



Efficacy of navaka guggulu in the management of obesity: A case study

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ABSTRACT

Obesity is a global public health problem because of its increased prevalence and health effects. It is the most common disorder encountered in clinical practice, which has serious social and psychological dimensions that affect all age groups. A 28-year old married obese male whose body weight and height were 97 kilograms and 5.9 feet respectively showed a body mass index (BMI) of 30. All the examinations and tests were normal before the study. There were 3 weight reduction regimes that included only walking in the morning during the first month, followed by walking with dieting in the second month and in addition to dieting and walking, two tablets of Navaka Guggulu was prescribed to be taken daily. The vital signs, bowel habits, micturition habits and appetite were assessed daily. After the interventions, the weight reduction was observed at 0.5, 0.8 and 4.7 kgs at the end of the first, second and fourth month, respectively. The results of routine blood parameters, autonomic function tests and respiratory function tests were normal with an increase in the haemoglobin level, high-density lipids and a decrease in the total cholesterol level, triglycerides, low-density lipids and very low-density lipids. The present study showed that Navaka Guggulu was not only beneficial but also safe and efficacious in the treatment of obesity.



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INTRODUCTION

Obesity, a major worldwide epidemic, is fundamentally caused by the intake of high caloric food and a modern sedentary lifestyle which results in gross energy imbalance between calories consumed

and calories expended and also due to genetic predisposition (Kopelman, 2000). When fat gets accumulated in the body, the person faces difficulty even in performing routine activities as it is associated with dyspnea on exertion, thirst, drowsiness, voracious appetite, sudden obstruction to respiration, body ache, excessive sweating and bad odour from the body leading to decreased life expectancy (Prasad *et al.*, 2009). Obesity, if left unattended leads to various major complications like hypertension, coronary heart disease, atherosclerosis, diabetes and some types of cancer (Kopelman, 2000). The incidence of obesity is increasing very rapidly. According to the World Health Organization, more than 13% of the world's adult population was obese in 2016 (World Health Organisation, 2018). Six hundred million adults and around 100 million children were obese in 2015 (Kishor *et al.*, 2018). As per the Quetelet's index, the normal,

overweight and obese BMI ranges from 18.5-24.9, 25.0-29.9 and 30.0-39.9, respectively (Hannan *et al.*, 1995). Though there are many approaches in modern medicine and surgery for the management of obesity, it is still posing a major problem to the population because of its complications and side effects. Thus, for the complications and preventions of obesity, people seek ayurvedic treatment for promoting weight loss and reducing obesity in a natural way. In our study, a case of obesity was controlled by walking, both walking and dieting and the addition of the drug, Navaka Guggulu.



Figure 1: Ingredients of Navaka Guggulu

Navaka Guggulu is a polyherbal ayurvedic formulation which is effective in treating weight loss, improving digestion and in relieving rheumatoid arthritis. It has no known side effects (Vyas *et al.*, 2017). It contains nine herbs which are shown in Figure 1 with Guggulu (*Commiphora Mukul*) as its base ingredient (Simha and Laxminarayana, 2008).

The present study aimed at assessing the effect of Navaka Guggulu on obesity.

METHODOLOGY

The study was designed for a treatment period of 4 months. The subject was requested to sign the informed consent form, and he voluntarily took part in the study. The investigators counseled the subject and impressed him to follow the prescribed regime for 4 months. A self-designed proforma was used to obtain the information regarding the personal details, sociodemographic profile, family history, diet pattern, compliance to drug and exercise by interviewing the subject.

Case Report

A 28-year-old married male with a family history of obesity presented for the treatment of obesity with the complaints of not losing weight by walking and

dieting as he was a little irregular. On examination, his height was 5.9 feet and weight 97 kilograms (kgs) with a body mass index of 30, which denotes obesity according to Quetelet's index. Hematological routine tests including total red blood cell (RBC) count, total white blood cell (WBC) count, differential count, platelet count, hemoglobin (Hb) level, packed cell volume (PCV), erythrocyte sedimentation rate (ESR), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin volume (MCHV), peripheral smear study along with glucose and thyroid function test reported normal. Lipid profile test for assessing total cholesterol (TC), triglycerides (TG), high-density lipids (HDL), low-density lipids (LDL) and very low-density lipids (VLDL) were also normal. Autonomic function tests such as cold pressor test and Valsalva manoeuvre were tested and found to be normal. Knee jerk and respiratory function tests were also normal. The subject was advised to have 7 to 8 hours of sleep. Parameters such as vital signs, bowel habits, micturition habits and appetite were monitored daily. The subject was prescribed the below regimen to be followed strictly given below,

In the 1st month

Moderate to brisk walking in the morning for about 30 minutes daily.

In the 2nd month

Continue walking and to add dieting that included low fat, sugar, salt, adequate carbohydrates and high protein.

In the 3rd and 4th month

Intake of two tablets (500mg each) of Navaka Guggulu daily after meals both morning and evening with lukewarm water (Satish *et al.*, 2015) was compiled along with walking and dieting.

RESULTS

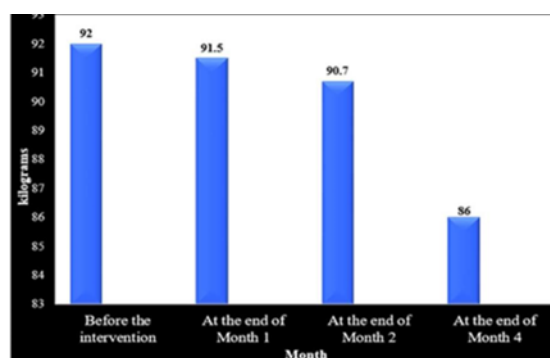


Figure 2: Changes in body weight

The weight reduction was 0.5, 0.8 and 4.7 kg at the end of the first, second and fourth month respec-

Table 1: Results of various blood parameters

Name of the test done	Units	Before the study	the Walking only	Walking and Dieting	Walking, Dieting and Drug intake
Total RBC count	million cells/cu.mm	4.7	4.8	4.8	4.9
Total WBC count	cells/cu.mm	9,800	9,830	9,820	9,840
Differential count					
Neutrophil	%	64	64	63	63
Lymphocyte	%	30	31	31	32
Eosinophil	%	6	6	6	3
Basophil	%	0	0	0	0
Monocyte	%	0	0	0	0
Platelet count	cells/cu.mm	2,60,000	2,61,000	2,63,000	2,66,000
Hb% (Sahli's method)	grams%	14	14	14.1	17
Packed Cell Volume (PCV)	%	42	42	43	43
Erythrocyte Sedimentation Rate (ESR) in 60 minutes	mm	6	6	6	6
M.C.V	cu.microns	89	88	90	88
M.C.H	picograms	30	29	29	35
M.C.H.C	%	33	33	33	40
Glucose fasting	mg/dl	90	90	88	86
Total cholesterol	mg/dl	193	194	188	185
Triglycerides	mg/dl	140	137	131	124
H.D.L	mg/dl	45	48	52	59
L.D.L	mg/dl	120	119	110	101
V.L.D.L	mg/dl	26	26	20	12
TC/HDL ratio		3.7	3.5	3.1	2.5
HDL/LDL ratio		0.4	0.4	0.5	0.6
T3	ng/dl	148.2	146	146	145
T4	ng/dl	8.95	8.8	8.7	8.5
TSH	μ IU/ml	1	1	1.1	1.1

tively are shown in Figure 2. The obtained values of all the blood parameters remained in the respective normal ranges are shown in Table 1. Vital signs, bowel habits, micturition habits and appetite were also normal. Results of autonomic function tests and respiratory function tests reported to be normal with an increase in the Hb level is shown in Figure 3 HDL is shown in Figure 4 and a decrease in the TC, TG is shown in Figure 5 LDL is shown in Figure 6 and VLDL is shown in Figure 7 levels, which eventually

decreased the ratio of TC/HDL and HDL/LDL. Side effects such as gastric disturbances, headache, and skin rashes were not reported by the subject during the treatment period.

DISCUSSION

Incidence of obesity is increasing day by day due to faulty diet pattern and luxuries life measures that ultimately lead to a decrease in physical activ-

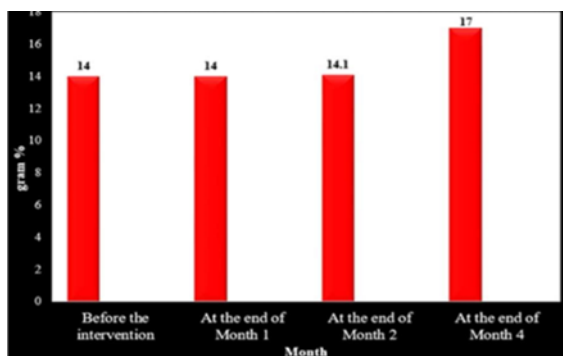


Figure 3: Changes in haemoglobin

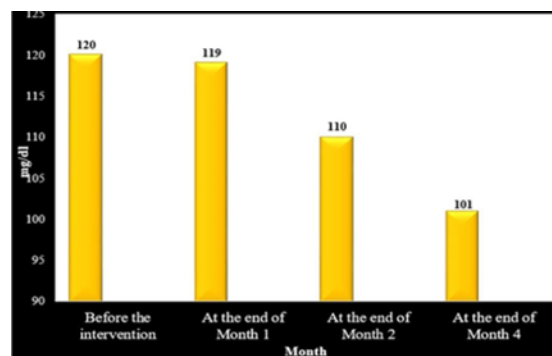


Figure 6: Changes in LDL level

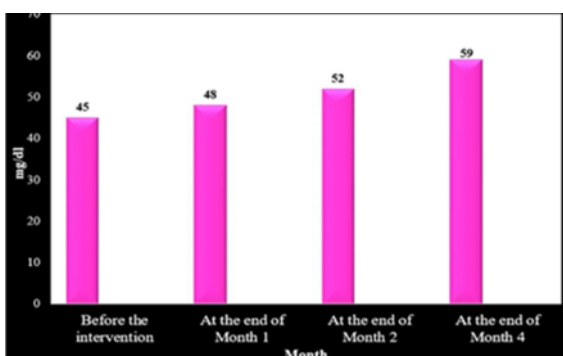


Figure 4: Changes in HDL level

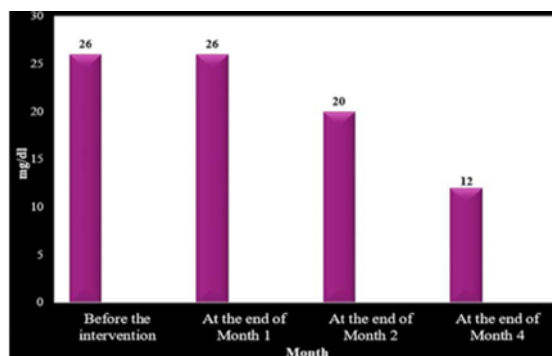


Figure 7: Changes in VLDL level

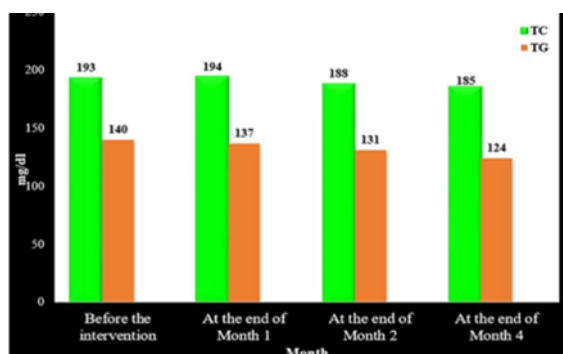


Figure 5: Changes in TC & TG levels

ities. Promoting a healthy lifestyle not only prevents complications but also improves quality of life and tackles obesity. A change in the lifestyle will have a tremendous effect on staying hail and healthy. Empirical evidence ensures that Navaka Guggulu has been in practice for the last 2500 years (Prasad *et al.*, 2009). The aim of this study was to assess the effect of Navaka Guggulu in the management of obesity.

In this study, the subject reported the family history of obesity, which presents that it is inherited. It may be forewarned that if there is a family history of obesity, an earlier onset of obesity is probably possible and diagnosis should be made earlier to prevent obesity (Prasad *et al.*, 2009).

Body weight and BMI reduce significantly, which

show Navaka Guggulu has an anti-obesity effect and thereby encouraging in weight reduction. The explanation for this was given in a study that Navaka Guggulu corrected the metabolic process and the increase of fat. The ingredients of Navaka Guggulu have the properties to normalize the state of digestive fire by which the increasing fat is regulated (Sharma *et al.*, 2015). A study conducted by Srivastava *et al.* also reported highly significant results of weight and BMI reduction by Navaka Guggulu (Srivastav *et al.*, 2006).

It is noteworthy that the values of all the blood parameters were in the normal ranges, which appear that Navaka Guggulu has not affected the hematological system of the body.

The absence of any side effects during the regimen too speculates that Navaka Guggulu has not led to any afflictions in the normal body functions.

There was an increase in the HDL level in our study. A similar study reported that the intake of Navaka Guggulu increased the HDL level whereas dry powder massage which is also used in the treatment of obesity had not shown any increase in the HDL level (Sharma *et al.*, 2015).

It is evident from the test results that VLDL and LDL levels are decreased. Transportation of endogenous TG is carried out by VLDL, whereas cholesterol and phospholipids to peripheral cells are transported by

LDL. Hence, the decline in the TG levels is persistent with the decrease in VLDL. Probably, this suggests that the transport of endogenous TG by VLDL to peripheral tissues may be one mechanism of Navaka Guggulu. The reduction in the TC, TG, LDL, VLDL that eventually decreases the ratio of TC/HDL, HDL/LDL and the increase in HDL which is evident in the current study is the desired pharmacological action of Navaka Guggulu. Diet and lifestyle component has a direct effect on lipids. The decrease in lipid values and the risk for atherosclerosis through lifestyle modification like diet and exercise was reported earlier (Vyas *et al.*, 2017). Navaka Guggulu has shown an overall good effect on lipid profile tests, the deviation of which is a major cause of obesity.

CONCLUSION

Navaka Guggulu, proper diet pattern and brisk walking when administered together appear to be effective in the management of obesity as Navaka Guggulu poses antihyperlipidemic property. Navaka Guggulu provided no statistical amendments in regards to the blood parameters, thyroid function tests, autonomic function tests, and respiratory function tests. No side effects were reported during the treatment, and so Navaka Guggulu can be considered safe and an effective traditional drug in a weight reduction of an obese subject. Efforts should be taken to remain healthy by exercising regularly and consuming the right quality and quantity of the food as per the caloric requirement so as to increase life expectancy.

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