



COMPARATIVE CLINICAL STUDY OF TRIKATU ARKA AND MEDOHARA GUGGULU IN HINASTHOULYA W.S.R. TO OVER WEIGHT

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ABSTRACT

Overweight and obesity are now on the rise in low and middle income countries. Changes in dietary and physical activity patterns are often the result of environmental and societal changes B.M.I provides the most useful population level measure of overweight and obesity. Acharya charaka explained sthoulya under ashtaninditapurushas. It is a kapha,medo pradhana vyadhi and having a direct link to the pathogenesis of prameha. Bahudoshaja vyadhi, sthoulya causes many secondary diseases which require early diagnosis and treatment. Hinasthoulya is the early stage where it can be treated by dipana,pachana oushadhi which otherwise will be turning to sthoulya.

Keywords- Hinasthoulya, Trikatu Arka, Medohara guggulu, Overweight.

Introduction

The present era is more challenged with various lifestyle diseases. Hinasthoulya (over weight) is one such lifestyle disease. Over weight is considered as the core of many diseases.

Obesity is a leading preventable cause for death worldwide with increasing rates in adults and children. Globally more than 7 billion people are overweight. In 2015, 600 million adults and 100 million children were obese in 195 countries. Authorities view it as one of the most serious public health problems in 21st century. Obesity is regarded as *Meroroga* a disorder of *Medodhathu*-*adiopse* tissue and fat metabolism. People gaining too much weight there are health issues associated like cardiovascular diseases, type 2 diabetes, musculoskeletal disorders, cancer of endometrium, cervix and colon, infertility, gallstones. Obesity is an important health problem in India. Twenty two million Indians are obese.

Obesity and Overweight are 5th leading risk for global death and are linked to more death world wide than underweight. Overweight refers to an excessive amount of body weight that includes muscles, bone, fat and water or when a person weighs more than what is considered to be healthy for his age and height.

Medoroga is classified under *Santharpanajanya Vyadhis* and *Sthoulya* as a *Kaphaja Nanatmajavyadhi*. Acharya Charaka and Vagbhata have mentioned "*karshyamevavaramsthoulyamna hi sthoolasyabheshajam*" implying *Atisthulas* are more liable to be at health risk than *Atikrusha*¹. *Sthoulya* is primarily *Santharpanajanya Vyadhi* so *Chikitsa* aims towards *Apatarpanaupakramai.e*; *Langhana*, *Pachana*, *Deepana* and *Shodhana*.

Sthoulya has bad prognosis if not duly managed as it can cause death due to its many fold complications¹. *Charakacharya* has mentioned that due to lack of immunity obese/overweight persons are mostly affected by secondary diseases. Hence need for study and its treatment is required at an initial level. In *Ashtanga Sangraha*

(Dvididhopakramaneeyamadhyayam) Hinasthoulya has been mentioned and it is said that correction of agni is the prime step².

Medoroga is mainly caused due to the Agni Vaishamyatha. Improper Jataragni due to NidanaSevanaleads to impaired Dhatwagni thus causing accumulation of Medas in excess and which later leads to Sthoulya. The treatment of Obesity in an initial stage, correction of Agni has its importance. Vata and Kapha being the main components of vitiation in Medoroga, Agni Sandhookshana is primarily focused. The main treatment for Obesity cannot be dieting and exercise. Diet program may produce weight loss in short term, but maintaining the weight loss is frequently difficult and often require making exercise and a low calory diet as a permanent part of a person's lifestyle and the success rates ranges from 2 to 20%. The medicines used in Obesity (Rimonabant, sibutramine, orlistat) affects long term and complication of these are very common. Its uses are associated with high rates of Gastro Enteric side effects^{3,4}. So it is better to adopt safe and effective treatment measures to prevent Obesity and Overweight by applying principles of Ayurveda. Keeping all the points of samprapti a sincere attempt has been made to check all the pathological factors in Medoroga.

Considering the above points the clinical trial was aimed to come out with the help of effective formulations i.e; Trikatu Arka and Medohara Guggulu internally.

Aims and Objectives

- To evaluate the effect of Trikatu Arka internally in Hinasthoulya
- To see the efficacy of Trikatu Arka in Hinasthoulya over Medohara Guggulu.

Materials and methods

The study was conducted on 40 clinically diagnosed patients of Hinasthoulya on the basis of subjective and objective parameters and was randomly selected from O.P.D & I.P.D of D.G.M.A.M..C Hospital & Research centre Gadag and from various medical camps conducted.

Inclusion criteria

1. Diagnosed and confirmed cases of on the basis of classical symptoms like Alasya, Alpabala, Ayatopachaya, Nidradikya, Kshutatimatram, Pipasatimatram, Kshudraswasam¹⁹.
2. Patients of age between 16-50 years of either sex.
3. B.M.I 25 TO 30 Kg/m²

Exclusion criteria

1. Patients with hypertension, diabetes mellitus
2. Patient with evidence of Renal, Hepatic, Cardiac involvement
3. Patient with Hypothyroidism (Endocrinal dysfunctions)
4. Patient on long termed steroid treatment.
5. Pregnant women and lactating women.

Diagnostic criteria

Patient was diagnosed based on signs and symptoms of Medoroga viz Alasya, Alpabala, Ayatopachaya, Nidradikya as mentioned in the classics.

The value of B.M.I at 25 and above 25 up to 30 will be considered as overweight.

Posology and grouping

Group A: Trikatu arka

Dose- 15ml two times a day, after food

Anupana-15ml water

Group B: Medohara Guggulu

Dose-2 tablet two times a day after food (500mg each)

Anupana- Jala

Study duration

Group A: Trikatu Arka- 30 days

Follow up-15days

Total study duration - 45 days.

Group B : MedoharaGuggulu- 30 days

Follow up days- 15 days

Total study duration- 45days

Total study duration:45 days

Patient was assessed clinically on 0th, 15th, 30th, 45th day

CRITERIA FOR ASSESSMENT OF RESULT:

Assessment was done by considering the base line of data, Subjective and Objective Parameters to pre, during and post medication and will be compared for assessment of results. All the results were analyzed statistically by using **Un-paired t test**.

A. Subjective Parameters:

1. Alasya
2. Alpabala
3. Ayatopachaya
4. Nidradikya

B. Objective parameters:

1) Anthropometric assessment.

- a) Weight in kgs.
- b) BMI Range
- c) Chest (vaksha) circumference
- d) Abdomen (udara) circumference
- e) Hip circumference

f) Waist (kati) circumference.

g) Waist hip ratio.

Name and details of drugs

Trikatu arka has been described in Arkapraksha and Medoharaguggulu is described in Rasendra sara sangraha. The drugs of this yogas mainly contain ushnaveerya, katu vipaka, katu tiktha kashaya rasa dravyas predominantly. They possess the qualities of Dipana, Pachana, Lekhana, properties thus kapha vata shamaka and medogna in nature.

Table no.1 showing ingredients of Trikatu arka⁵

Sl no	Ingredients	Botanical name	Proportion
1	Maricha	<i>Piper nigrum</i>	1 part
2	Pippali	<i>Piper longum</i>	1 part
3	Shunti	<i>Zingiber officinale</i>	1part

Table no.2 showing ingredients of Medohara guggulu⁶

Sl no	Ingredients	Botanical name	Proportion
1	Maricha	<i>Piper nigrum</i>	1 part
2	Pippali	<i>Piper longum</i>	1part
3	Shunti	<i>Zingiber officinale</i>	1part
4	Chitraka	<i>Plumbago zylanica</i>	1part
5	Mustha	<i>Cyperus rotundus</i>	1part
6	Hareetaki	<i>Teriminalia chebula</i>	1part
7	Vibhitaki	<i>Terminalia bellarica</i>	1part
8	Amalaki	<i>Embilica offcinalis</i>	1part
9	Vidanga	<i>Embelia ribes</i>	1part
10	Guggulu	<i>Commiphora mukul</i>	9parts

Properties and actions of the formulations**Table no.3 showing Rasa, guna, virya, vipaka , karma of trikatu arka⁷**

Sl no	Sanskrit name	Rasa	Guna	Virya	Vipaka	Karma	Proportion
1	Maricha	Katu	Laghu, tikshna	Katu	Katu	Kaphavatahara	1part
2	Pippali	Katu	Laghu	Mahdura	Madhura	Vatakaphahara	1part
3	Shunti	Katu	Guru, Ruksha,	Madhura	Madhura	Vatakaphahara	1part

Table no.4 showing Rasa , guna, virya, vipaka , karma of Medoharaguggulu⁸

Sl no	Sanskrit name	Rasa	Guna	Virya	Vipaka	Karma	Proportion
1	Maricha	Katu	Laghu, tikshna	Katu	Katu	Kaphavatahara	1part
2	Pippali	Katu	Laghu	Mahdura	Madhura	Vatakaphahara	1part
3	Shunti	Katu	Guru, Ruksha, Tikshna	Madhura	Madhura	Vatakaphahara	1part
4	Chitraka	Katu	Laghu,Ruksha	Ushna	Katu	Vatakaphahara	1 part
5	Mustha	Tikha,Katu, Kashaya	Laghu,Ruksha	Sheeta	Katu	Vatakaphahara	1 part
6	Hareetaki	Pancharasa	Laghu, Ruksha	Ushna	Madhura	Tridosahara, Lekhana	1 part
7	Vibhitaki	Kashaya	Laghu,Ruksha	Ushna	Madhura	Kaphahara	1 part
8	Amalaki	Pancharasa	Ruksha, Laghu	Sheeta	Madhura	Tridosahara	1 part
9	Vidanga	Katu, kashaya	Laghu, Ruksha	Ushna	Katu	Kaphavatahara	1 part
10	Sudha Guggulu	Tiktha, Katu	Laghu, Ruksha	Ushna	Katu	Tridosahara	9 parts

Parameters	Mean		MD	Reduction (%)	SD	SE	t-value	p-value	Remarks
	BT	AF							
Alasya	1.25	0.25	1	82.49%	1.025	0.229	4.358	0.0003	Significant
Alpabala	1.3	0.2	1.1	80.83%	0.55	0.12	8.90	0	Highly significant
Ayathopachaya	1.5	0.75	0.75	67.94%	0.63	0.14	5.25	0.00004	Significant
Nidradikya	0.75	0.25	0.5	85.18%	0.60	0.13	3.68	0.001	Significant

Results

Table no. 5 Showing the statistical analysis of before treatment (BT) and after follow up (AF) of GroupA- Subjective Parameters

Table no.6 Showing the statistical analysis of before treatment (BT) and after follow up (AF) of Group B- Subjective parameters

Parameters	Mean		MD	Reduction (%)	SD	SE	t-value	p-value	Remarks
	BT	AF							
Alasya	1.65	0.5	1.15	78.57%	1.03	0.135	4.94	0.00008	Significant
Alpabala	1.6	0.85	0.75	79.68%	0.63	0.142	5.25	0.00004	Significant
Ayathopachaya	1.45	0.45	1	69.23%	0.64	0.14	6.89	0	Highly significant
Nidradikya	0.55	0.2	0.35	89.76%	0.48	0.10	3.19	0.004	Significant

Table no.7 Showing the statistical analysis of before treatment (BT) and after follow up (AF) of group A and group B Subjective parameters

<i>Parameters</i>	<i>Group A</i>		<i>Group B</i>		<i>SD</i>	<i>t-value</i>	<i>Df</i>	<i>p-value</i>	<i>Remarks</i>
	<i>N</i>	<i>MD±SD</i>	<i>N</i>	<i>MD±SD</i>					
<i>Alasya</i>	20	1±1.025	20	1.15±1.03	1.027	-0.45	38	0.64	Not significant
<i>Alpabala</i>	20	1.1±0.55	20	0.75±0.63	0.602	0.52	38	0.60	Not significant
<i>Ayathopachaya</i>	20	0.75±0.63	20	1± 0.64	0.637	0	38	1	Not significant
<i>Nidradikya</i>	20	0.5±0.60	20	0.35±0.48	0.550	0.86	38	0.39	Not significant

Table no.8 Showing the statistical analysis of before treatment (BT) and after follow up (AF) of group A- Objective parameters

<i>Parameters</i>	<i>Mean</i>		<i>MD</i>	<i>SD</i>	<i>SE</i>	<i>t-value</i>	<i>p-value</i>	<i>Remarks</i>
	<i>BT</i>	<i>AF</i>						
<i>Weight</i>	68.55	66.15	2.4	1.42	0.31	7.510	0	Highly significant
<i>BMI</i>	28.17	27.07	1.1	0.71	0.15	6.92	0	Highly significant
<i>WH ratio</i>	0.88	0.86	0.013	0.019	0.004	3.04	0.006	Significant

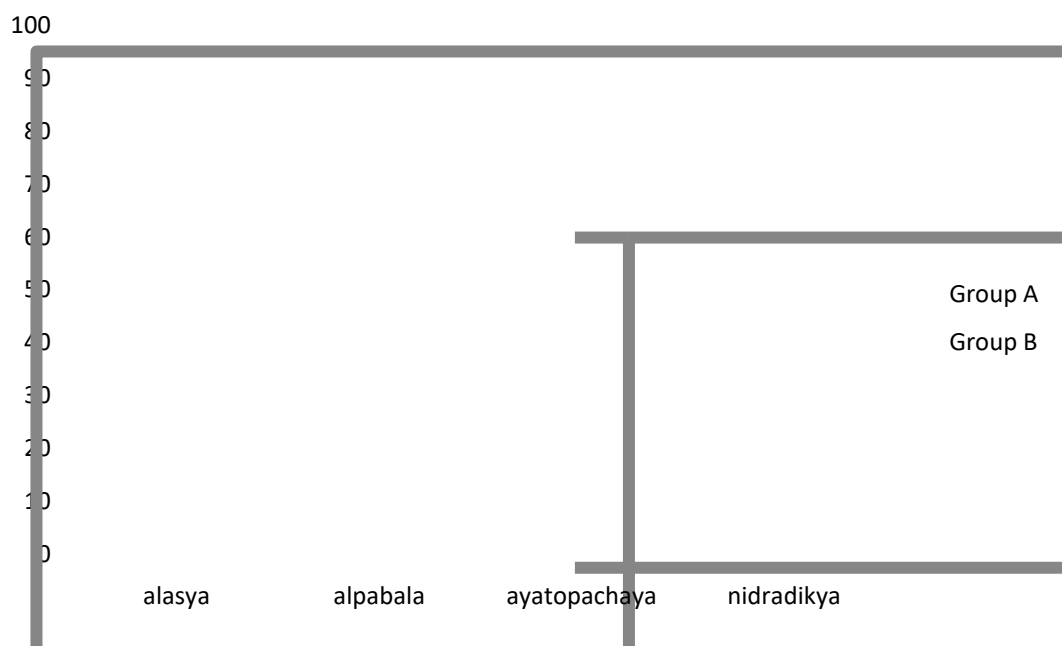
Table no. 9 Showing the statistical analysis of before treatment (BT) and after follow up (AF) of group B –Objective parameters

<i>Parameters</i>	<i>Mean</i>		<i>MD</i>	<i>SD</i>	<i>SE</i>	<i>t-value</i>	<i>p-value</i>	<i>Remarks</i>
	<i>BT</i>	<i>AF</i>						
<i>Weight</i>	72.35	69.55	2.8	1.23	0.27	10.101	0	<i>Highly significant</i>
<i>BMI</i>	27.86	26.79	1.065	0.45	0.10	10.55	0	<i>Highly significant</i>
<i>WH ratio</i>	0.93	0.91	0.023	0.023	0.005	4.31	0.0003	<i>Significant</i>

Table no 10 Showing the statistical analysis of before treatment (BT) and after follow up (AF) of group A and group B-Objective parameters

<i>Parameters</i>	<i>Group A</i>		<i>Group B</i>		<i>SD</i>	<i>t-value</i>	<i>DF</i>	<i>p-value</i>	<i>Remarks</i>
	<i>N</i>	<i>MD±SD</i>	<i>N</i>	<i>MD±SD</i>					
<i>Weight</i>	20	2.4±1.42	20	2.8±1.23	1.33	-0.94	38	0.35	<i>Not significant</i>
<i>BMI</i>	20	1.1±0.71	20	1.065±0.45	0.59	0.180	38	0.853	<i>Not significant</i>
<i>WH ratio</i>	20	0.013±0.019	20	0.023±0.023	0.021	-1.369	38	0.179	<i>Not significant</i>

Graph no. 1 Showing comparison of subjective parameter wise result in both groups



Graph no.2 Showing comparison of objective parameter wise result in both groups

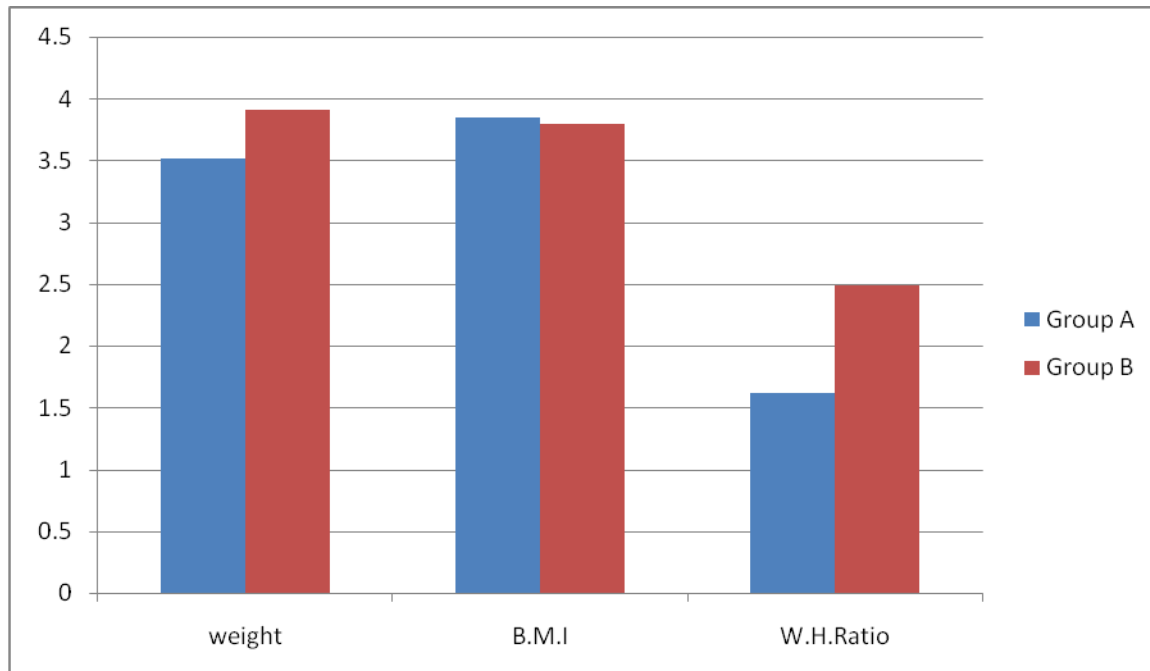


Table no. 11 Showing Statistical analysis of Group A and Group B**Unpaired t test**

<i>Parameters</i>	<i>Group A</i>		<i>Group B</i>		<i>SD</i>	<i>t-value</i>	<i>Df</i>	<i>p-value</i>	<i>Remarks</i>
	<i>N</i>	<i>MD±SD</i>	<i>N</i>	<i>MD±SD</i>					
<i>Alasya</i>	20	1±1.025	20	1.15±1.03	1.027	-0.45	38	0.64	Not significant
<i>Alpabala</i>	20	1.1±0.55	20	0.75±0.63	0.602	0.52	38	0.60	Not significant
<i>Ayathopachaya</i>	20	0.75±0.63	20	1± 0.64	0.637	0	38	1	Not significant
<i>Nidradikya</i>	20	0.5±0.60	20	0.35±0.48	0.550	0.86	38	0.39	Not significant
<i>Weight</i>	20	2.4±1.42	20	2.8±1.23	1.33	-0.94	38	0.35	Not significant
<i>BMI</i>	20	1.1±0.71	20	1.065±0.45	0.59	0.180	38	0.853	Not significant
<i>WH ratio</i>	20	0.013±0.019	20	0.023±0.023	0.021	-1.369	38	0.179	Not significant

Alasya : t value is -0.45 and corresponding p value is 0.64 we can conclude that mean effect of alasya is same in both the group and is statistically not significant.

Alpabala: t value is 0.52 and corresponding p value is 0.60 we can conclude that the mean effect of alpabala is same in both the group and is statistically not significant.

Ayatopachaya: t value is 0 and corresponding p value is 1 we can conclude that the mean effect of ayatopachaya in both the groups are same and is statistically not significant

Nidradikya: t value is 0.86 and corresponding p value is 0.39 we can conclude that the mean effect of nidradikya in both group are same and is statistically not significant.

Weight: t value is -0.94 and corresponding p value 0.35 we can conclude that mean effect of weight is same in both the group and is statistically not significant.

B.M.I.: t value is 0.180 and corresponding p value is 0.853 we can conclude that mean effect of alasya is same in both the group and is statistically not significant.

W.H.Ratio: t value is -1.369 and corresponding p value is 0.179 we can conclude that mean effect of alasya is same in both the group and is statistically not significant.

All the subjective and objective parameters in both the group have shown significant result. The clinical assessment of the result was assessed on the basis of change in grades after treatment. In the present study it was observed that both Trikatu arka and Medohara guggulu are effective in Hinasthoulya. The objective parameters were greatly improved in the group A compared to group B. Objective parameters like weight, B.M.I and Waist hip ratio showed more significant result in group B. Statistically evaluating the efficacy of Trikatu arka and Medohara guggulu, both doesn't have significant difference in the effect. Subjective parameter alasya was significantly reduced in both groups statistically were as reduction in alpabala symptom was highly significant in group A and significant in group B. Ayatopachaya symptoms reduction was highly significant in group B and nidradikya symptoms reduced significantly in both the groups. Objective parameters like weight and B.M.I showed highly significant change in both the group and waist hip ratio was significantly changed in both the group. Statistically analyzing both the groups there was no significant difference between the Trikatu arka and Medoharaguggulu group.

Discussions

Regular intake of food which contains high fat and calorie content increases the chances of obesity. Along with the quantity the quality of the food also matters. Atisampurna ahara, atimatra ahara, adhyasana have been mentioned in classics as a cause for sthoulya.

In general madhura, guru, seeta,snigdha, pichila gunas are said to be increasing kapha dosha and thus medodhatu. Current lifestyle involves a lot of these food stuff which directly influences the increased incidence of obesity..

a sedentary lifestyle causing an imbalance in the energy intake and expenditure leading to obesity. That is the anabolic rate exceeds the catabolic rate, this lead to storage of excess energy in the form of fat and lastly resulting to obesity.

Relieving from any kind of mental activity and indulging in a sedentary life style can cause obesity. In modern science there is an opinion about stress as a factor inducing obesity.

Swedadikya is due to medodushti and a significant number of patients are complaining of the same. Sweda being the mala of meda is obviously increased when there is a medodhatu vrudhi.

In overweight patients restriction of physical activity was found as medodhatu dushti is there and kaphadosha dushti also causes person to have alasya, alpabala. Kshudraswasa is considered as a lakshana of medovrudhi which is correctly anticipated here.

Action of any therapy or drug is based on gunas attributed, which acts on doshas. Sthoulya being a santarpanajanya vyadhi the prime principle of treatment is apatarpana. According to acharya charaka vatakapha medohara chikitsa is to be adopted. Trikatu arka mentioned in arkaprakasha is directly mentioned in sthoulya chikitsa which is having the same gunas. Medohara guggulu given in rasendra sara sangraha also having the properties of kapha vatahara and lekhana.

Considering the ingredients of trikatu and medohara guggulu all of them have dipana, pachana kaphavatahara properties. Drugs having katu ,tiktharasa, laghu ruksha guna, katu vipaka, ushna veerya acts on kapha and meda and takes part in samprapthi vighatana of sthoulya.

Acharya charaka specified '*guru cha apatarpanam*'⁹ to be followed which will pacify the tikshnagni caused due to medovruta vata in koshta and doesn't cause brihmana. All these drugs have agni and vayu mahabhuta predominancy explicitly pacifying kapha and medodushti.

Maricha

- It has katu tiktha rasa, laghu ruksha guna, ushna veerya and katu vipaka.
- Action on srotas and dhatus- it has been found to have rasayana effect in pranavaha srotas, Srotoshodhaka, Agnidipana, Chedana, Medohara, Swedajanaka, Mutrajanaka, Lekhana
- Action on doshas: Vatakaphahara
- Chemical constituents and its actions:¹⁰ The major constituent piperine is proved to reduce serum triglyceride, total cholesterol, LDL and VLDL levels and significantly increase the level of HDL, piperine inhibits lipid and lipoprotein accumulation by modulating the enzymes of the lipid metabolism, like lecithin- cholesterol acyltransferase and lipoprotein lipase.

Pippali

- It has katu rasa, tikshna, laghu, snigdha guna, madhura vipaka, anushna virya
- Action on srotas and dhatus: Rakthashodhaka, mootrala, vrishya, Rasayana.
- Action on dosha: Vatakapha shamaka. Agnidipaka, Rechaka, Amavatanashaka, Pachaka.
- Chemical constituents and its actions: ¹¹Pippali is a drug which has been already proven for its antilipidemic activity. Chemical constituents include polyphenols, alkaloids, terpenoids, tannins and oils and the major compounds are piperine, piperidine, pellitorine oil, cepharadione, piperolactum, paprazine and sylvamide. The antiobesity effect is possibly due to the role of it to alter the energy expenditure by increasing the expression of fat burning proteins and also inhibition of lipogenesis mediated by decrease in gene expression of FAS and malic enzyme. The suppression of increment of plasma lipids by pepper extract result from the reduced absorption of fat and cholesterol due to inhibition of the activity of pancreatic lipase. Studies have shown that oral administration of pepper decreased leptin and increased adiponectin which does fatty acid oxidation. Hexane, ethyl acetate, ethanolic and aqueous extracts of pepper have antihyperglycemic and anti-obesity

effect, among for ethyl acetate and aqueous extract have more efficacious in obesity treatment. The therapeutic efficacy can be attributed to its phytochemicals such as alkaloids, tannins, polyphenols.

Shunti

- It has katu rasa, laghu, snigdha guna, madhura vipaka and ushna virya.
- Action on srotas/dhatus: it is Srotorodhanivarana, Mutrala, Shothahara, Anulomana
- Action on dosha: Vatanulomana, Kaphavatahara, Bhedini, Agnideepaka, Ruchikara, Jihwasamshodhana, Dipana, Pachana.
- Chemical constituents and its actions:¹² it contains aromatic oil, Starch, Fat, Fibre, Camphene, Phellandrene, Zingiberine, Cineol, Borneol, Gingerol, Gingerin(oleo-resin).It modulate obesity through various potential mechanisms including increasing thermogenesis, increasing lipolysis, suppression of lipogenesis, inhibition of intestinal fat absorption and controlling appetite. It has antioxidant activity and hypoglycaemic effect. Ginger has antioxidant activity. It is also a potential cognitive function enhancer for middle aged women.

Haritaki

- It has lavanavarjitha pancha rasa, kashaya pradhana rasa, laghu ruksha guna, madhura vipaka, ushna veerya.
- Action on srotas/ dhatus: it has rasayana action, Medhya, Vayasthapana, Anulomana, Pramehaghna, Arshoghna, Kusthaghna, Shothaghna, Gulmaghna, Adhmanahara, Trishna nigrhana, Anahahara,Mutrakrichranivaraka, Mutraghatahara, Mrudurechana.
- Action on dosha: Tridosha shamaka, vatahara due to ushnvirya and madhura vipaka, pitta shamaka because of madhura vipaka and kashaya rasa, kapha shamaka owing to ushna virya and kashaya rasa. Dipana, Pachana,
- Chemical constituents and its actions: Tannins, Chebulic acid and d- galloyl glucose, Chebulagic acid, Chebulinic acid, gallic acid, sorbitol, ethyl gallate, punicalagin terflavin, Terchebin. It is proved to have hypolipidemic action. Other actions includes

antibacterial, antiviral activity, antifungal, antispasmodic, purgative, cytoprotective and cardiogenic.

Vibhitaki

- It has kashaya rasa, ruksha, laghu guna, madhura vipaka and ushna virya.
- Action on Srotas/dhatus: Srotoshodhaka, Medohara, Shothahara, Anulomana, Bhedhana, Vedanasthapana, Dipana, Pachana.
- Action on dosha: Tridosha shamaka, mainly kapha shamaka, kaphahara because of ushna virya and kashaya rasa, vatahara because of ushna virya and madhura vipaka.
- Other karmas include kasaharana, netrya, keshya, mukharogahara.
- Chemical constituents and its actions: Tannin, Gallic acid, Ellagic acid, Phyllembelin, Ethylgalate, Galloyl glucose, Chebulagic acid, Mannitol, Bellaricanin. It is astringent, expectorant. Methanolic extract of fruits has antidiabetic and antioxidant activity. Studies have shown its effect in hypercholesterolemia and atherosclerosis.

Amalaki

- It has amlapradhana lavana varjita pancharasa, ruksha, laghu, sara guna, madhura vipaka and sita virya.
- Action on srotas and dhatus: it is a good rasayana dravya, medohara, vrishya, bhagna sandhana kara, Mutrala and Anuloma.
- Action on doshas: Tridosahara, Vatahara because of amla rasa, pittahara because of sita virya and madhura vipaka, kaphahara by ruksha guna and kashaya rasa.
- Other karmas : Dipana, Pramehahara, Mruduvirechaka.
- Chemical constituents: it contains ellagic acid, Amlaic acid, Phyllanthine, Phyllantidine, Zeatine, Zeatin nucleotide, Zeatin riboside, Chebulic acid, Chebulagic acid, Gallic acid, Ascorbic acid, Flavanoid, Tannin. It is a potent immunomodulator, antioxidant, antiulcerogenic, anticarcinogenic, Antihypercholesterolaemic, Pancreatoprotective and antimicrobial.

Mustha

- It has tiktha, kashaya, katu rasa, laghu ruksha guna, katu vipaka, sita virya.
- Action on srotas and dhatus: Swedajanaka, Mutrajanaka, Grahi, Agnidipaka, Trishnahara Pachaka.
- Action on Dosha: Pitta kapha shamaka, pittasamaka due to its sita virya and tiktha kashaya rasa. Kapha shamaka due to katu vipaka, tiktha kashaya katu rasa.
- It is Jwaragna,, Rochaka, Krimghna, Atisaragna, Dipaka.
- Chemical constituents and its actions: it contains Cyperene, Cypernone, Ketoalcohols, essential oil which contains pinene, cineol, linolenic, oleic, myristic acid, steroic acid and glycerol. It acts as a appetizer, digestant, astringent, antihelminthic.
- Studies showed it has analgesic action, anti-inflammatory action, antidiarrhoeal activity.

Vidanga

- It has katu kashaya rasa, laghu, ruksha, tikshna guna, katu vipaka, ushna virya and krimghna as prabhava.
- Action on srotas and dhatus: Rasayana, Medohara, Anulomaka, Mutrajanaka, Admanahara, Mehahara, Dipana, Pachana
- Action on Dosha: Kapha Vatashamaka, vata shamaka due to ushna virya, kaphahara because of ushna viry, katu vipaka, katu kashaya rasa.
- Other karmas: Krimigna, Sulahara, Ruchya, Garbhanirodhaka, Varnya, Kushtagna.
- Chemical constituents and its actions: Embelin, Quercitol, Tannin, Iodoemboline, Bromoembolin, Embelic acid, Volatile oil, Vilangin. It has antihelmentic, Antifungal, Antioxiant, Anticonvulsant actions. Studies have shown its action in diabetes, reduction in systolic blood pressure.

Chitraka

- It has katu rasa, tikshna guna, katu vipaka, ushna virya.

- Action on srotas and dhatus: Rasayana, Swedajanaka, Grahi, Lekhana, Medohara, Agnidipana, Pachaka, Shothagna.
- Action on doshas: Vatakapha shamaka, vatahara because of ushna virya, kaphahara because of ushna virya, katu rasa and katu vipaka.
- Chemical constituents and its actions: Plumbagin, Isozeylinone, chitranone, elliptone, vanillic acid, plubagic acid, tannin, catechol, plumbazeylanone and naphthalenone. It is a appetizer, digestant. Plumbagin induces the tumor recession and it has shown antiinfertility effect.

Guggulu

- It has tiktha, katu, madhura, kashaya rasa, tikshna ,sara, sukshma, snigdha, laghu, vishada guna, katu vipaka, ushna virya.
- Action on srotas and dhatus: Rasayana, Vrushya, Medohara, Shothahara, Mutrala
- Action o dosha: Tridoshaghna, Vatashamaka due to ushna virya, pittahara due to tiktha madhura kashaya rasa, kaphahara because of ushna virya, katu vipaka and tiktha, katu kashaya rasa.
- Vatanulomana, Kaphanissaraka, Vranaropana, Gandamalanashaka, Arshoghna,Amavatahara, Pramehahara, Sandhanakara, Swarya, Dipana, Balya, Kushtagna, Krimihara.
- Chemical constituents and its actions: Gum resin of guggulu contains steroidal constituents like Z-guggulusterone, E-Guggulusterone, Guggulusterols I,II,III,IV and V Diterpene alcohol, Myrecene, Dimyrcene, Polymyrcene, Cystine, Arginine, Aspartic acid, Glutamic acid, Proline, Tyrosine, Tryptophan.
- Its ethanol extract is been proved to have antihyperglycemic, Hypolipidemic and antioxidant activity and commiphora mukul is a potential preventive and therapeutic agent against the osidative stree associated ischemic heart disease owing to antioxidant and antiperoxidative activity.
- Guggulusterone isolated from the drug have shown hypoglycemic and hypolipidemic effect.

Conclusion

Hinasthoulya can be correlated to overweight.

Charaka acharya considered sthoulya under ashtanindita purushas¹³

Acharya sushruta considered rasa dhatu dushya in the pathology of sthoulya.¹⁴

Acharya Charaka, Chakrapani, Bhavamisra opined that sthoulya can be inherited from obese parents. In Bhavaprakasha there is a mentioning about decreased proportion of shonita and increased proportion of shukra at the time of conception results in lean but potent body and increased proportion of sonata and decreased proportion of sukra predisposes development of stout but weak body.

Measures commonly used in the assessment of obesity is weight, B.M.I, W.H.Ratio

Both Trikatu arka and Medoharaguggulu are highly effective in hinasthoulya.

The properties present in trikatu arka and medoharaguggulu like dipana, pachana, kapha medohara properties helped in the sthoulyahara action.

Madhura, guru, seeta,snigdha, pichila gunas are said to be increasing kapha dosha and thus medodhatu. Current lifestyle involves a lot of these food stuff which directly influences the increased incidence of obesity.

Swedadikya is due to medodushti and a significant number of patients are complaining of the same. Sweda being the mala of meda is obviously increased when there is a medodhatu vrudhi.

trikatu and medohara guggulu all of them have dipana, pachana kaphavatahara properties. Drugs having katu ,tiktharasa, laghu ruksha guna, katu vipaka, ushna veerya acts on kapha and meda and takes part in samprapthi vighatana of sthoulya¹⁵.

Trikatu arka had better action in relieving the subjective paramaters like alasya,alpabala,ayatopacha and nidradikya.

Medohara guggulu acted more efficiently in reducing the objective parameters like weight, B.M.I and Waist hip ratio.

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