



Title: A study on the effect of *vidangadi* compound on lipid profile and fasting blood sugar

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Abstract:

Sthaulya is included under eight undesirable conditions (*Ashtau Nindita*), *Shleshma Nanatmaa*, *Samtarpana Nimittaja*, *Atinindita*, *Ati Brihmana Nimittaja*, and *Bahu Dosha Janita Vikara*. Moreover, *Sushruta* has emphasized on metabolic disturbances (*Dhatva agnimandya*) in the etiopathogenesis of *Sthaulya*. The World Health Organization (WHO) defines BMI between 25 -29.9 is overweight and BMI greater than 30 is obesity. The present study is a clinical study to evaluate the efficacy of *Vidangadi* Compound (VC) on Obesity and type II diabetes. Diagnosed patients were selected from Ayurveda Teaching Hospital at Borella from the period of January 2015 to May 2016. Thirty patients (30) who had BMI between 25 to 45 and fasting blood glucose <200 mg/dl were included in the study. Subjective assessment criteria were the symptoms of obesity with proper grading whereas objective criteria were BMI, body circumferences, skin-fold thickness, Lipid profile and FBS. Data were analyzed by using SPSS statistical software. In this study, *Vidangadi* Compound (VC) in the form of pill was given 1 g (each pill 500mg) at 8.00 A.M & 6.00 P.M before meal for eight weeks with 5 ml bee honey. VC improved *Sphik Chalata*, *Anga Gaurava*, *Anga daurgandaya*, *Ati- kshudha*, *Daurbalya*, *Sewedadikya*, *Uthsha hani*, *Gathrasada*, *Udara Chalata*, *Sthana Chalata*, body circumferences, BMI, Skin Fold Thickness, Fasting Blood Sugar (from 96.30±1.63 to 92.61±1.58), Triglyceride (from 126.94 ± 8.28 to 115.84 ± 9.02) and HDL (from 46.88 ±1.98 to 52.13±1.01) in statistically highly significant manner (p<0.001). VC is composed of *Katu* (66.6%), *Tikta* (50%) and *Kashaya rasa* (83.33%); *Laghu* (33.33%), *Ruksha* (33.3%), *Thikсна* (16.66%), *Sukshma* (16.6%) and *yogavahi guna* (16.6%); *Ushana virya* (50%) and *Katu vipaka* (83.3%). Collectively, these properties of VC are responsible in improving subjective as well as objective parameters of *sthaulya* especially Lipid profile and Fasting Blood Sugar significantly.

Keyword: *Vidangadi* Compound, Obesity, Type-II Diabetes, Lipid profile, Fasting Blood sugar

Introduction:

Sthoulya is included under *Ashtaunindita purusha*ⁱ and diseases of *Shleshma nanatmaja*ⁱⁱ, *Samtarpana nimittaja*ⁱⁱⁱ, *Ati-Brihmana nimittaja*^{iv} and *Bahudoshaja nitavikara*^v. Accumulation of fat over the limit led to ill effect in the body known as obesity. Body mass index (BMI) is an index of weight-for-height that is commonly used to classify overweight and obesity. The World Health Organization (WHO) definition is ^{vi}a BMI greater than 25 is overweight and ^{vii} BMI greater than 30 is obesity. Obesity and overweight occurs due to imbalance between calories consumed and calories utilized. Globally, there have been two reasons for overweight and obesity:⁷ an increased intake of energy-dense foods that are high in fat, salt and sugars; and⁸ a decrease in physical activity due to the increasingly sedentary nature of many forms of work and increasing urbanization. Overweight and obesity are the fifth leading risk for global deaths. At least, 2.8 million adults die each year as a result of being overweight or obese. In addition, 44% of the diabetes burden, 23% of the ischemic heart disease burden and between 7% and 41% of certain cancer burdens are attributable to overweight and obesity. Overall, more than one in ten of the world's adult population is obese. ^{viii} In addition to increased future risks, obese persons experience breathing difficulties, increased risk of fractures, hypertension, cardiovascular diseases and psychological effects.^{ix}

Apathyanimittaja prameha is caused by unhealthy dietary and lifestyle factors and it is well correlated with type II Diabetes Mellitus. Ayurveda possesses a number of

valuable remedies that can be used in the management of *apathyanimittaja prameha*.

JUSTIFICATION

Obesity is one of the burning problems globally as it hamper the different systems in the body. An obese person is prone to land up in complications like dyslipidemia, hypertension, coronary heart diseases, diabetes mellitus, osteoarthritis, infertility, impotency and many psychological. Ayurveda is one of the highly developed indigenous systems of medicine in the world. The classical *Vidangadi* Compound had not been subjected to any scientific study to evaluate its efficacy on *Sthoulya* and *apathyanimittaja prameha*.

Aims and Objects:

This study was carried out to evaluate the efficacy of *Vidangadi* Compound on *Sthoulya* and *apathyanimittaja prameha*.

METHODOLOGY

The present study is a clinical study in which patients who fulfilled the criteria were selected from Ayurveda Teaching Hospital at Borella, Colombo 08, Sri Lanka from period of January 2015 to May 2016. Both male and female patients, between 20 -60 years of age, who had BMI between 25 to 45 kg/m² and FBS less than 200 mg/dl were included in the study. Sixty (30) patients were treated with *Vidangadi* Compound at the dose 1 g (each pill of 500mg) 8.00 a.m & 6.00 p.m before meal with 5 ml bee honey for a period of eight (08) weeks.

Patients were evaluated before starting the treatment and after completing the



treatment for their subjective as well as objective criteria. Subjective criteria (symptoms of *sthaulya* and *apatyanimittaja prameha*) were assessed with proper grading according to their severity. Objective assessment criteria were BMI, body circumferences, skin-fold thickness, lipid profile and FBS.^x Specific diet was recommended to each patient during the period of treatment.

Data were analyzed by SPSS statistical software. Qualitative data were analyzed by Wilcoxon Sign Rank test and Mann-Whitney test whereas quantitative data were analyzed by paired and unpaired students 't' tests.

Results and Observations:

Majority of patients were in 40-49 age group (48.33%), female (93.33%), married (93.3%), housewife (76.7%), had secondary education (78.3%), belonged to middle socio-economic status (86.7%), and lived in suburban areas (66.7%). Considering the family history, obesity and type II DM were among sisters (41.7%), mother (38.3%) and father (30.0%).

The majority of patients had mixed diet (90%); *adayasana* (53.3%), *vishamasana* (36.7%) and *virudhasana* (25%); food rich in *snigdha* (73.3%) and *guruguna* (70.0%); *madhurarasa* (58.3%); and *visamagni* (53.3%). Considering the life style, the majority of patients had no exercise (68.3%), had excessive sleep (61.7%) and day sleep (36.7%). *Vata-kaphaprakriti* (58.3%) were more common among *sthaulya* and *apatyanimittaja prameha*. All most all patients had *avara* state of *abayavarana shakthi* and *avara jarana shakthi* (each 100%).

Effect of Vidangadi Compound on Sthaulya and Apatyanimittaja prameha

The improvement of the mean value of *Sphik Chalata* (from 3.71 to 2.36), *Anga Gaurava* (from 3.48 to 1.93) *Anga daurgandaya* (from 3.63 to 1.83), *Ati-kshudha* (from 2.00 to 0.14), *Daurbalya* (from 3.42 to 1.53), *Sewedaabadha* (from 3.38 to 1.67), *Uthsha hani*(from 3.19 to 1.85), *Gathrasada* (from 3.54 to 1.85), *Udara Chalata* (from 3.69 to 1.93) and *Sthana Chalata* (from 3.64 to 2.14) was statistically highly significant ($p < 0.001$). *Ati- Trisha* (from 3.64 to 1.43), *Shuwasa* (from 3.07 to 1.71) and *Nidradikya* (from 3.60 to 2.30) was statistically significant. ($p < 0.05$).

Table 1: Effect of Vidangadi Compound on Body circumferences

Parameter	Mean		SD± SE		t	P
	BT	AT	BT	AT		
Mid Arm Circumference	34.67	29.67	2.91±0.53	5.91±1.08	4.687	P<0.001
Waist Circumference	106.03	97.93	7.88±1.44	7.66±1.39	16.565	P<0.001
Hip Circumference	112.39	99.66	7.40±1.35	18.50±3.37	3.871	P<0.001

The mean value of mid Arm Circumference, Waist Circumference and Hip Circumference, was reduced from 34.67 to 29.67, from 106.03 to 97.93, from 112.39 to 99.66 respectively.

Therefore, mid Arm Circumference, Waist Circumference and Hip Circumference were statistically highly significant. ($p < 0.001$).

Table: Effect of *Vidangadi* Compound on BMI

Parameter	Mean		SD± SE		T	P
	BT	AT	BT	AT		
BMI	36.54	31.77	3.99±0.73	3.55±0.64	18.55	P<0.001

The mean value of BMI was reduced from 36.54 to 31.77 which is statistically highly significant ($p < 0.001$).

Table 3: Effect of *Vidangadi* Compound on Skin Fold Thickness

Parameter	Mean		SD± SE		T	P
	BT	AT	BT	AT		
Bicep	23.50	18.87	6.67±1.21	6.58±1.20	8.492	P<0.001
Triceps	25.73	19.00	6.61±1.20	4.66±0.85	8.564	P<0.001
Supra iliac	42.83	38.67	5.55±1.01	5.93±1.08	8.398	P<0.001
Mid thigh	42.71	38.17	3.50±0.64	4.97±0.90	6.561	P<0.001
Umbilical	41.80	36.50	3.82±0.69	5.36±0.97	7.737	P<0.001

The mean value of Skin Fold Thickness, middle portion of the Bicep (from 23.5 to 18.87), Triceps (from 25.73 to 19.00), Supra iliac (from 42.83 to 38.67), Mid-

thigh (from 42.71 to 38.17) and Umbilical (from 41.80 to 36.50) was reduced in statistically highly significant manner. ($p < 0.001$).

Table 4: Effect of *Vidangadi* Compound on Lipid profile and Fasting blood sugar

Parameter	Mean		SD± SE		T	P
	BT	AT	BT	AT		
Total Cholesterol	193.52	191.44	42.73± 7.80	37.26 ± 6.80	0.423	p>0.05
Triglyceride	126.94	115.84	45.38±8.28	49.40± 9.02	2.487	p<0.05
LDL	119.60	118.93	45.73±8.34	36.49±6.66	0.151	p>0.05
HDL	46.88	52.13	10.87±1.98	5.53±1.01	-3.167	p<0.05
FBS	96.30	92.61	8.97±1.63	8.66±1.58	6.223	P<0.001

The mean value of Fasting blood sugar (from 96.30 to 92.61) was reduced in statistically highly significant manner ($P < 0.001$) whereas the mean value of Triglyceride (from 126.94 to 115.84) and HDL (from 46.88 to 52.13) was reduced statistically significant ($p < 0.05$). According to the reduction of mean value of total cholesterol (from 193.53 to 191.4) and LDL (from 119.6 to 118.93) was insignificant. ($p > 0.05$).

Discussions:

In this study, collectively, 80% of patients belong to the age group of 30-49 meaning young adults and middle-aged people are more prone to have obesity. The majority of *sthaulya* patients are female (93.33%). According to a study conducted by Al-Isa AN- Prevalence of obesity among adult Kuwaitis: a cross-sectional study, it has been reported that obesity ($BMI \geq 30.0$) is at present, estimated to be about 40.6% in adult females are obese.^{xi} Hence, it is evident that females are more vulnerable to develop obesity. The majority of patients are married (93.3%), housewives (76.7%), having secondary education (78.3%), belonging to middle socio-economic status (86.7%) and living in suburban areas (66.7%). The majority of the patients are having gradual onset (98.3%). Considering the family history, obesity is common among sisters (41.7%) and mothers (38.3%).

Considering the psychological history, this study reports that majority of the obesity patient having tension (45%) which may be due to the effect of disease. Among female patients, the majority of patients are having regular menstrual cycle (53.6%). The majority of patients are

having mixed diet (90%) than the people who take vegetarian diet (10%). Excessive consumption of animal products rich in fat and oil is well established risk factor of obesity.

In this study, *Vidangadi* compound (VC) was given for a period of eight weeks 1g (2 pills) twice a day, before meal with 5ml Bee honey. The improvement of *Sphik Chalata*, *Anga Gaurava*, *Anga daurgandaya*, *Ati- kshudha*, *Daurbalya*, *Sewedaabadha*, *Uthsha hani*, *Gathrasada*, *Udara Chalata* and *Sthana Chalata* is statistically highly significant ($p < 0.001$) whereas *Ati- Trisha*, *Shuwasa* and *Nidradikya* is improved in statistically significant manner ($p < 0.05$).

Discussion on the effect of *Vidangadi* compound

Vidangadi compound improved *Sphik Chalata*, *Anga Gaurava*, *Anga daurgandaya*, *Ati- kshudha*, *Daurbalya*, *Sewedaabadha*, *Uthsha hani*, *Gathrasada*, *Udara Chalata* and *Sthana Chalata*, Mid Arm Circumference, Waist Circumference, Hip Circumference, BMI, Skin Fold Thickness over middle portion of the Biceps, Triceps, supra iliac, Mid-thigh and Umbilical region Triglyceride, HDL, and Fasting Blood Sugar is statistically highly significant ($p < 0.001$).

Vadangadi compound is composed of *Katu rasa* (66.6%), *Tikta rasa* (50%) and *Kashaya rasa* (83.33%); *Laghu guna* (33.33%), *Ruksha guna* (33.3%), *Thikсна guna* (16.66%), *Sukshma guna* (16.6%) and *yogavahi guna* (16.6%); *Ushana virya* (50%) and *Sheeta virya* (50%) and *Katu vipaka* (83.3%). *Vidanga* is having *kapha vata shamaka deepana, pachana,*



muthrakaraka, rakthasodaka and *shothaharai* properties. *Nagara* is composed of *vata kapha shamaka, thrupthigna, deepana, trishna nigrahana* and *pachana* properties. It is an appetizer and improves digestion. *Yava* is having *thrusnahara* property. *Amalaki* contains *thridosagna, medya, daha prasamana, muthrakaraka, agnideepana, pachana, anulomana* and *rochana* properties. *Yavakshara* is having *kapha vata shamaka* and *agni deepana* properties. *Lahua bashma* is having *kapha* and *pitta shamaka, vayasthapana,* and *meda-hara* effects.^{xii} *Makshika* (bee honey) contains *thridosagna, kapha pitta shamaka,*

yogavahi, anti- inflammatory and anti – oxidant properties. Collectively, these properties of VC are responsible in improving subjective as well as objective parameters of *sthaulya* significantly.

Conclusion:

By fore going, it may be concluded that *Vadangadi compound* is effective in improving most of the subjective as well as objective parameters of obesity (*Sthaulya*) and *apathyanimittaja prameha*. Finally, it may be suggested that these findings need to be validated by further research having more number of patients with longer duration of treatment.

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^xAn International Quarterly Journal of Research in Ayurveda /AYU 2014 Jan-Mar; 35(1): 28–34 [Shri Kant Tiwari](#) Department of *Kaya Chikitsa*, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India).

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