Additionally, she is educating others in nutrition and lifestyle changes and composes diets for those seeking her for help. She remains on "The Body in the Brain" Education Plan.

In summary, after 2 years she had lost a total of 43 kg and 98.6% of the loss was fat. She had changed her lifestyle and eating plan, and now exercised five days a week on a stationary bicycle at home and went for a 30 min walk for a minimum of 4 times a week.

## Discussion: Rational for Diet and Supporting Daily Natural Supplement Combination

Diets rich in fiber in combination with a reduced energy intake have shown to reduce weight in overweight and obese individuals [7,8]. Fiber-rich food in combination with increased energy expenditure has proven to show only minor weight loss. The combination of a modified diet with foods rich in tryptophan and a daily dietary supplement have shown to decrease not only weight, but also increase fat loss in the body. When combined with close follow-up (26 outpatient clinic meetings) with emphasis on an education plan called “The Body in the Brain”, it was in this patient possible to obtain normal blood pressure and blood sugar, normal weight and normal fat mass [9] that has been shown to be almost impossible in morbidly obese without bariatric surgery. The patented over-the-counter diet supplement consists of three natural ingredients: White kidney bean extract, green tea extract and Locust bean gum extract that recently went through the NDI Notification process and FDA responded with a no-objection letter. This dietary supplement may be considered as one of the main contributors towards this patient’s fat loss. The white kidney bean extract is well known for its  $\alpha$ -amylase inhibiting effect and has been used for weight loss for years but the weight loss has been only minor and the bean extract taken alone has among others side effects as bad breath.

Until 2015, the locust bean gum extract had not been approved by the FDA as an ingredient in dietary supplements. This extract has lipid lowering effects and inhibits ghrelin, the hunger hormone making subjects faster satiated at meals and prolongs the effect of satiety between meals [10]. The lipid lowering effects are postulated to be facilitated through binding bile acids and increasing bile acid secretion [11]. Additionally, Locust Bean Gum interferes with micellar formation, which impacts cholesterol absorption. Locust bean gum fiber may also act as a water-holding and cation-exchange agent, increasing total fecal output because of the increased water-holding capacity [12,13].

The green tea extract containing catechin is polyphenols with anti-oxidant and anti-inflammatory properties [14]. Green tea extract has shown to have an impact on metabolism by increasing thermogenesis [15]. Moreover, green tea extract has shown to reduce adipocyte lipogenesis, decrease fat absorption and increase fat oxidation and thereby help in combat obesity [16]. The primary catechin in the green tea is epigallocatechin gallate (EGCG) that inhibits catechol-o-methyltransferase and thus prolongs the action of norepinephrine indirectly increasing thermogenesis [17] causing an increase in BMR and the gut’s transit time thereby inhibit absorption of sugar and fat into the body. In combination with Locust bean gum and white kidney bean there is no bad breath involved as a side effect of the white kidney bean extract most likely due to the antiseptic effect of the green tea. This combination of three ingredients has shown to have synergistic effect on weight loss.

This dietary supplement in combination with increase in physical activity could be the cause of the fact that our patient lost much more fat that would have been predicted with lifestyle changes alone. However, her energy level increased, her tiredness disappeared, she slept better at night and her mood improved which might be caused by her change in diet from simple carbohydrates and diet sodas to food rich in tryptophan and water with lime and her morning energy shot. Food rich in tryptophan especially consisting of complex carbohydrates and proteins such as chicken, turkey, salmon, cod and

halibut and lean meat, may have increased the serotonin levels in the brain, lowered the insulin levels, increased the sensitivity to leptin, increased the melatonin and decreased the stress hormone cortisol. When all these hormonal reactions are in balance, the body will lose weight and decrease fat mass. The education program “The Body in the Brain” targets education of these hormonal regulations upon food manipulations.

## Concluding Remarks

Weight loss can be a lifelong struggle, but in this case our patient had become motivated to learn how the body’s metabolism functions and how interactions of the brain and hormone actions balance with the right food combinations. Our patient with a BMI of 46.9 kg/m<sup>2</sup> was able to lose 36.7% of her initial body weight and normalize her blood pressure and pre-diabetic parameters after 2 years with a program consisting of close follow up, an education program “The Body in the Brain” and a dietary supplement consisting of white kidney bean extract, locust bean extract and green tea extract.

The success of this patient provides hope that this plan will also work for other patients who are overweight or obese, if they are able to tolerate the diet and are complaint with following the educational recommendations.

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