

## UNVEILING THE APPROACH OF OBESITY IN AYURVEDA

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### ABSTRACT

Obesity is an exploding endemic. In today's community when 13% of the world's adult population (11% of men and 15% of women) are obese (in 2014), bigger is a dangerous and unhealthy condition. The current available medicines do not give a satisfactory response in the treatment of obesity. Ayurveda is rapidly advancing onto the world stage as a medicine that has endured through time and history to assuage the ills of humankind and assist in the prevention of further diseases and imbalances of health. Ayurvedic medicines are notable for their sophistication in addressing the clinical concerns while remedying an individual's particular needs. This paper aims at understanding and comparing the mechanisms of various herbs involved in reducing adiposity as per Ayurvedic terminologies used in ancient text along with the modern accepted concepts. Thousands of years old, the herbal medicine tradition remains a vibrant player in today's health field. Ayurvedic Medicines which work on Sthaulya have also been enlisted with an effort to establish their hypocholastraemic, anti-obesity and anti-atherosclerotic effect.

**Keywords:** *Obesity, Sthaulya, Ayurvedic medicines.*

### INTRODUCTION

One has heard of the saying “**BIGGER IS BETTER**” But in today's community bigger is a dangerous and unhealthy condition. Obesity is considered as an **exploding “epidemic”** of 21<sup>st</sup> century which is threatening millions of lives worldwide. And it is ever growing. Body weight is the physical expression of good health. But, the condition of being overweight is viewed as one of the many signs of imbalance or “**disease**” (wherein the easiness of the body is lost) in the human system. This condition is referred to as being obese.

### What is obesity?

Obesity is more than just a few extra pounds. Obesity is the heavy accumulation of fat in your body to such a degree that it rapidly increases your risk of diseases that can damage your health and knock years off your life, such as heart disease and diabetes. The fat may be equally distributed around the body or concentrated on the stomach (apple-shaped) or the hips and thighs (pear-shaped).

For medical purposes, the body mass index (BMI) is used to determine if your weight is in the healthy range [1].

- You are in the normal range if your BMI is between 18.5 and 25 (kg/m<sup>2</sup>).
- You are overweight if your BMI is between 25 and 30.
- **You are obese if your BMI is 30 or higher.**
- You are morbidly obese if your BMI is 40 or higher.

Obesity is primarily characterized as the imbalance of energy in the body. If your calorie intake exceeds the amount of calories burned, you will become susceptible to weight gain. **Obesity is the result of the body's inability to balance calorie intake and energy expenditure.** Our intake of food must match our output of energy. If these two numbers do not correspond then fat cells multiply and make a home in the tissues of the body. Once this occurs, a person is on a dangerous path leading to obesity.

#### **Prevalence of Obesity:**

While slightly more women than men are obese (24 per cent versus 23 per cent), in the last ten years there has been a greater increase in the number of men who are obese [1].

Some recent WHO global estimates follow [2].

- In 2014, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 600 million were obese.
- Overall, about 13% of the world's adult population (11% of men and 15% of women) was obese in 2014.
- In 2014, 39% of adults aged 18 years and over (38% of men and 40% of women) were overweight.
- The worldwide prevalence of obesity more than doubled between 1980 and 2014. Overweight and obesity are

linked to more deaths worldwide than underweight. (This includes all high-income and most middle-income countries).

#### **Obesity in India:**

A country, where 270 million people live below the 'poverty line', Obesity seems to be a distant issue, meant for the rich kids of the world. But India is under siege too. It is the third most obese country in world. The UD topped the list with 13 percent of the obese people worldwide in 2013, while China and India together accounted for 15 percent of the world's obese population, with 46 million and 30 million obese people, respectively. According to the study, number of overweight and obese people globally increased from 857 million in 1980 to 2.1 billion in 2013. This is one-third of the world's population [3].

#### **Obesity in Rajasthan:**

Based on data from the 2007 National Family Health Survey, the percentage of obese and overweight men in Rajasthan is 8.4 percent and 9 percent in women [4].

Obesity is not a simple problem since it has the capacity to trigger approximately 53 diseases. This is one of the primary causes of non-communicable diseases [5]. Causes of obesity include lack of physical activity with increased intake of food, industrialization, stress during work and dietary habits especially fast food, canned food, beverages, etc[6]. Dietary control, behavioral modification, drug therapy and surgery are the modes in which it is managed in conventional system [7]. In spite of its treatment, the success of treatment is mysterious [8].

#### **Ayurveda's view on Obesity:**

Obesity is one of the oldest documented diseases. In Ayurveda, as early as 1500 BC

Charak Samhita described the disorder under the title Sthaulya (Obesity) and Medoroga (disease of fat) or diseased state of fat metabolism [9]. This disease is a state in which increased adipose tissue makes his hips, abdomen and breast pendulous and whose vitality is much less than his body size [10]. In fact, Atisthula (Obesity) and Atiruksha (Excessive dryness) were the conditions favorable to get diseases [11]. Hence, Acharya Charak has grouped this condition under Nindita Purusha (undesirable constitution)[9].

### **Paradigms of Obesity in Ayurved and Modern:**

Apatarpana Chikitsa (emaciation therapy) is the line of treatment adopted in this disease which includes Langhana (fasting therapy), Rukshana (drying therapy) and Swedana (fomentation therapy).[12] Whilst further classification of treatment of Sthaulya (Obesity), Bhavmishra specifically stated to utilize the drug with the action of Lekhana (scrapping) Medaghna (anti-adipose tissue), Kapha-medagna (ability to reduce Kapha and fat), Karshyakar (Ability to make lean) Sthoulyanashak (removes Obesity)[13].

When a different modern perspective is considered, a huge number of herbal supplements are currently present in the market for the management of obesity, although not all of them have the same effect, reason being, supplements targeting different molecules thereby following unique mechanism of action varying completely from the other. The basic principle underlying the mode of action of anti-obesity supplements is regulating the energy balance in the body, which is the balance between energy intake and expenditure [14].

Classification of the mechanism of action of herbs viz.,

- 1) Peripherally acting and
- 2) Centrally acting.

### **1 Peripherally Acting Mechanism**

Substances acting peripherally reduce energy intake through gastrointestinal mechanisms such as nutrients digestion and absorption [15].

#### **1.1. Lipase Inhibition**

Dietary fat is not directly absorbed by the intestine unless the fat has been subjected to the action of pancreatic lipase [15]. Medicine act by forming a covalent bond which inhibits these lipases from hydrolyzing the ingested fat into absorbable free fatty acids and monoglycerides. The decreased absorption of ingested fat leads to an overall decreased caloric absorption, in turn leading to weight loss [16].The group of Medoghna drugs (Table 1) can be co-related to possess such pancreatic lipase inhibitory phytochemical which include mainly saponins, polyphenols and flavanoids.

#### **1.2. Adipogenesis down Regulation**

Energy balance and lipid homeostasis is maintained in the body by specialized cells called as adipocytes. Adipocytes primarily store triglycerides and release them in the form of free fatty acid with the change of energy demand in the body [17].

Ayurvedic drugs (Table 1) showing inhibitory activity against adipocyte differentiation can be co-related with Lekhana (scrapping) and Karshyakar (ability to make one lean) properties. Several such naturally-occurring compounds have displayed apoptotic effects on maturing preadipocytes, decrease adipogenesis and fat mobilization.

#### **1.3. Thermogenesis**

Excessive adiposity results from an imbalance in energy homeostasis as a result of excessive food intake are not balanced by increased energy expenditure [18, 19].

Numerous naturally-occurring compounds have been proposed as treatments for weight loss via enhanced energy expenditure, including caffeine [20, 21] and capsaicin [22, 23]. Drugs possessing such properties are correlated under Swedakar (Increasing body heat and producing sweating) and Karshyakar (ability to make one lean)(Table 1).

#### 1.4. Lipid Metabolism

Lipolysis entails stimulating triglyceride hydrolysis in order to diminish fat stores, thereby combating obesity. This option requires the associated oxidation of the newly released fatty acids and led to the development

of the b3-adrenergic agonists [24]. The major Ayurvedic drugs (Table 1) fall under the category of Kapha-Medoghna group (ability to reduce Kapha and fat) and Sthaulayana-nashak drugs, which cause Lipolysis.

#### 2. Centrally Acting Mechanisms

Body mass can also be maintained by restricting the intake of food. Many products act in a way through their effect on the receptor within the central nervous system thereby developing a sense of satiety within the body. The Medo-rogahar group of Ayurvedic Drugs (Table 1), which act centrally, are related to have the following mechanism as well.

**Table 1: List of Textual Ayurvedic Medicines [27]**

Specific Classification	Action-	Sanskrit Name	Latin Name
<b>Kapha-Medohar (ability to reduce Kapha and fat)</b>		<i>Pippali</i>	<i>Piper longum</i>
		<i>Kantakari Phala</i>	<i>Solanum xanthocarpum</i>
		<i>Snuhi</i>	<i>Euphorbia nirifolia</i>
		<i>Paribhadra</i>	<i>Erythrina variegata</i>
		<i>Shighru</i>	<i>Moringa oleifera</i>
		<i>Yavasa</i>	<i>Fegonia cretica</i>
		<i>Mundi</i>	<i>Spiranthus indica</i>
		<i>Apamarga</i>	<i>Acaranthus aspera</i>
		<i>Panchvalkala (Group of five trees)</i>	<i>Ficus bengalensis, F. religiosa, F. glomerata, F. lacor, Thespesia populanea</i>
		<i>KutaShalmali</i>	<i>Ceiba petandra</i>
		<i>Moksha</i>	<i>Schrebera sweitenoides</i>
		<i>Timisha</i>	<i>Ougenia delbergioides</i>
		<i>Phanasa</i>	<i>Artocarpus heterophyllum</i>
		<i>Maasha</i>	<i>Phaseolus trilobus</i>
		<i>Kulathya</i>	<i>Dolichos biflorus</i>
		<i>Laaja</i>	Paddy roasted
	<i>Holaka</i>	Roasting any un-ripened cereal	
	<i>Sarshapa taila</i>	Mustard oil	

	<i>Gomutra</i> <i>Puranamadhu</i>	Cow urine Old honey
<b>Medo-nashaka</b> <b>(anti-adipose)</b>	<i>Granthi parna</i> <i>Khadira</i> <i>Bhurjapatra</i> <i>Yava</i> <i>Kanguni</i> <i>TuvariTaila</i> <i>Takra</i>	Variety of Chorak <i>Acacia catechu</i> <i>Butea utilis</i> <i>Hordeum vulgare</i> <i>Setaria italica</i> <i>Hydnocarpus laurifolia</i> oil Butter-milk
<b>SthaulayaNashak</b> <b>(reduce obesity)</b>	<i>Trikatu(a combina-</i> <i>tion medicine)</i>	<i>Piper longum, P. nigrum</i> and <i>Zingiber officinale</i>
<b>Karshyakara</b> <b>(ability to make lean)</b>	<i>Dhanyaka</i> <i>Gavedhuka</i>	<i>Coriandrum sativum</i> <i>Coix lachymajobi</i>
<b>Medoroghara (anti-obesity, reduce adipose tissue)</b>	<i>Sinshapa</i> <i>Arjuna</i>	<i>Dalbergia sisso</i> <i>Terminalia arjuna</i>
<b>Lekhana (scraping)</b>	<i>Madanphala</i> <i>Karpura</i> <i>Puranaguggulu</i> <i>Panchvalkala</i> <i>Unripe fruit of Kapittha</i> <i>KshudraDhanya</i> <i>Pinyaak</i> <i>Tilataila</i>	<i>Randia dumentorum</i> <i>Cinnamomum camphora</i> Old <i>Commiphora mukul</i> Combination of five plants <i>Feronia limonia</i>  Inferior grains like oats,ragi,etc Powder of sesamum Sesame oil

### Recently popular Ayurvedic plants used as Supplements:

*Nelumbo nucifera* leaves [25] and *Garcinia cambogia* fruits [26] are mere few of the examples for plants popularly being prescribed for Obesity treatment.

### Prospect of Future “Ayurvedic Wonder Obesity drug”:

- 1) Health benefits of weight loss without any side effects.
- 2) Less demanding than accepted lifestyle changes, such as exercise and diet.

3) More easily accepted than a professional consultation with a physician or a nutritionist.

4) 100% natural origin and perception that natural means safe [14]

### CONCLUSION

The present review explaining Ayurvedic and Modern paradigms of Obesity Medicines is a first of its kind attempt. The herbal medicine tradition remains a vibrant player in today’s health field.

Ayurveda is rapidly advancing onto the world stage as a medicine that has endured

through time and history to assuage the ills of humankind and assist in the prevention of further diseases and imbalances of health. This literature may be further evaluated for clinical utility and planning of treatment of obesity disorder.

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