



A COMPARATIVE CLINICAL STUDY OF MADHOODAK AND GOMUTRA-ARKA AS PATHYA IN ATISTHAULYA W.S.R. TO OBESITY

ASHUTOSH DWIVEDI¹ NARENDRA SINGH RAJPOOT² ARCHANA SINGH³ KASHINATH SAMAGANDI⁴ JAGRITI SHARMA⁵

Background: Overweight and obesity are the fifth leading risk for global death. At least 2.8 million adult die each year as a result of obesity. It is a major risk factor for serious non-communicable diseases, such as CVD, hypertension, stroke, DM etc. Various medicines are available for the management but results are unsatisfactory and prevention is the only alternative. It is told that there is no other medicine as diet. So there is a need to find a suitable measure for this purpose. **Objective:** To assess the efficacy of *Madhoodak & Gomutra Arka* in the management of *Sthaulya* & compare their effect. **Material method:** In present clinical trial 40 patient aged between 20 to 45 years, reporting BMI in between 25 to 40 kg/m², having clinical signs and symptoms of *Sthaulya* were selected from O.P.D. & I.P.D. & Yoga Unit of NIA Hospital, Jaipur, Rajasthan, and registered following written consent. Registered patients were randomly divided into two groups. Group A has been administered with *Gomutra Arka* in the dose of 10 ml with 40 ml of water once in a day, & Group M has been administered with *Madhoodak* in the dose of 10 ml with 40 ml of water once in a day. Follow up has been recorded after every fortnight for the duration of 3 month. **Results:** Both the groups showed statistically highly significant (p<0.001) results in all the Subjective, Objective, Anthropometric & Laboratorial parameters except in *Alpavyavaya & Gatrasada*. Group A showed better percentage of relief in maximum parameters except in *Daurbalya, Atipipasa, Atikshudha, & Alpavyavaya*. These are the only symptoms in which *Madhoodak* Group showed maximum percentage relief. **Conclusion:** The *Gomutra Arka & Madhoodak* both are safe, cost effective and free from side effects & can be used for effective management of *Sthaulya* and in comparison *Gomutra Arka* is better.

Keywords: *Atisthaulya, Gomutra-Arka, Madhoodak, Obesity*

¹Asst. Professor, Dept. of Swasthavritta & Yoga, ³Asst. Professor, Dept. of Roga Nidana, Govt. Ayurved College Rewa M.P. ²Ayurveda Medical Officer, Gwalior M.P. ⁴Assistant Professor, P.G. Dept. of Swasthavritta & Yoga, National Institute of Ayurveda, Jaipur, ⁵Associate Professor, Rasashastra & Bhaishajya Kalpana, MJF Ayurved College Chomu, Jaipur

Corresponding Email id: drashutosh1984@gmail.com

Access this article online: www.jahm.in

Published by Atreya Ayurveda Publications under the license CC-by-NC-SA.

INTRODUCTION:

Sthaulya^[1] i.e. obesity is one of the most effective disease which affect someone social, physical and mental features. As per modern view, it is a precursor to coronary heart disease, high blood pressure, diabetes mellitus and osteoarthritis which have been recognized as the leading killer diseases of the millennium^[2]. Obesity has reached epidemic proportions globally with more than 1 billion overweight adults; at least 300million of them are obese^[3]. The Framingham heart study showed that a 20% excess over the desirable body weight clearly poses risk to health^[4]. Overweight and obesity are the fifth leading risk for global death. At least 2.8 million adult die each year as a result of obesity. Somehow global estimate from 2008 are as following. 1.5 billion adult, 20 and older were obese. (200million men, 300 million women) in India 13% women and 9% men are overweight (national family health survey-3, 2005-06). The prevalence of obesity was 42.4% in 2017~2018. From 1999–2000 through 2017–2018, the prevalence of obesity increased from 30.5% to 42.4%, and the prevalence of severe obesity increased from 4.7% to 9.2%^[5]. As obesity is identified as a major risk factor for serious non-communicable diseases the emergence of this disease indicates the need

of prevention. Various medicines are available for the management but results are unsatisfactory and prevention is the only alternative. It is told that there is no other medicine as diet. So there is a need to find a suitable measure for this purpose.

Keeping in view, this burning problem of the present era and its associated devastating disease, it has been decided to do research on *Sthaulya* with certain *Ayurvedic* Classical remedies^{[6][7][8][9]}. For this purpose *Madhoodak & Gomutra Arka* has been selected to as pathya diet.

Madhoodak is “*Guru&Aptarpana*” drug. Due to its heaviness quality^[10], it digests lately, as a result, the obese person does not feel hunger quickly and due to its *Aptarpana* action,^{[11][12]} it reduces fat^{[13][14][15][16]}. Whereas **Gomutra** is *Deepana, Pachana* and *Malashodhak* helps in rectifying the *Medovahasrotas*^{[17][18]}. When the *Gomutra* is used in *Arka* form it acts on *Medovahasrotas* as a *lekhanidraavya*^{[19][20]}. Therefore it is selected in the form of *Arka* to counteract the *Samprapti* of *Ati-Sthaulya*.

OBJECTIVES:

1. To assess the efficacy of *Madhoodak&Gomutra Arka* in the management of *Sthaulya*.

2. To compare the effect of *Madhoodak* and *Gomutra Arka* in the management of *Sthaulya*.

MATERIAL & METHODS:

Study Design: Randomized prospective open level parallel clinical trial

Study Population: Patients from peripheral area of NIA Madhovilias Jaipur.

Study sample: Patients attending the OPD of NIA, JAIPUR

Sample Size: 40

Study setting: conducted at National Institute of Ayurveda Jaipur from 2016 to 2018.

Inclusion Criteria: Patients aged between 20 to 45 years, reporting BMI in between 25 to 40 kg/m², having clinical signs and symptoms of *Sthaulya* and should not on any others medicines for *Sthaulya* were included in the study.

Exclusion Criteria: Patients not fulfilling the inclusion criteria and reporting severe Hypertension, Diabetes mellitus, Hypothyroidism or having evidence of renal, hepatic and cardiac involvement were not included in the study. Patients with long term Steroid treatment and pregnant women were also excluded.

Diagnostic Criteria:

It was mainly based on the specially prepared proforma, including all clinical signs and symptoms of the disease in which detailed history was taken and physical examination

was done. Standard height – weight chart was also included (in all anthropometry). Moreover, the value of BMI, circumferences was also used as diagnostic criteria.

Investigations: Routine haematological, urine, stool examination were done to know the present status of patients as well as to exclude others pathological condition. Relevant biochemical tests like S. Cholesterol, S. Triglyceride, HDL, LDL, VLDL etc. were carried out before and after treatment.

Plan of Study: 40 patients irrespective of age, sex, religion, caste etc., were randomly selected & distributed into following 2 therapeutics groups. 33 have completed the course and out of those 33 patients (for making equilibrium in clinical and statistical analysis), total 30 patients 15 from each group has been assessed for the efficacy of the therapy.

(1) Group A – Gomutra Arka Group: In this group *Gomutra Arka* had been administered once in a day, early morning, empty stomach in the dose of 10 ml with 40 ml of water (1 Pal)

(2) Group M – Madhoodak Group: In this group *Madhoodak* had been given orally once in a day, early morning, empty stomach in the dose of 10 ml with 40 ml of normal water (1 Pal)

Follow up & Duration of Trial: Patients were advised to visit for follow up after every

fortnight for the duration of 3 month. Total duration of the trial was 3 month

Assessment criteria: For assessing the variables, patients were examined in every 15 days, the suitable scoring method and objective signs were recorded. After completion of 3 month duration treatment, the efficacy of therapy was assessed on the basis of subjective criteria *ChalaSphika Udara Stana, Alasya / Utsahahani, Kshudrashwasa, Daurbalya, Nidradhikya, Swedadhikya* (At normal temperature in normal condition), *Daurgandhya, AtiPipasa, AtiKshudha, AngaGaurava*(heaviness in body), *AlpaVyavaya, GatraSada* as well as objective criterion: Weight, BMI & circumference measurements (girth measurements of Chest,

Waist, Hip, Mid Arm).S. Cholesterol, S. Triglyceride, HDL, LDL and VLDL has been also evaluated.

Statistical analysis: The obtained information's were analysed statistically in terms of mean score (X), Standard deviation (S.D.), Standard Error (S.E.). Paired't' test was carried out at the level of 0.1, 0.05, 0.02, 0.01, & 0.001 of P levels.

Observations & Results:

Clinical study has been conducted in 30 registered cases of *Sthaulya*. Each patient was analysed for age, sex, religion, educational status, occupation etc. during the course of treatment. General observations are comprehended as under.

Table no. 1: Distribution of patients:

Group	Detail of Group	Pt. Registered	Pt. completed therapy	Pt. selected for clinical study
A	Gomutra Arka	20	16	15
M	Madhoodak	20	17	15
Total		40	33	30

Table No.2 - Distribution of patients according to Age Group:

S.No.	Age Group	Group A	Group M	Total	Percentage
1.	20-30 yr.	01	08	09	30%
2.	31-40 yr.	07	03	10	33.33%
3.	40-45yr.	07	04	11	36.66%
Total		15	15	30	100%

Observations showed that the maximum numbers of patients were in the age group of 40-45 yrs. i.e. 36.66%, followed by

33.33% of the age group 31-40yrs. Maximum numbers of patient's were male (53.33%). Maximum numbers of patients were belonging

to Hindu community (96.66%), while 3.33% were from Sikh community. Majority of patient's had graduate/P.G. (56.66%) followed by primary(16.66%) & Higher Secondary education (6.66%). Only 3.33% were uneducated. Maximum patients were service class (50%) followed by house hold ladies (33.33%), businessmen (6.66%). 10% were others. Maximum no. of patients (86.66%) having sedentary occupational nature. According to socio-economic status most of the patient's (53.33%) was coming from middle class followed by poor class (23.33%). Maximum no. of patients (93.33%) were married. Maximum no. of patients (93.33%) were having their residence at urban area. Maximum patients (70%) were having chronicity more than 5 years followed by patients (16.66% & 10%) having chronicity between 2-3 years & 1-2years. Maximum no. of patient's (63.33%) having positive family history of *Sthaulya*. Most of the patients (43.33%) were taking *Ayurvedic* treatment followed by patients (33.33%) were taking allopathic treatment and patients (23.33%) were taking no treatment history. Maximum no. of patients were vegetarians (73.33%) followed by patients were on mixed diet (26.66%).

Maximum no. of patients were reported *Adhyashana* (40%) followed by *Vishamasana*(33.33%), *Samasana* (16.66%)

and *Viruddhasana* (13.33%) type of dietetic habit. Maximum no. of patients were having *Vishamagni* (46.66%) followed by patients having *Tikshnagni* (36.66%), *Samamagni* (10%)and *Mandagni* (6.66%). Most of the patients (53.33%)were having *Vata-Kapha Prakriti* followed by *Pitta-Kapha Prakriti* (40%) and *Vata-Pitta Prakriti* (6.66%).Most of the patients were of *TamasikaPrakriti* (50%), followed by *Rajasika* (46.66%) and *SatvikaPrakriti* (3.33%). Maximum no. of patient were having *MadhyamSara*(90%) followed by patient having *AvaraSara*(6.66%) and *PravaraSara* (3.33%). Maximum no. of patient were having *MadhyamSamhanana* (56.66%), followed by patient having *ParavaraSamhanana* (43.33%). Maximum no. of patient were having *MadhyamSatva* (63.33%), followed by patient having *PravaraSatva* (30%) and *AvaraSatva* (6.66%).Maximum no. of patient were having *MadhyamKoshtha*(63.66%) followed patient having by *KruraKoshtha* (26.66%) and *MriduKoshtha* (10%). Maximum no. of patients were having regular bowel habits(56.66%). Maximum no. of patients were having *AvaraVyayamShakti* (63.33%) followed by patients having with *MadhyamVyayamShakti* (33.33%) and *PravaraVyayamShakti* (3.33%).

Observation of menstrual history of 14 female patients showed irregular menstruation (50%), regular menstruation

(42.85%) and menopause (7.14%). Most of the female patients were using IUCD contraceptive method (50%) followed by females using contraceptive oral pills (35.71%) and other methods (14.28%).

Among 30 patients, consuming *Atibhojana* (56.66%), *Atiguru* (36.66%), *Atimadhura* (80%), *Atisheeta* (26.22%), *Atisnigdha* (83.33%), *Bekri* (10%), Milk Product (73.33%), Fast Food (26.6%), Soft drink and cold water (6.66%), sweet and butter

(16.66%), Egg (23.33%), Chees (13.33%) had been reported majorly as *AharajaNidana.Avyayama* (90%), *Divaswapana* (80%), *Sukhashaya* (63.33%), *BhojanottarNidra* (43.33%), *Avyavaya* (16.66%) had been noted as major *ViharajaNidana*. *Achinta* (83.33%), *Harshanityatva*(76.66%), *Manasonivriti*(26.66%) and *Priyadarshana* (10%) had been reported majorly as *ManasaNidana* of *Sthaulya*.

Table No.3: Showing Incidence of Symptoms of *Sthaulya* in 30 Registered Cases of *Sthaulya*.

S. No.	Symptoms	Groups		Total	Percentage
		A	M		
1.	<i>ChalaSphikaUdaraStana</i>	14	12	26	86.66%
2.	<i>Alasya/Utsahahani</i>	10	12	22	73.33%
3.	<i>KshudraShwasa</i>	04	05	11	30%
4.	<i>Daurbalya</i>	12	13	25	83.33%
5.	<i>Nidradhikya</i>	11	10	21	70%
6.	<i>Swedadhikya</i>	07	06	13	43.33%
7.	<i>Daurgandhya</i>	06	05	11	36.66%
8.	<i>AtiPipasa</i>	08	06	14	46.66%
9.	<i>AtiKshudha</i>	07	09	16	53.33%
10.	<i>AngaGaurava</i>	11	12	23	76.66%
11.	<i>AlpaVyavaya</i>	06	07	13	43.33%
12.	<i>GatraSada</i>	14	13	27	90% 1

Table No. 4: Showing Weight of *Sthaulya* in 30 Registered Cases.

S. No.	Weight in kg.	Group A	Group M	Total	Percentage
1.	61-70	03	01	04	13.33%
2.	71-80	03	06	09	30%
3.	81-90	03	06	09	30%
4.	91-100	05	01	06	20%
5.	101-110	01	01	02	6.66%

Table No. 5: Showing Incidence of BMI in 30 Registered Cases of *Sthaulya*.

S. No.	BMI(kg/m ²)	Group A	Group M	Total	Percentage
1.	25-29.9 (Over wt.)	06	04	10	33.33%
2.	30-39.9 (Obese)	09	11	20	66.66%
3.	>40 (Very Obese)	00	00	00	00%

Table No. 6: Effect of Therapy on Subjective Parameters:

Subjective Parameter	Results					
	Group-A			Group-M		
	% Relief	SD	P Value	% Relief	SD	P Value
1. <i>Chala SphikaUdaraStana</i>	68.96%	0.487	0.001	53.33%	0.258	0.001
2. <i>Alasya / Utsahahani</i>	82.60%	0.593	0.001	45%	0.507	0.001
3. <i>KshudraShwasa</i>	89.47%	0.743	0.001	58.82%	0.487	0.001
4. <i>Daurbalya</i>	66.66%	0.560	0.001	86.36%	0.457	0.001
5. <i>Nidradhikya</i>	75%	0.534	0.001	61.53%	0.450	0.001
6. <i>Swedadhikya</i>	83.33%	0.816	0.001	73.91%	0.639	0.001
7. <i>Daurgandhya:</i>	72.22%	0.516	0.001	61.90%	0.351	0.001
8. <i>AtiPipasa</i>	65.51%	0.703	0.01	80%	0.617	0.001
9. <i>AtiKshudha</i>	59.09%	0.516	0.001	76.92%	0.617	0.001
10. <i>Anga-Gaurava</i>	76.92%	0.487	0.001	52.63%	0.487	0.001
11. <i>AlpaVyavaya</i>	36.36%	0.457	0.1	75%	0.414	0.1
12. <i>GatraSada</i>	84%	0.736	0.001	46.66%	0.516	0.01

Table No. 7 – Effect of Therapy on Anthropometric Profile:

Anthropometric Profile	% Relief					
	Group-A			Group-M		
	% Relief	SD	P Value	% Relief	SD	P Value
1. Body Weight	6.05%	1.887	0.001	4.96%	1.878	0.001
2. Body Mass Index (BMI)	5.55%	0.763	0.001	4.77%	0.728	0.001
3. Chest Circumference	2.10%	0.774	0.001	1.06%	0.990	0.001
4. Waist Circumference	3.04%	1.207	0.001	2.06%	1.407	0.001
5. Hip Circumference	3.40%	1.373	0.001	1.19%	0.975	0.001
6. Mid Arm Circumference	6.31%	1.032	0.001	2.84%	0.990	0.01

Table No. 8 –Effect of Therapy on Biochemical Profile:

Biochemical Profile	% Relief					
	Group-A			Group-M		
	% Relief	SD	P Value	% Relief	SD	P Value
1. Serum Cholesterol	17.73%	27.187	0.001	11.78%	19.909	0.001

2. Serum Triglycerides	23.68%	38.634	0.001	15.03%	17.377	0.001
3. HDL	9.61%	6.478	0.02	4.94%	2.458	0.01
4. LDL	18.89%	20.398	0.01	9.34%	14.868	0.1
5. VLDL	30.10%	9.445	0.01	25.31%	1.794	0.001

Overall Effect of Therapy:

Group-A: Maximum 53.33% observed Moderate improvement, 40% patients showed Marked Improvement, while 6.66% patients showed Mild improvement.

Group-M: Maximum 66.66% observed Moderate improvement, 13.33% patients showed Marked Improvement, while 20% patients showed Mild improvement.

DISCUSSION:

In the disease *Sthaulya*, *Tikshnagni* occurs. Here, *Jatharagni* is found in excessive condition whereas *Medodhatvagni* is found in *Manda* condition. It is due to *Avarana* of *Vayu* in *Kostha*. So person indulges more food, which produce excessive *Meda* and vitiated cycle go on. This cycle is broken (*SampraptiVighatana*) by *Katu-Rasa & Ushna-ViryaPradhana* drugs. *Gomutra Arka* decreases *Meda* by its *Lekhana*, *Shoshana* and *Kaphanashaka* properties, *Kaphanashaka* properties due to *Agni* and *VayuMahabhuta* dominance in them (Su.Su15). **Madhoodak** is "*Guru&Aptarpana*" drug. Due to its heaviness quality, it digests lately, as a result, the obese person does not feel hunger quickly and due to its *Aptarpana* action, it reduces fat.

Maximum patients belonged to the 18-50 years age groups shows *Sthaulya* found more in *Madhya – awastha*. Maximum patients were male & from Hindu community may be due to small sample size. Maximum patients (56.66%) were Graduate/PG, clearly shows that education has its carrier conscious because as the education level increases people busy in their works and do not concentrate on health or they have no time for physical work. Maximum patients(50%) were working followed by house hold ladies (33.33%). Therefore, their energy expenditure is less than energy intake, which may lead them to obese. House wife are more prone to sitting in front of T.V. in resting hours, doing negligible exercise and the reason behind this might be work nature, advancement of new techniques, tools (Mixer, Washing machines) which reduces energy expenditure and beside these the most important cause is *Divaswapna* which may lead to obese.

Maximum patients (86.66%) were doing sedentary type of work. It showed diminished state of physical activities, which decreases energy expenditure and diminishes metabolism. Therefore, person may progress towards the obesity. In Ayurveda, it has been

listed as *Avyayama* in *nidana* of *sthaulya*. Maximum patients (53.33%) belonged to middle class. It is evident that these persons are less conscious about the weight gain, they tend to over eat readily accessible food supply and fast food services, which leads to obesity. Maximum 93.33% patients were married. Since the disease affected more the middle age persons, which is the age when the generally a person remain married. Moreover, Married female found obese in comparison to Unmarried, owing to hormonal imbalance occurring after marriage, in pregnancy.

Maximum patients (93.33%) belongs to urban population, because urban population is consuming more fatty, oily and fast food and having less physical activities as compared to rural population. Maximum patients (63.33%) had positive family history, which shows that the genetically predisposition is an important etiological factor in the in the development of obesity. *Acharya Charaka* has also stated *Beejaswabhabha* as one of the important cause of *Sthaulya*. Modern Text also accepts the role of genetic factor influencing energy expenditure by affecting BMR, thermal effect of food. Maximum patients (43.33%) were taking *Ayurvedic* treatment shows that people have more believe in *Ayurvedic* treatment for obesity.

Maximum patients (73.33%) were having vegetarian diet. From this study it

cannot be concluded that *Sthaulya* is prevalent in vegetarians. Modern text also does not support these types of observations. Most of the patients reported *Adhyashana* (40%) and *Vishamasan*(33.33%). Due to overeating undigested *Ahara* rasa convert into *Ama* and further intake of *Madhur*, *Snigdha* and *Guru Ahara* aggravates the formation of *Ama*. Because *Visamashan* type of dietetic habit produce *Ama* in the body and Makes *Medodhatvagnimandya* leads to obesity. Majority of the patient's were having *Vishamagni* (46.66%) followed by *Tikshnagni*(36.66%). *Tikshnagni* and *Vishamagni* is the main cause of *Sthaulya*, which is due to the *Avarana* of *Vayu* in *koshtha* by vitiated *Kapha* and *Meda*. Due to *Tikshnagni*, patients feel excessive hunger, resulting in frequent and excessive food intake leading to weight gain.

Maximum patients had *Vata-Kapha* (53.33%) and *Pitta-Kapha* (40%) *Prakriti*. Thus it can be said that most of the patients (above 93%) had *Kapha* dominant *Prakriti* either associated with *Vata* or *Pitta*. This indicates that *Kapha* is the predominant factor for *Sthaulya*. In *ManasaPrakriti* maximum patients (50%) reported *Tamas Prakriti* followed by *Rajas Prakriti* (46.66%), that is the most conducive for the disease *Sthaulya*.

Maximum patients were having *Madhyama Sara* (90%), *Madhyama*

Samhanana (56.66%) & *Madhyama Sattva* (63.33%). Such patients bear less stamina to fight against the disease. Therefore, that type of person easily got the disease compared to *Pravara Sara-Samhanana-Satva*. Most of the patients (63.33%) had *Madhyama Koshta* and regular bowel habit. In normal condition, *Madhyama Koshta* is found due to *Kapha* dominancy. This indicates that *Kapha* is the predominant factor for *Sthaulya*. Maximum patients (63.66%) were observed *AvaraVyayama Shakti*. Lack of physical activities reduces energy expenditure compare to energy intake, therefor stands for an important *Nidana* of *Medoroga*.

History of irregular menstruation and menopause in females showed that hormones play certain role in pathogenesis of obesity. Contraceptive history of IUCD & oral pills showed that these methods disturb the hormonal balance, which may make female obese.

Among 30 patients most of the patients were indulging in those food habits, which aggravates *KaphaDosh* and increase the *MedaDushya* according to principal of "*SamanyaVridhikaranam*" causes excessive accumulation of *Meda* in body, resulting in obesity. Whereas lack of physical activity in form of *Avyayama*, *Divaswapana*, *Sukhasaiya*, and *BhojanottaraNidra* were noted as major *ViharajNidana* of *Sthaulya*. Restricted physical

activities and excessive sleep caused increased growth hormone level and diminished metabolism, resulting increasing weight. In case of *manasika Nidana Achinta*, *Harshanityatva*, *Manasonivriti* and *Priyadarshana* were majorly identified. In modern science, jolliness, tension free life, over eating and less physical activities, being a cause for obesity.

In present study, all the patients were having *Bharavridhi* whereas *Gatrasada*, *Chala Sphika Udara Stana*, *Daurbalya*, *Anga Gauravain*, *Alasya*, *Nidradhikya*, *AtiKshudain*, *AtiPipasa*, *Swedadhikya* and *AlpaVyavayain*, *Daugandhya*, *Kshudra Shwasa* are the common symptoms. Genesis of all symptoms can be attributed to *Nidana Sevana* that ultimately causes vitiation of *Kapha* and *Vata*, *Medovridhi*, *Avaran* of *Meda* on *Vata*, *Pitta Dusti*, and production of *AamMeda*, *Srotorodha* and *DhatuKshaya*. *Atikshudha* and *Atipipasa* occurred due to *Avarana* of *Vayu* in *Kostha*, while some of them appeared due to aggravation of *Kapha* and *Medovridhi*. In obese person lean body mass is replaced by fatty mass. Fat is bulkier than muscle. 1 kg of fat requires approximately 1½ times more space than 1kg of muscle. In obese person lean body mass are reduced and sedentary habits remaining muscles are also not trained to bear the load of physical activities. Hence in obese person *Angagauravata*,

Ayaseswaskastata, *Daurgandhya*, *Vyavayakastata* etc. symptoms appear. Increased *Medodhatu* in the body increases the weight of the person this increased weight is the prime cause for *Ksudra Swasa*. This is evidenced in classics as well as observed in previous studies. Modern science has also accepts obesity as one of the causes for Dyspnoea.

Effect of Trial on Subjective Parameter :

Group–A (*Gomutra Arka*) - The effect of *Gomutra Arka* Group on symptomatology provided highly significant ($p < 0.001$) results with Marked Relief in *Kshudra Shwasa*, *GatraSada*, *Swedadhikya*, *Alasya*, *AngaGaurava*, and Moderate Relief in *Nidradhikya*, *Daurgandhya*, *ChalaSphika Udara Stana*, *Daurbalya*, *Atipipasa*, *Atikshudha*. Statistically non-significant ($p < 0.1$) results with mild relief reported in *Alpa Vyavaya*.

Group – M (*Madhoodak*) -The effect of *Madhoodak* Group on symptomatology provided highly significant ($p < 0.001$) with Marked Relief in *Daurbalya*, *Atipipasa*, *Atikshudha* and Moderate Relief in *Swedadhikya*, *Daurgandhya*, *Nidradhikya*, *KshudraShwasa*, *ChalaSphikaUdaraStana*, *AngaGaurava*, and mild relief in *Alasya*. Statistically significant with mild relief in *GatraSada*, Statistically non-significant ($p < 0.1$) with Moderate Relief 75% in *AlpaVyavaya*.

The combination of *Katu Rasa*, *Laghu* and *RukshaGuna*, *UshnaVirya*, *KatuVipakaPradhana* drug *Gomutra Arka* can do the function against *Kapha*, *Kleda* and *Meda* and perform *Strovibandhanashana*. *Gomutra Arkais* more effective on *Kapha*, *Meda*, *Medodhatvagni*, which provide better result in all signs and symptoms as compare to *Madhoodak* except in *Daurbalya*, *AtiPipasa*, *AtiKshudha*, *AlpaVyavaya*.

Effect of Trial on Objective Parameter

Group - A (*Gomutra Arka*):In the *Gomutra Arka* Group, the results were highly significant and reduction was observed with in weight and B.M.I. ratio. Considering the effect of *Gomutra Arka* on Body Circumference, it provided highly significant relief with reduction of Chest, Waist, Hip & Mid Arm Circumference. The effect of *Gomutra Arka* on Biochemical Parameter provided highly significant (0.001) reduction in S. Cholesterol, S. Triglyceride, and significant reduction in LDL, VLDL, and moderate significant reduction in HDL.

Group – M (*Madhoodak*):In the *Madhoodak* Group, the results were highly significant and reduction was observed in weight and B.M.I. ratio. Considering the effect of *Madhoodak* on Body circumference, it provided highly significant relief with reduction of Chest, Waist, HipCircumference, and significant relief with reduction in Mid Arm Circumference. The

effect of *Madhoodak* on Biochemical Parameter provided highly significant reduction in S. Cholesterol, S. Triglyceride, VLDL, and significant reduction with in HDL, and non-significant reduction with in LDL.

After analysis all parameters in both groups *Gomutra Arka* Group showed maximum percentage relief in Subjective, as well as Objective parameter except *Daurbalya*, *Atipipasa*, *Atikshudha*, and *AlpaVyavaya*. This is the only symptoms in which *Madhoodak* Group showed maximum percentage relief. In *Daurbalya*, *Madhoodak* result is better because, *Madhoo* have fructose & sucrose sugar, which provide energy to the patients. In *AtiVyavaya* *Madhoodak* result is better because *Madhoo* have *Madhur Rasa* (Fructose, sucrose sugar), which is *SukradhatuVardhak*. In *Atikshudha* *Madhoo* result is better because *Madhoo* have *kaphaPittahar* Properties, due to his *Pittahar* action it reduce *Pittadosha*. Pitta is responsible for *Atikshudha*. In *Atipipasa* *Madhoodak* result is better compare to *Gomutra Arka* Because *Gomutra* is less effective in *AtiPipasa* due to its *AtiTikshna*, *AtiUshna*, *Ruksha* properties.

Probable Mode of Action:

Gomutra Arka Group showed higher percentage relief as compare to *Madhoodak* Group in all Anthropometric Profile (Weight, BMI, Chest, Waist, Hip, and Mid Arm Circumference). *Gomutra Arka* Group showed higher percentage relief as compare to *Madhoodak* Group in S. Cholesterol, S. Triglycerides, HDL, LDL, and VLDL due to its higher *Karshana* and *Lekhana* properties compare to *Madhoodak*.

Overall Effect of Therapy:

The overall effect of *Gomutra Arka* Group showed Marked Improvement in 40% patients, Moderate improvement in 53.33% patients and 6.66% patients were found Mild improvement result. The overall effect of *Madhoodak* Group showed Marked improvement in 13.33% patients, Moderate improvement in 66.66% patients and 20% patients were found Mild improvement result. Thus in this way overall comparison of all the parameters showed that effect of *Gomutra Arka* was better than *Madhoodak*. All the patients tolerated medicines and no side effect of drugs was reported.

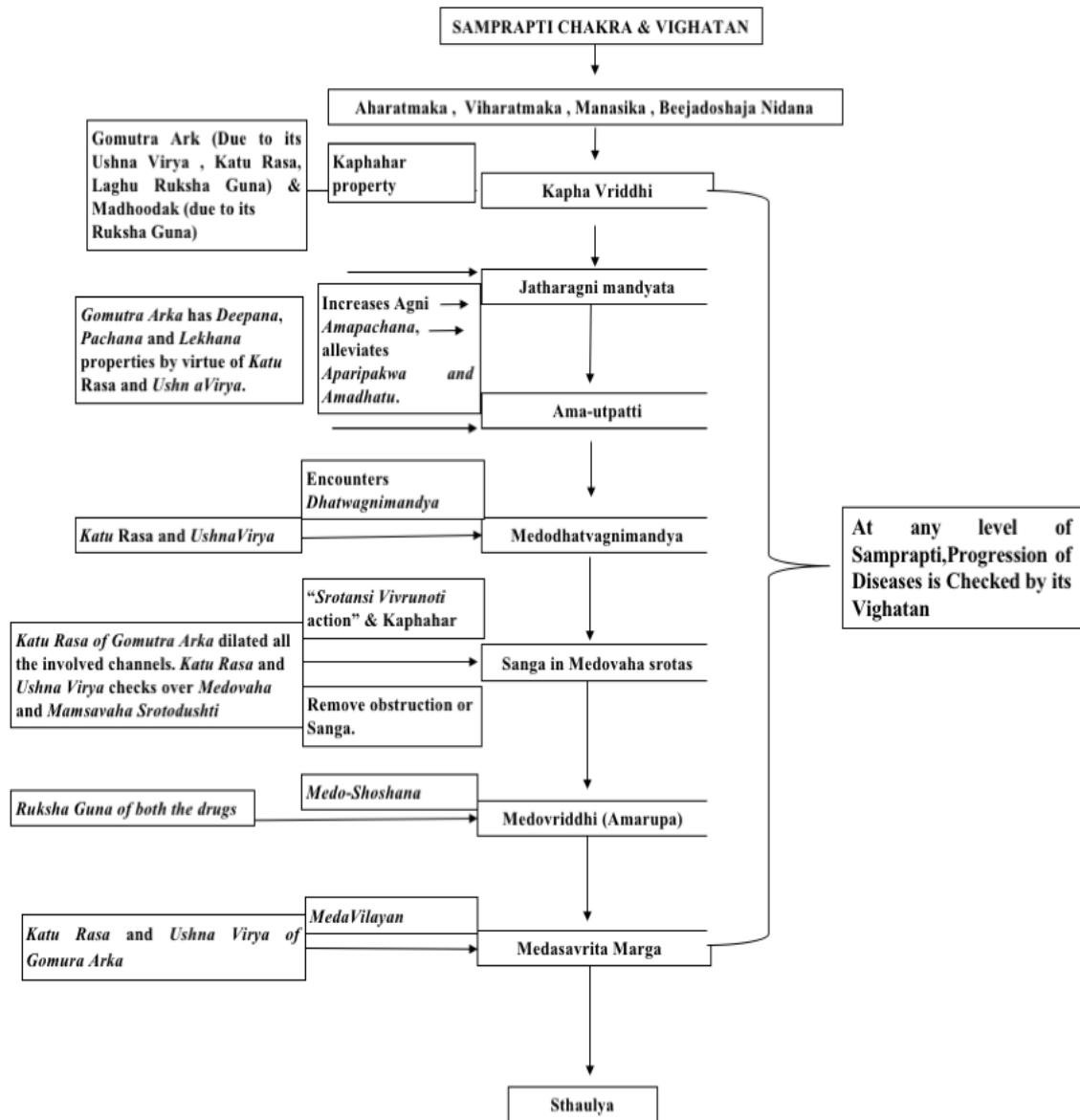


Fig 1: probable mode of action of oral medicines

Effect of *Gomutra Arka* & *Madhoodak* on *Sthaulya* may be as follow-

Dosha: *Kapha Dosha* takes place in the pathogenesis of *Sthaulya*. *Gomutra Arka* have *Kaphahara* action by virtue of its *UshnaVirya*, thus it encounters *kaphadosha*. *Kaphahara* action is also achieved by its dominance of *KatuRasa* and *LaghuRukshaGuna*. *Madhoo* have also *Kaphahar* action by dominance of *RukshaGuna*.

Dushya: *Meda* is the chief culprits in *Sthaulya*. Both *Gomutra Arka* and *Madhoodak* perform *Medo-Shoshana* action due to dominance of *Ruksha Guna*. *Gomutra Arka* has *Katu Rasa* and *Ushna Virya* also helps in *MedaVilayana* action.

Agni and Ama Dosha: *Gomutra Arka* has *Deepana, Pachana* and *Lekhana* properties by virtue of *Katu Rasa* and *Ushna Virya*. Thus increases *Agni* and helps in *Ama pachana*,

there by alleviates *Aparipakwa* and *Amadhatu*. *Katu Rasa* and *UshnaVirya* also encounters *Dhatwagnimandya* and potentiates the weakened *Dhatwagni*

Srotas: Due to *Katu Rasa*, *Gomutra Arka* dilated all the involved channels i.e. “*Srotansi Vivrunoti* action”. *Katu Rasa* and *Ushna Virya* checks over *Medovaha* and *Mamsavaha Srotodushti*.

CONCLUSION:

At the end of the study, following conclusion can be drawn that excessive indulgence in oily and fatty food, sedentary life style, *Divaswapana*, *Manasika* factors like-*Harshanitya*, *Manasonivrita* etc. along with genetic predisposition play a major role in etio-pathogenesis of *Sthaulya*. *Gomutra Arka* showed maximum percentage relief in all the Subjective & Objective parameter except *Daurbalya*, *Atipipasa*, *Atikshudha*, & *Alpavyavaya*. These are the only symptoms in which *Madhoodak* Group showed maximum percentage relief. Overall comparison of all the parameter showed that effect of *Gomutra Arka* was better than *Madhoodak*. It can be said that *Gomutra Arka* is more effective to control all parameters due to its highly *Karshana*, *Lekhana* properties compare to *Madhoodak*. So it can be concluded that “*Gomutra Arka* and *Madhoodak* is high quality remedy for management of *Sthaulya*, when used individually or simultaneously along with

NidanParivarjan&Pathya rule”. The plus point observed in case of *Ayurvedic* management is absence of any hazardous effect, which is really a great benefit to the patients and is of vital importance in view of the global acceptance of *Ayurveda*.

REFERENCES:

1. Chakrapani on Caraka Samhita, Sutra Sthan, Ashtouninditiya Adhyaya, Chapter 21 verse 4 Available from <http://niimh.nic.in/ebooks/ecaraka/?mod=read> assessed on 24/10/2020.
2. Agrawal Vivek. An etiopathological and therapeutic study on Sthula pramehi w.s.r.to NIDDM. Int.J.Res. Ayur. Pharm. 2012; 3(5):676-681 Available from: https://www.ijrap.net/admin/php/uploads/876_pdf.pdf
3. Kokiwar PR. An epidemiological study of obesity in a rural area. J Family Community Med. 2011 May;18(2):91. doi: 10.4103/2230-8229.83377. PMID: 21897919; PMCID: PMC3159236. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3159236/>
4. Mitchell GF, Hwang SJ, Vasan RS, Larson MG, Pencina MJ, Hamburg NM, Vita JA, Levy D, Benjamin EJ. Arterial stiffness and cardiovascular events: the Framingham Heart Study. Circulation. 2010 Feb 2;121(4):505-11. doi: 10.1161/CIRCULATIONAHA.109.886655. Epub 2010 Jan 18. PMID: 20083680; PMCID: PMC2836717. Available from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2836717/>
5. Available from: <https://www.cdc.gov/obesity/data/adult.html>
6. Chakrapani on Caraka Samhita, Sutra Sthan, Ashtouninditiya Adhyaya, Chapter 21 verse 20-21 Available from: <http://niimh.nic.in/ebooks/ecaraka/?mod=read> assessed on 24/10/2020.
7. Kaviraj Atridev Gupta's Vidyotani Teeka on Ashtanga Hrudayam, Edited by Vaidya Yadunandan Upadhyaya, Sutrashtana, Chap. 14, verse 22, Chaukhamba Prakashan Publication, Reprint Edition 2009, Varanasi, pp 137.
8. Chakrapani on Caraka Samhita, Sutra Sthan, Langhanbruhaneeya Adhyaya, Chapter 22 verse 9-17. Available from: <http://niimh.nic.in/ebooks/ecaraka/?mod=read> assessed on 24/10/2020.
9. Chakrapani on Caraka Samhita, Sutra Sthan, Santapaniya Adhyaya, Chapter 23 verse 6-9 Available from: <http://niimh.nic.in/ebooks/ecaraka/?mod=read> assessed on 24/10/2020.
10. Chakrapani on Caraka Samhita, Sutra Sthan, Annapanavidhi Adhyaya, Chapter 27 verse 245 Available from:

- <http://niimh.nic.in/ebooks/ecaraka/?mod=read> assessed on 24/10/2020.
11. Chakrapani on Caraka Samhita, Sutra Sthan, Ashtouninditiya Adhyaya, Chapter 21 verse 20 Available from: <http://niimh.nic.in/ebooks/ecaraka/?mod=read> assessed on 24/10/2020.
12. Chakrapani on Caraka Samhita, Sutra Sthan, Ashtouninditiya Adhyaya, Chapter 21 verse 21-27 Available from: <http://niimh.nic.in/ebooks/ecaraka/?mod=read> assessed on 24/10/2020.
13. Gohar A., Shakeel M., Atkinson R.L., Haleem D.J. ,Potential mechanisms of improvement in body weight, metabolic profile, and liver metabolism by honey in rats on a high fat diet. Pharma Nutrition. Vol.14, December 2020, Available from <https://doi.org/10.1016/j.phanu.2020.100227> <https://www.sciencedirect.com/science/article/abs/pii/S2213434420300529?via%3Dihub>
14. Simona Terzo ,Flavia Mulè, Antonella Amato . Honey and obesity-related dysfunctions: a summary on health benefits. Journal of Nutritional Biochemistry. Volume 82, August 2020. Available from: <https://doi.org/10.1016/j.jnutbio.2020.108401>, <https://www.sciencedirect.com/science/article/abs/pii/S0955286320300206>
15. Prof. K.C. Chunekar , Bhavprakash Nighantu, Edited by Dr. G.S.Pandey , Chap. Ath Madu varg , Verse no 5, Chaukhambha Visvabharti Publication , Reprint Edition 2013, Varanasi 2013. page no 772.
16. Prof. K.C. Chunekar , Bhavprakash Nighantu, Edited by Dr. G.S.Pandey , Chap. Ath Madu varg , Verse no 25, Chaukhambha Visvabharti Publication , Reprint Edition 2013, Varanasi 2013. page no 774
17. Prof. K.C. Chunekar , Bhavprakash Nighantu, Edited by Dr. G.S.Pandey , Chap. Ath Mutra varg, Verse no 1-5, Chaukhambha Visvabharti Publication, Reprint Edition 2013, Varanasi 2013, page no 761
18. Chakrapani on Caraka Samhita, Sutra Sthan, Deerghanjeevitiya Adhyaya, Chapter 1 verse 96-100 Available from: <http://niimh.nic.in/ebooks/ecaraka/?mod=read> assessed on 24/10/2020.
19. Shushruta Samhita, Sutrasthan, Ritucharya Adhyaya Chapter 45 verse 217-221 , Available from : <http://niimh.nic.in/ebooks/esushruta/?mod=read> assessed on 24/10/2020.
20. Gulhane, Harshad & Nakanekar, Amit & Mahakal, Nilesh & Bhople, Sunanda & Salunke, Amrut. (2017). GOMUTRA (COW URINE): A MULTIDIMENSIONAL DRUG REVIEW ARTICLE. International Journal of Research in Ayurveda & Pharmacy. 8. 1-6. 10.7897/2277-4343.085231. https://www.researchgate.net/publication/320392731_GOMUTRA_COW_URINE_A_MULTIDIMENSIONAL_DRUG_REVIEW_ARTICLE/citation/download

Cite this article as:

Ashutosh Dwivedi, Narendra Singh Rajpoot, Archana Singh, Kashinath Samagandi, Jagriti Sharma. A Comparative Clinical Study of Madhoodak and Gomutra-Arka as Pathya in Atisthauilya w.s.r. to Obesity, *J of Ayurveda and Hol Med (JAHM)*.2020; 8(4):1-15

Source of support: Nil