Published online in http://ijam. co. in

ISSN: 0976-5921

Appraisal on Ayurvedic Herbs in the Management of *Sthaulya* (Obesity)

Review Article

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Abstract

Sthaulya (Obesity) is a lifestyle and metabolic disorder. Ayurveda treated *Sthaulya* as a *Santarpanottha Vikara* (diseases due to excessive nutrition) which has been identified as one of the leading cause of morbidity and mortality worldwide in both developed and developing countries. *Medodushti* (disorders of fat metabolism) serves as one of the important etiological factor. In Ayurveda herbal drugs are being used to lower the levels of serum cholesterol for the treatment and prevention of this disorder. In this regard, an attempt has been made to review the drugs useful in *Sthaulya* specifically mentioned in *Ganas* (group of drugs) of Ayurvedic classical texts which are useful in prevention and management of conditions like Dyslipidemia and its complications.

Keywords: Dyslipidemia, *Lekhana, Medohara*, *Sthaulya*, Obesity, Ayurveda.

Introduction:

Sthaulya (obesity) is one of the lifestyle and metabolic disorder which was explained in Ayurvedic classics. In Ayurveda it is diagnosed generally basing on the characteristic features like *chala* (sagging) *sphik* (buttocks), *udara* (belly) and *sthana* (breast), also decreased *upachaya* (general strength) and *utsaaha* (enthusiasm).

In modern the accumulation of fat over the limit led to ill/adverse 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 in adults. The World Health Organization (WHO) definition is "A BMI greater than or equal to 25 is overweight and a BMI greater than or equal to 30 is obesity".(1)

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. WHO global estimates for the year 2008, reported 1.5 billion people were overweight, of these, over 200 million men and nearly 300 million women were obese. Overall more than one in ten of the world's adult population was obese.(1)

In 2010, around 43 million children under five were overweight. Overweight and obesity are now on the rise in low and middle income countries, particularly in urban settings. Close to 35 million overweight children are living in developing countries and 8 million in developed countries. Childhood obesity is associated with a higher chance of premature death and disability in adulthood. But in addition to increased future risks, obese children experience breathing difficulties, increased risk of fractures, hypertension, cardiovascular diseases and psychological effects. (2)

Atisthaulya (over obese) is considered as one of the eight despicable conditions as described by Acharya Charaka.(3) A person in whom there is excessive accumulation of *Meda* (fat/adipose tissue) and *Mamsa* (flesh/muscle tissue) leading to flabbiness of hips, abdomen, and breast has been categorized as *Atisthaulya*.(4) *Medas* is body tissue predominant in *Prithvi* (earth) and *Ap* (water) *Mahabhutas* (basic elements) similar to *Kapha Dosha*.(5) It is characterized by *Snighdha* (unctuous), *Guru* (heavy), *Sthula* (space occupying), *Picchila* (slimy), *Mridu* (tender/ soft) and *Sandra* (dense) *Guna* (qualities).(6) *Sneha* (oleation), *Sweda* (production of sweat), *Drudhatva* (compactness), and *Asthipushti* (nourishment of bones) are the main function of *Medodhatu*.(7) Consumption of *Guru* (heavy to digest), *Sheeta* (cold), *Snigdha* (unctuous), *Madhuradi Kaphavardhaka* (sweet and *Kapha* increasing) drugs along with lack of exercise and sedentary life style result in excessive nourishment of *Medas* while other bodily elements (*Dhatus*) are deprived of nourishment.

Disproportionately increased *Medas* is accountable for several serious consequences reported in Charaka Samhita like *Ayuhrasa* (decrease of life span), *Javoparodha* (decrease in enthusiasm and activity), *Krichravyavayata* (difficulty in sexual act), *Dourbalya* (decrease of strength), *Dourgandhya* (bad

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Published online in http://ijam. co. in

ISSN: 0976-5921

International Journal of Ayurvedic Medicine, 2017, 8(4), 159-168

odor), *Swedabadha* (excess perspiration) and *Kshut Pipasadhikya* (excessive hunger and thirst).(8) *Mandotsaham* (less activity referring to sedentary lifestyle), *Atisnigdham* (excessive intake of fatty substances), *Atisthaulyam* (gross obesity), and *Mahashanam* (excessive eating) constitute for causation of *Prameha*(9) (urinary diseases including Diabetes) and these etiological factors may also initiate Dyslipidemia.

Obesity and Hyperlipidemia being the most common problems in older age groups as well as adolescents, there is a necessity to combat them with drugs mentioned in Ayurvedic classics which may be useful in the conditions of *Medodushti* and *Sthaulya.* In this regard, an attempt has been made to critically review the Medohara drugs mentioned in the classical texts which may give us a better understanding for its prevention and management.

Materials and Methods:

Compilation of *Medohara* (which removes or dries up excess *Medas*) and *Lekhaneeya* (which scrapes excess *Medas*) herbs were done from *Ganas* of Charaka Samhita(10), Sushruta Samhita(11), Astanga sangraha (12), and Ashtanga Hrudaya(13). A total of 100 different herbs have been enlisted from these various groups (*Ganas*) of classical Ayurvedic texts after excluding the controversial drugs. *Rasa* (taste), *Guna* (quality), *Veerya* (potency), *Vipaka* (drug metabolism), Action on *Doshas* and useful part of the herbs were compiled from Dhanvantari Nighantu,(14) Bhavaprakasha Nighantu,(15) Nighantu Adarsha,(16) and Textbook of Dravyaguna(17,18) was tabulated. Herbs with proven lipid lowering activity reported through different research models are also tabulated. (19,20,21)

Results:

Charaka has given single *Gana* of 10 drugs (*Lekhaniya Gana*), while Sushruta and Vagbhata have mentioned 8 and 10 *Ganas* respectively in Table-1. Analysis of 100 drugs has been made, which are taken from different *Ganas* of classical texts. Useful part was recorded based on relevant references from classical texts and modern texts of Dravyaguna in Table-2. Herbs with proven lipid lowering activity are mentioned in Table-3.

Table 1: List of *Ganas* mentioned in Ayurvedic classical for *Sthaulya*

Name of the Gana	C.S	S.S	A.S	A.H
Arkadi gana	x	✓	✓	✓
Asanadi gana	x	x	✓	✓
Lekhaniya gana	✓	x	x	x
Lodhradi gana	x	✓	✓	✓
Mushkakadi gana	x	✓	✓	✓
Nyagrodhadi gana	x	✓	✓	✓
Salasardi gana	x	✓	x	x
Surasadi gana	x	x	✓	✓
Tryushana gana	x	✓	x	x
Ushakadi gana	x	✓	✓	✓
Vacha Haridradi gana	x	x	✓	✓
Varunadi gana	x	✓	✓	✓
Vatsakadi gana	x	x	✓	✓

Note: C.S: Charaka Samhita; S.S: Susruta Samhita; A.S: Ashtanga Sangraha; A.H: Ashtanga Hrudaya

Table 2: List of *Sthaulya hara* (Anti-Obesity) drugs

S. No.	Sanskrit name	Latin name	*Rasa* (taste)	*Guna* (qualities)	*Virya* (potency)	*Vipaka* (after digestion)	*Dosha* passification	Useful part
1	*Agnimantha*	*Premna integrifolia Linn.*	*Katu* (pungent), *Tikta* (bitter)	*Laghu* (lightness), *Rooksha* (dry)	*Ushna* (Hot)	*Katu*	*Kapha*, *Vata*	Root bark, leaf
2	*Aguru*	*Aquilaria agallocha Roxb.*	*Katu*, *Tikta*	*Laghu*, *Teekshna* (piercing)	*Ushna*	*Katu*	*Kapha, Vata*	resinous wood, oil
3	*Ajakarna*	*Dipterocarpus turbinatus Gaertn.f.*	*Katu*, *Tikta*	*Laghu*, *Snigdha* (unctuous)	*Ushna*	*Katu*	*Kapha*, *Vata*	Oil, bark, fruit

4	*Ajamoda*	*Trachyspermum roxburghianum (DC.) Craib.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Fruits
5	*Alarka*	*Calotropis gigantea (Linn.) R.Br. ex.Ait.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Root bark, flowers, leaf, latex, seeds
6	*Amalaki*	*Emblica officinalis Gaertn.*	Five tastes (except *lavana*)	Guru (heavines s), *Sheeta* (coolant)	*Sheeta*	*Madhu ra* (sweet)	*Tridosha*	Fruits
7	*Amra*	*Mangifera indica Linn.*	*Kashay a* (astring ent)	*Laghu*	*Sheeta*	*Katu*	*Kapha, pitta*	Bark, Seeds
8	*Arjuna*	*Terminalia arjuna (Roxb.) W. & A.*	*Kashay a*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Bark
9	*Arka*	*Calotropis procera (Ait.) R.Br.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Root bark, flowers, leaf, latex, seeds
10	*Asana*	*Pterocarpus marsupium Roxb.*	*Tikta, Kashay a*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Heart-wood, exudate resin
11	*Ashoka*	*Saraca asoca (Roxb.) DeWilde.*	*Tikta, Kashay a*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Stem bark, seeds
12	*Aswatha*	*Ficus religiosa Linn.*	*Madhur a, Kashay a*	*Guru (Heavy for diges-tion), Ruksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Bark, Tender leaf, Latex and Fruit
13	*Ativisha*	*Aconitum heterophyllum Wall. ex Royle.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, pitta*	Tuber-ous root
14	*Badara*	*Ziziphus jujuba Mill.*	*Madhur a*	*Guru*	*Sheeta*	*Katu*	*Vata, pitta*	Root, leaf, Fruit
15	*Bhallataka*	*Semecarpus anacardium Linn. f.*	*Katu, Tikta, Kashay a*	*laghu, Teeksh-na, Snigdha*	*Ushna*	*Madhu ra*	*Kapha, Vata*	Fruits
16	*Bharngi*	*Clerodendrum serratum (Linn.) Moon.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Root, leaves
17	*Bhurja*	*Betula utilis D. Don.*	*Kashay a*	*Laghu*	*Ushna*	*Katu*	*Tridosha*	Bark
18	*Bhustrna*	*Andropogon citratus DC.*	*Katu, Tikta*	*laghu, Teekshna*	*Ushna*	*Katu*	*Kapha, Vata*	Leaf, rhizome
19	*Bilwa*	*Aegle marmelos (L.) Correa. ex Roxb.*	*Katu, Tikta, Kashay a*	*Teekshna*	*Ushna*	*Katu*	*Kapha, Vata*	Fruits
20	*Bimbi*	*Coccinia indica W. and A.*	*Tikta*	*Laghu, Rooksha, Teekshna*	*Ushna*	*Katu*	*Kapha, pitta*	Leaves, Root, Fruit
21	*Bruhati*	*Solanum indicum Linn.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Root, fruit

22	*Chandana*	*Santalum album Linn.*	*Tikta, Madhura*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Heart wood, oil
23	*Chavya*	*Piper chaba Hunter non.Blume.*	*Katu*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Roots
24	*Chirabilva*	*Holoptelia integrifolia Planch*	*Tikta, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, pitta*	Bark
25	*Chitraka*	*Plumbago zeylanica Linn.*	*Katu*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Root Bark
26	*Choraka*	*Angelica glauca Edgew.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Root
27	*Darbha*	*Desmostachya bipinnata Stapf.*	*Madhura, Kashaya*	*Laghu, Snigdha*	*Sheeta*	*Madhu ra*	*Tridosha*	Root
28	*Da-ruharidra*	*Berberis aristata DC.*	*Tikta, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, pitta*	root, stem, fruit
29	*Devahva*	*Cedrus deodara (Roxb.) Loud.*	*Katu, Tikta, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Bark, Heart-wood, oil
30	*Dhava*	*Anogeissus latifolia Wall. ex Bedd.*	*Kashaya*	*Laghu, Rooksha*	*sheeta*	*Katu*	*Kapha, pitta*	Heart wood, Exudate and Bark
31	*Ela*	*Elettaria cardamomum Maton.*	*Madhura, Katu,*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, Vata*	Seeds
32	*Elavaluka*	*Prunus cerasus Linn.*	*Tikta, Kashaya*	*Laghu, Snigdha*	*Sheeta*	*Katu*	*Kapha, pitta*	Stem bark, Seeds
33	*Hareetaki*	*Terminalia chebula Retz.*	*Five tastes (except lavana)*	*Laghu, Rooksha*	*Ushna*	*Madhu ra*	*Tridosha*	Fruits
34	*Haridra*	*Curcuma longa Linn.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Rhi-zome
35	*Hingu*	*Ferula foetida Regel.*	*Katu*	*Laghu, Snigdha*	*Ushna*	*Katu*	*Kapha, Vata*	Resin
36	*Ingudi*	*Balanites aegyptiaca (Linn.) Delile.*	*Katu, Tikta*	*Laghu, Snigdha*	*Ushna*	*Katu*	*Kapha, Vata*	Stem bark, fruit, Seed oil
37	*Jambu*	*Syzygium cuminii (Linn.) Skeels.*	*Madhura, Amla, Kashaya*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Fruit, seed, leaf, stem bark
38	*Jeeraka*	*Cuminum cyminum Linn.*	*Katu*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Seeds
39	*Jhingini*	*Odina wodier Roxb.*	*Madhura, Katu, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Bark, leaves
40	*Jyotish-mati*	*Celastrus paniculatus Willd.*	*Katu, Tikta*	*Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	Seed oil
41	*Kadali*	*Musa paradisiaca Linn.*	*Madhura, Kashaya*	*Guru, Snigdha*	*Sheeta*	*Madhu ra*	*Vata, pitta*	Fruit, Stem, Flower
42	*Kadamba*	*Anthocephalus cadamba Miq.*	*Tikta, Kashaya*	*Rooksha*	*Sheeta*	*Katu*	*Tridosha*	Bark, Fruit, leaves

43	*Kalinga*	*Seeds of H. antidysenterica.*	*Tikta, Kashaya*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Seeds
44	*Kantakari*	*Solanum xanthocarpum S. and W.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	whole plant, root, fruit
45	*Kapeetana*	*Thespesia populnea Soland. ex Correa.*	*Kashaya*	*Laghu, snigdha*	*Sheeta*	*Katu*	*Kapha, pitta*	Stem bark
46	*Karanja*	*Derris indica (Lamk.) Bennet.*	*Katu, Tikta, Kashaya*	*Laghu, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	fruit, leaves, bark, seeds
47	*Kasamar-da*	*Cassia occidentalis Linn.*	*Madhura, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Tridosha*	Root, seed, Leaf
48	*Katphala*	*Myrica nagi Hook. f. non-Thunb.*	*Katu, Tikta, Kashaya*	*Laghu, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	Bark, Fruit
49	*Katuki*	*Picrorhiza kurroa Royle. ex Benth.*	*Tikta*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, Vata*	Root, roots
50	*Khadira*	*Acacia catechu (Linn. f.) Willd.*	*Tikta, Kashaya*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	bark, heart wood, flowers
51	*Koshamra*	*Schleichera oleosa (Lour.) Oken.*	*Amla*	*Guru*	*Ushna*	*Katu*	*Kapha, Vata*	bark, seed, oil
52	*Kramuka*	*Areca catechu Linn.*	*Madhura, Kashaya*	*Guru, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Fruit
53	*Kuchan-dana*	*Pterocarpus santalinus Linn. f.*	*Madhura, Tikta*	*Guru, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	heart wood
54	*Kushta*	*Sausurea lappa Decne.*	*Madhura, katu, Tik-ta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Roots
55	*Kutaja*	*Holarrhena antidysenterica (Linn.) Wall.*	*Tikta, Kashaya*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Bark, fruit
56	*Kutannata*	*Oroxylum indicum Vent.*	*Madhura, Tikta, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	root bark, fruit
57	*Lodhra*	*Symplocos racemosa Roxb.*	*Tikta, Kashaya*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	bark, flower
58	*Madana*	*Randia dumetorum Poir.*	*Madhura, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Fruit, seeds
59	*Madhooka*	*Bassia longifolia Koen.*	*Madhura, Kashaya*	*Guru, snigdha*	*Sheeta*	*Madhu ra*	*Vata, pitta*	Flow-ers, Seeds and Oil
60	*Madhuka*	*Glycyrrhiza glabra Linn.*	*Madhura*	*Guru, snigdha*	*Sheeta*	*Madhu ra*	*Vata, pitta*	Roots
61	*Maricha*	*Piper nigrum Linn.*	*Katu*	*Laghu, Teeksh-na, sookshm a*	*Ushna*	*Katu*	*Kapha, Vata*	seeds

Published online in http://ijam. co. in

ISSN: 0976-5921

International Journal of Ayurvedic Medicine, 2017, 8(4), 159-168

62	*Mayuraka*	*Achyranthes aspera Linn.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	whole plant, Kshara
63	*Moorva*	*Maerua arenaria Hook. f. and Thoms.*	*Tikta, Kashaya*	*Guru, Rooksha*	*Ushna*	*Katu*	*Tridosha*	Root
64	*Musta*	*Cyperus rotundus Linn.*	*Katu, Tikta, Kashaya*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Tuber
65	*Nagadanti*	*Baliospermum montanum Muell.*	*Katu*	*Guru, Teeksh-na*	*Ushna*	*Katu*	*Kapha, vata*	Root, Leaves, Seed
66	*Naktamala*	*Pongamia glabra Bent.*	*Katu, Tikta, Kashaya*	*Laghu, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	fruit, leaves, bark, seeds
67	*Nyagrodha*	*Ficus benghalensis Linn.*	*Kashaya*	*Guru, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Bark, Tender leaf, Latex
68	*Palasha*	*Butea monosperma (Lam.) Taub.*	*Katu, Tikta, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Flowers, fruit, Kshara
69	*Patha*	*Cissampelos pareira Linn.*	*Tikta*	*Laghu, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	Root and stem
70	*Pippali*	*Piper longum Linn.*	*Katu*	*Laghu, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	Fruit
71	*Pippali mula*	*Roots of Piper longum Linn.*	*Katu*	*Laghu, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	root
72	*Plaksha*	*Ficus lacor Buch.-Ham.*	*Kashaya*	*Guru, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Bark
73	*Prisniparni*	*Uraria picta Desv.*	*Madhura, Tikta*	*Laghu, Snigdha*	*Ushna*	*Madhu ra*	*Tridosha*	Root
74	*Priyala*	*Buchanania lanzan Spreng.*	*Madhura*	*Guru sara*	*Sheeta*	*Madhu ra*	*Kapha, pitta*	bark, seed
75	*Putikaran-ja*	*Caesalpinia bonduc (L.) Roxb.*	*Tikta, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Tridosha*	Root bark, leaf, seed
76	*Rasna*	*Pluchia lanceolata Oliver.*	*Tikta*	*Guru*	*Ushna*	*Katu*	*Kapha, Vata*	Leaf, Rhi-zome
77	*Saireyaka*	*Barleria prionitis L.*	*Madhura, Tikta*	*Laghu*	*Ushna*	*Katu*	*Kapha, Vata*	Whole plant
78	*Sarala*	*Pinus roxburghii Sarg.*	*Katu, Tikta, Kashaya*	*Laghu, Snigdha, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	Oil, Bark, resin,
79	*Sarja*	*Vateria indica Linn.*	*Tikta, Kashaya*	*Snigdha*	*Sheeta*	*Katu*	*Kapha, Vata*	Bark, Gum
80	*Shaaka*	*Tectona grandis Linn. f.*	*Tikta, Kashaya*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, Vata*	Leaves, seeds, bark
81	*Shaala*	*Shorea robusta Gaertn. f.*	*Madura, Kashaya*	*Rooksha*	*Sheeta*	*Katu*	*Vata, pitta*	Bark, heart-wood
82	*Shalasara*	*Niryasa of Shaala*	*Madura, Kashaya*	*Rooksha*	*Sheeta*	*Katu*	*Vata, pitta*	Resin

83	*Shatavari*	*Asparagus racemosa willd.*	*Madhura, Tikta*	*Guru, Snigdha*	*sheeta*	*Madhura*	*Vata, pitta*	Tuberous roots
84	*Shigru*	*Moringa oleifera Lam.*	*Katu, Tikta*	*Laghu, Rooksha, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	bark, leaves, fruits and seeds
85	*Shimshipa*	*Dalbergia sissoo Roxb. ex DC.*	*Katu, Tikta, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	leaves, Sara, bark, root
86	*Shireesha*	*Albizia lebbeck (Linn.) Willd.*	*Madhura, Tikta, Kashaya*	*Laghu, Rooksha, Teeksh-na*	*Ushna*	*Katu*	*Tro-dosha*	Bark, seeds, leaves and flowers
87	*Shunti*	*Zingiber officinalis Rosc.*	*Katu*	*Guru, Rooksha, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	Rhi-zome
88	*Siddharta*	*Brassica campestris Linn.*	*Katu, Tikta*	*Laghu, Snigdha*	*Ushna*	*Katu*	*Kapha, Vata*	Seed, seed oil
89	*Surasa*	*Ocimum sanctum Linn.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Leaf, Root, Seed
90	*Taala*	*Borassus flabellifer Linn.*	*Madhura*	*Guru, Snigdha*	*Sheeta*	*Katu*	*Vata, pitta*	Fruit, Flower, Juice, Root
91	*Tarkari*	*Clerodendrum phlomidis Linn.f.*	*Katu, Tikta*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Root bark, leaf
92	*Tinduka*	*Diospyros ebenum Koenig.*	*Katu, Tikta, Kashaya*	*Guru*	*Sheeta*	*Katu*	*Kapha, pitta*	Bark, fruit, seed
93	*Tinisha*	*Ougeinia dalbergioides Benth.*	*Kashaya*	*Laghu, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	heart wood and bark
94	*Udumbara*	*Ficus racemosa Linn.*	*Kashaya*	*Guru, Rooksha*	*Sheeta*	*Katu*	*Kapha, pitta*	Bark, Fruit, Latex
95	*Vacha*	*Acorus calamus Linn.*	*Katu, Tikta*	*Laghu, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	Rhi-zome
96	*Va-jravruksha*	*Euphorbia neriifolia auct. Non Linn.*	*Katu*	*Laghu, Teeksh-na*	*Ushna*	*Katu*	*Kapha, Vata*	Root, Leaf, Milky latex
97	*Vanjula*	*Salix caprea Linn.*	*Tikta, Kashaya*	*Laghu*	*Sheeta*	*Katu*	*Kapha,pitta*	Flowers
98	*Varuna*	*Crataeva nurvala Buch.-Ham.*	*Tikta, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Bark, flower, leaves
99	*Vibheetaki*	*Terminalia bellirica Roxb.*	*Kashaya*	*Laghu, Rooksha*	*Ushna*	*Madhura*	*Kapha, pitta*	Fruits
100	*Vidanga*	*Embelia ribes Burm. f.*	*Katu, Kashaya*	*Laghu, Rooksha*	*Ushna*	*Katu*	*Kapha, Vata*	Fruits, root

Table 3: List of anti-obesity herbs

S.No.	Sanskrit name	Latin name	Family
1	*Agnimantha*	*Premna integrifolia Linn.*	Verbenaceae
2	*Ajamoda*	*Trachyspermum roxburghianum (DC.) Craib.*	Apiaceae
3	*Alarka*	*Calotropis gigantea (Linn.) R.Br. ex.Ait.*	Apocynaceae
4	*Amalaki*	*Emblica officinalis Gaertn.*	Phyllanthaceae
5	*Amra*	*Mangifera indica Linn.*	Anacardiaceae
6	*Arjuna*	*Terminalia arjuna (Roxb.) W. & A.*	Combretaceae
7	*Arka*	*Calotropis procera (Ait.) R.Br.*	Apocynaceae
8	*Asana*	*Pterocarpus marsupium Roxb.*	Fabaceae
9	*Asoka*	*Saraca asoca (Roxb.) DeWilde.*	*Saraca asoca*
10	*Aswatha*	*Ficus religiosa Linn.*	Moraceae
11	*Badara*	*Ziziphus jujuba Mill.*	Rhamnaceae
12	*Bhallataka*	*Semecarpus anacardium Linn. f.*	Anacardiaceae
13	*Bilwa*	*Aegle marmelos (L.) Correa. ex Roxb.*	Rutaceae
14	*Bimbi*	*Coccinia indica W. and A.*	Cucurbitaceae
15	*Bruhati*	*Solanum indicum Linn.*	Solanaceae
16	*Chandana*	*Santalum album Linn.*	Santalaceae
17	*Chirabilva*	*Holoptelea integrifolia* (Roxb.) Planch	Ulmaceae
18	*Chitraka*	*Plumbago zeylanica Linn.*	Plumbaginaceae
19	*Darbha*	*Desmostachya bipinnata Stapf.*	Poaceae
20	*Daruharidra*	*Berberis aristata DC.*	Berberidaceae
21	*Devahva*	*Cedrus deodara (Roxb.) Loud.*	Pinaceae
22	*Dhava*	*Anogeissus latifolia Wall. ex Bedd.*	Combretaceae
23	*Hareetaki*	*Terminalia chebula Retz.*	Combretaceae
24	*Haridra*	*Curcuma longa Linn.*	Zingiberaceae
25	*Hingu*	*Ferula foetida Regel.*	Umbelliferae
26	*Jambu*	*Syzygium cuminii (Linn.) Skeels.*	Myrtaceae
27	*Jeeraka*	*Cuminum cyminum Linn.*	Umbelliferae
28	*Kadali*	*Musa paradisiaca Linn.*	Musaceae
29	*Kadamba*	*Anthocephalus cadamba Miq.*	Rubiaceae
30	*Kalinga*	Seeds of *holarrhena antidysenterica* L.	Apocynaceae
31	*Kantakari*	*Solanum xanthocarpum S. and W.*	Solanaceae
32	*Kapeetana*	*Thespesia populnea Soland. ex Correa.*	Malvaceae
33	*Karanja*	*Derris indica (Lamk.) Bennet.*	Papilionoideae
34	*Kasamarda*	*Cassia occidentalis Linn.*	Fabaceae
35	*Katuki*	*Picrorhiza kurroa Royle. ex Benth.*	Plantaginaceae
36	*Khadira*	*Acacia catechu (Linn. f.) Willd.*	Mimosaceae
37	*Kramuka*	*Areca catechu Linn.*	Arecaceae
38	*Kuchandana*	*Pterocarpus santalinus Linn. f.*	Fabaceae
39	*Kutannata*	*Oroxylum indicum Vent.*	Bignoniaceae
40	*Lodhra*	*Symplocos racemosa Roxb.*	Symplocaceae
41	*Madana*	*Randia dumetorum Poir.*	Rubiaceae
42	*Madhooka*	*Bassia longifolia Koen.*	Sapotaceae
43	*Madhuka*	*Glycyrrhiza glabra Linn.*	Fabaceae
44	*Maricha*	*Piper nigrum Linn.*	Piperaceae
45	*Mayuraka*	*Achyranthes aspera Linn.*	Amaranthaceae
46	*Moorva*	*Maerua arenaria Hook. f. and Thoms.*	Capparaceae
47	*Musta*	*Cyperus rotundus Linn.*	Cyperaceae
48	*Naktamala*	*Pongamia glabra Bent.*	Fabaceae
49	*Nyagrodha*	*Ficus benghalensis Linn.*	Moraceae
50	*Palasha*	*Butea monosperma (Lam.) Taub.*	Fabaceace
51	*Pippali*	Fruits of *Piper longum Linn.*	Piperaceae

52	*Pippalimula*	Roots of *Piper longum Linn.*	Piperaceae
53	*Putikaranja*	*Caesalpinia bonduc (L.) Roxb.*	Fabaceace
54	*Shaaka*	*Tectona grandis Linn. f.*	Lamiaceae
55	*Shatavari*	*Asparagus racemosa willd.*	Asparagaceae
56	*Shigru*	*Moringa oleifera Lam.*	Moringaceae
57	*Shimshipa*	*Dalbergia sissoo Roxb. ex DC.*	Fabaceace
58	*Shireesha*	*Albizia lebbeck (Linn.) Willd.*	Fabaceace
59	*Shunti*	*Zingiber officinalis Rosc.*	Zingiberaceae
60	*Siddharta*	*Brassica campestris Linn.*	Brassicaceae
61	*Surasa*	*Ocimum sanctum Linn.*	Lamiaceae
62	*Tinduka*	*Diospyros ebenum Koenig.*	Ebenaceae
63	*Tinisha*	*Ougeinia dalbergioides Benth.*	Fabaceace
64	*Udumbara*	*Ficus racemosa Linn.*	Moraceae
65	*Vacha*	*Acorus calamus Linn.*	Acoraceae
66	*Varuna*	*Crataeva nurvala Buch.-Ham.*	Capparaceae
67	*Vibheetaki*	*Terminalia bellirica Roxb.*	Combretaceae
68	*Vidanga*	*Embelia ribes Burm. f.*	Primulaceae

Discussion:

Agni (digestive fire, etc) in the body has its primary contribution in metabolism. *Ama* (undigested toxic substance) which results from hypo functioning of *Jatharagni* (digestive fire) may obstruct the *Srotas* (channels) leading to *Srotorodha* (obstruction of channels). This leads to *Medodushti* along with decreases in the nutrient supply to subsequent *Dhatus* namely *Asthi* (bone tissue), *Majja* (bone marrow), and *Shukra* (fertility promoting substance). (22)

Charaka has given single *Gana* of 10 drugs (*Lekhaniya Gana*) Acharya Sushruta has given 8 *Ganas*, whereas Vagbhata included 10 *Ganas* to be *Medohara*. *Surasadi Gana* is not indicated for *Medoroga* by Sushruta while Vagbhata has included it. *Laghu*, *Ruksha*, *Ushna*, and *Teekshna* contribute for *Langhana* and *Rukshaniya* effect and plays predominant role for the treatment of vitiated *Kapha Dosha* and *Medodhatu*. According to Susruta the *Vipaka* of *Langhana* and *Rukshaniya* drug should be *Laghu* which is also interpreted as *Katu Vipaka*.

The *Dravya* possessing *Katu Rasa* and *Tikta Rasa* are to be prescribed in the initial stages (Border line of hyperlipidemia) in the treatment of Dyslipidemia. Later *Kashaya* dominant drugs can be incorporated in the subsequent phases (High hyperlipidemia) which facilitates for *Shoshana* (absorption) of liquefied or detoxified *Kapha* and *Medas*, a state produced by *Tikta Rasa* and *Katu Rasa*. Finally the application of *Amla Rasa* which is attributed with *Vatanulomana* (facilitator of downward movement of Vata), and *Hridya* (cardio-tonic) (23) properties may be preferred which may overcome *Vataprakopa* induced by *Tikta*, *Katu*, and *Kashaya Rasa* drugs.

Majority of herbs possessing *Kaphahara*, *Vatahara* and *ushna veerya* activity are found to be *Medohara* in action. Antagonistic measures are usually employed to treat *Doshavriddhi* (24). But in case of *Medodushti*, *Sheeta Veerya* dominant herbs are also suggested. *Shalasaradi Gana*, *Lodhradi*, and *Nyagrodhadi Ganas* containing *Kashaya*, *Tikta,* and *Sheeta Veerya* drugs increase *Ruksha Guna* (dry) resulting in *Medo soshana* (absorption of vitiated fat). Drugs like *Yashtimadhu* (Glycyrrhiza glabra Linn.), *Shatavari* (Asparagus racemosus willd.), etc., possessing *Madhura Rasa* and *Snigdha Guna* are included in *ganas*. We can justify by saying they may help to soften and unction (25) the vessels hardened overtime by the deposited fat as in the case in Atherosclerosis.

It is observed that drugs like *Guggulu* (Commiphora wightii (Arn.) Bhandari.), *Vrukshamla* (Garcinia indica Choisy, Garcinia cambogia Desr.), *Atasi* (Linum usitassimum Linn.), *Lashuna* (Allium sativum Linn.) etc., promoted for controlling Obesity and Dyslipidemia though mentioned in Ayurvedic texts are not specifically found in classical *Ganas*.

Conclusion:

Drugs mentioned in each *Gana* of Ayurvedic classics have multiple pharmacological actions. This observation is useful for designing new formulations to treat *Medodushti* and its complications. Drugs that are *Katu*, *Tikta*, *Kashaya* in *Rasa*, possessing *Ushna Virya*, and *Laghu Ruksha Guna* are largely responsible for *Medohara* and *Lekhaneeya* activities in the treatment of *Sthaulya*. A better understanding in the existing evidence based science on herbs will further guide a qualitative research in obesity management that will attract the end users by the effective benefits. True randomized, double blinded, placebo-controlled clinical trials using herbal products will demonstrate their potential benefits.

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