



## Review Article

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### PROFICIENT MODULATION OF COMESTIBLES: AN AESTHETIC CHOICE FOR OBESE

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#### ABSTRACT

Restriction and alteration of the comestibles (food) are the prime modulations which are prescribed to tackle the burden of most of the lifestyle disorders especially the obesity. Obesity being the root cause of major ailments like cardiac disease, hypertension, diabetes mellitus etc. It is essential to control and preclude. Food restriction is the choice when an obese individual are hospitalized and supervised, whereas the alteration is best choice when the person go back to home and join with the delicious foods of family. Rarely, do we find the direction of selection and alteration prescribed by modern texts and dieticians, but Āyurveda excellence spread the ray of light as principle of āhāra saḥskāra and serves the need. Here an attempt is made to emphasise righteous method, starting from selection of food articles (cereals, pulses, vegetables etc) to the food preparation through Āyurveda classics and contemporary methods, according to the need and palatability.

**Key words:** Obesity, āhāra saḥskāra, Diet, Food, Restriction, Alteration.

#### INTRODUCTION

Being a saḥtarpaṇa janya vyādhi<sup>1</sup>, ati sthauḷyā<sup>2</sup> is best correlated with the Obesity, a disease of multi-factorial, which is beyond the person control. Factors like behavioural, cultural, physiological, metabolic, genetic and social factors are the prime culprits. Sedentary lifestyle, most of us lead today, has come with a heavy price - the burden of obesity, one of the greatest health threats to modern world. Statistic reveals that around 14% to 18% of population in India suffers from obesity. Obesity is a condition in which we see the excess accumulation of fat cells in the body, especially around the abdomen (central obesity). Some of the dangerous adverse effect of Obesity is that, it increases the chances of heart and coronary diseases, diabetes mellitus, hypertension, dyslipidemia, stroke, cholecystitis, cholelithiasis, osteoarthritis, sleep apnea, some types of cancer and other diseases<sup>3</sup>. Before this, obese people tend to face frequent emotional, psychological break down and sickness absenteeism at the workplace, which in turn requires expensive healthcare.

There are many factors which causes obesity. Some are external which includes diet and regimen and some are internal like genetic factor. Irrespective of the causative factors, diet places a key role in controlling and precluding the individual by becoming prey to the disease obesity. Thousands of website links suggest regarding diet plan and food intake, most of dieticians guide obese by diet plenary. These diet leaflets explain mainly regarding does and don'ts of food. It is very easy to accept their guidelines when a clinician or dietician convinces you by providing success statistics. And even it is easy to follow, when the person is hospitalized and supervised continuously by doctor. But, when an individual go back to his residence, then the pattern of food intake reverts back to normal because of lack of

supervision, influence of food intake made by family members and carving of the delicious fatty and carb food. So diet alteration is suitable choice rather than the diet restriction. Diet alteration helps an individual to consume all the food like others and even helps to reduce his body weight without any endeavour. Here in this article an attempt is made to give general strategy regarding the selection & alteration of food with reverence to processing and cooking by concept of āhāra Saḥskāra.

Irregular, excessive and faulty pattern of food (Ahāra) like adhyāśana (repeated intake), ati mātṛā Ahāra (excessive quantity/ increased frequency), ati saḥpūraṇa (intake up to full belly), guru,śeeta, pichilā, snigdha guna āhāra (properties of food which has more affinity towards kapha and medha dhatu – oil and fatty food) madhurā rasapradhāna āhāra (kapha prakopaka properties – high carbohydrates), are the prime cause of the disease sthauḷyā<sup>4</sup>. agni saḥadūkṣaṇa is the main culprit which induce more craving towards excessive food; because of ignition is done by vāta doṣa which is obstructed by pichila and snigdha guna of āhāra.

On the basis of this patho-physiology and symptoms, line of management is planned and executed. agni (digestive fire), mātra and poṣaṇatā are the prime factors to be considered while dealing with the obesity.

Here, it refers that, āhāra, vihāra and auśadhi should be selected which are guru (heavy for digestion/ gives feeling of satiety) and atarpaṇa (which does not nourishes the medha dhatu/adipose tissue)<sup>5</sup>.

Another principle quotes that, quantity of intake is responsible for gurtwa (heaviness) and laghutwa (lightness) of food articles. Guru Aahra, if taken in small quantity is light in effect and Laghu Aahara taken in large quantity result in heaviness<sup>6</sup>. Other than guru, snigdha, maṇḍa, ślekṣaṇa etc. guṇa has the property of tarpaṇa

where as laghu rūkṣa, tīkṣṇa, himā, kharā etc guna has atarpakā properties.

guru and atarpaṇa are the two contradictory attributes, so it's very hard to find food which food has both the qualities. Guṇas present in food article cannot be destroyed, but can be altered. Food which are naturally guru guṇa like nava dhanya, madhurā rasa pradhana are absolutely contraindicated for obese. Saḥskāra is the Method of alteration is made to get food as desirable to obese.

### Comprehensive Description

On the basis of food sources and preparation, following guidelines are made. Many classification of food are mentioned in modern science. Among these, classifications which is made on the basis of nutrients<sup>7</sup> are like cereals, millets, pulses, oils and fats, milk and milk products, vegetables, non vegetarian food and miscellaneous is consider here to elaborate the present context.

### General consideration

General rules in selection of comestibles, which preferably aid in reducing and maintaining the appropriate body weight as follows.

Generally food which are of guru, śīta, pichila, snigdha guṇa (properties of food which has more affinity towards kapha and medha dhātu – oil and fatty food) madhurā rasa pradhāna (kapha prakopaka properties – high carbohydrates), are considered as prime cause of the disease sthauḷyā. Selection of food opposite to afore said qualities is the right choice. Ayurveda classical reference guide in selection of such kind of food, which are older, are of laghu, rūkṣa guṇa even though they are madhurā rasa, helps to reduce the body fat<sup>8</sup>.

All comestibles of bitter and pungent taste generally aggravate vāta and are un-aphrodisiac are best diet in kaphaja vikāras like sthauḷyā, madhumeha etc<sup>9</sup>.

Activities with concerned to food intake like adhyaśana (repeated intake), ati mātra āhāra (excessive quantity/ increased frequency), ati saḥpūrṇa (intake up to full belly) also adds up to the body weight. Activities contrasts to these are advised with respect to agni as said above.

### Diet alteration among cereals (Mono-cotyledon)

Cereals are main source of carbohydrates. It includes paddy, wheat, barley and maize. Among all cereals, 3/4<sup>th</sup> of human population directly rely on paddy as a source of energy, so paddy is considered as the major staple food of the human race. This is often restricted for obese by most of dietician because of tendency to increase the body weight. In India paddy is a staple food of south Indians, most of the preparation will be made out of the rice as part or a whole. Paddy is used to prepare rice (cooked), and even to prepare the Idli, Dosa, Pullav, Vangebath, Pova, Appam etc. These are major delicious foods which are consumed frequently. Strict avoidance of these food make obese to go for starvation. Some of the recommended strategy regarding selection of paddy and its preparation are fallows,

**Selection of paddy-** New paddy grains are heavy and have tendency to increase the body weight so such grains

are not advisable, whereas paddy grains which are quite older ( more than 6 months to year) is advisable because of light in nature and helps to reduce the body fat.

Even no one can rely upon the shopkeeper to get older rice, as a commercial point of view, shopkeeper may misguide one in purchasing. So preservation of rice grains more than 6 months is best and ultimate choice, if someone feels difficulty in storage for long period, then the alteration in cooking is only the choice left.

### Modulation in Rice preparation

Roasting of paddy/rice in a pan over the fire is the modulation method to make paddy lighter, similar to the quality of the older paddy. Roasting should be done for few seconds, till it convert to light brownish in colour, and then it is soaked in water before rice preparation<sup>10</sup>.

Another method of making rice lighter is washing the rice grains in water thoroughly and draining that water<sup>11</sup>.

### Modulation of Rice Recipes

**Idli, Dosa & Appam:** Usual preparation is done by soaking rice over night, and grinding this with 1/2 part of black gram and allowing it for natural fermentation. Difference in Idli, Dosa and Appam, is of consistency. Ayurveda quotes that consumption of Urad Dal (black gram) increases the body weight<sup>12</sup>.

But Urad Dal is the best part which attracts the wild yeast for natural fermentation. And even natural fermented food are good to reduce the body weight, where as fermentation is the processes which don't occur when water is chlorinated, table salt is iodized, home having central air-conditioning many with hypo-allergenic filters, reducing the supply of the "wild yeast". So most of the rice recipes like Idli and Dosa which are made in hotels are artificially fermented which is not suitable for hefty person as this increases body weight and causes gastritis.

Needed modulation is, soak roasted rice for 6-8 hours and grind it with very less quantity of black gram/ green gram and add fenugreek seeds and keep this mixture overnight soaking. Fenugreek seed is best in attracting wild yeast which is needed for proper natural fermentation. This kind of rice recipe viz Idli and Dosa are good for obese. dhānyāmla is the fermentation process which is indirectly similar to fermented Idli, Dosa and Appam recipe. This process of fermentation takes about 8-10 hours to 8 days. Such natural fermented food recipe has the properties of laghu, tīkṣṇa, kapha and vāta harā<sup>13</sup>, which is most beneficial for sthauḷyā.

**Wheat, Barley and Jowar** – These are best food sources which help to reduce and control the body weight, when they consumed whole as an **Atta**, because of certain properties like,

- They are rich in fibers, being polysaccharides it helps in easy elimination of fat through faecal matter.
- It increases the feeling of satiation, thereby reduce the hunger pangs and cut the unnecessary eating which is usual complaints of obese.
- Since it stabilizes blood glucose levels, it's a wise choice for diabetics.

- The minerals and vitamins present in whole wheat help to fight cancer, high blood pressure and many heart related diseases.
- Eating whole grain daily reduces fatigue and anemia by providing adequate amount of iron to the body.

Atta of wheat is used to prepare Roti and Phulka in house, which is usually consumed after smearing with ghee or oil for obese.

Consuming the refined flour - Maida food recipes like Naan, Poori, Pastry, Bread, Biscuits etc are matter of concern for obese, because of following reason.

- Refined flour – Maida, is flour with zero nutrition. Contrast to whole wheat flour, refined flours are lacking in bran and germ layer which are rich in vitamin E and B complex, minerals, proteins and phytochemical.
- Demands more oil or butter while baking or cooking, this paves way to obesity or fat storage in the body.

#### Alteration recommended

As a matter of commercial concern, the unscrupulous manufacturers mix the whole grain flour with the refined flour and brand it as the pure whole grain flour. Hence selection of old grains is recommended. Grinding of the selected grains in flour mill is advised. Prefer to consume homemade recipes of whole grain flour or refined flour by limiting the usage of oil/ghee for the purpose of smearing. While preparing the dough add small amount powdered condiments like pepper, ginger, bishop seeds, cumin seeds in the process of kneading, which helps in proper digestion and assimilation of the consumed food.

Here oil / ghee which is used for smearing is the prime culprit to make an individual hefty. In this regard selected oils are refined vegetable oils like rice bran oil, olive oil, sunflower oil, safflower oil, mustard oil which is considered as the cholesterol free. Among all the vegetable oils, oils like groundnut oil, coconut oil and palm oil are restricted, because of rich saturated fatty acid which makes the individual to suffer from obesity, atherosclerosis, coronary cardiac diseases etc.

Animal oils are completely restricted.

#### Diet alteration among Pulses (Di-cotyledon)

Weight reduction is achieved if there is an energy deficit, that is, if caloric intake is reduced below the level of energy expenditure. High-protein diets have recently been proposed as a “new” strategy for successful weight loss. High-protein diets typically offer wide latitude in protein food choices, restriction in other food choices (mainly carbohydrates), and provide structured eating plans.

In high-protein diets, weight loss is initially high due to

- Fluid loss related to reduced carbohydrate intake,
- Overall caloric restriction,
- Ketosis-induced appetite suppression (results from the depletion of glycogen stores induced by a severe restriction of carbohydrates, to an extent that goes far beyond what is commensurate with a healthy diet).

Pulses are advised to reduce the weight because they are protein rich. Beans and pulses are nutritious, economical and widely available. From iconic Karnataka Bele Saru, Rajasthani 'Daal Baati', to Andhra's 'moong dal pesarattu'

to Punjabi 'Karare chole', 'Raungi', to Sindhi 'Teen dal' are some of the best pulses recipes.

**Alteration recommended-** Generally all pulses are indicated and alteration which is recommended is during seasoning (Tadka) of the recipes. Seasoning should be made with the condiments like pepper, ginger, cumin seeds, bishop seeds, cinnamomum tamala, cardamom, garlic etc which helps in easy digestion and assimilation of the food.

#### Green leafy vegetables and Fruits

Bhava prakash quotes that all śākā varga dravya are of guru, rūkṣa guṇa and bahu varcas( easy evacuation of stools) these properties fulfils the line of treatment of sthauḷyā<sup>14</sup>.

All green leafy vegetables and fruits are very much beneficial to reduce the body weight because of following rationale

- Phytoestrogens – present reduces blood cholesterol.
- Flavonoids especially of Citrus fruits (Naringenin) – lowers high triglycerides, Cholesterol level and normalise glucose metabolism.
- High water content,
- Relatively low energy density,
- Relatively high content of dietary fibres, of which viscous dietary fibres constitute a considerable proportion. Dietary fibres, particularly viscous dietary fibre, which are present in fruit in considerable amount, have been shown to increase postprandial satiety and to decrease subsequent hunger in short-term studies. In the long term, this may lead to decrease in energy intake and, thereby reduce body fat.

#### Specification in Selection of Vegetables

There is no unique specification required while selecting the green leafy vegetables, all are said to be the best diet. Even though some research work propose acidic vegetables to reduce the body fat rapidly.

**Acidic vegetables-** Cabbage, cauliflower, cucumber, tomatoes, pepper, red onion (rich of flavonoids) are preferable. When these are consumed in raw form which helps to reduce body fat drastically.

Alteration is needed while preparing Raitha and Sabje from vegetables.

- Preferable oil which is low or nil in cholesterol while preparing
- Seasoning should be made with the condiments like pepper, ginger, cumin seeds, bishop seeds etc as said above.

#### Selection of fruits

Acidic fruits are preferred rather than alkaline fruits, and negative calorie fruits. Research shows very good impact of acidic fruits and low/negative calorie fruits in knocking the body fat. Consumption of raw whole fruit is preferred than juice.

**Acidic fruits-** Apple, apricots, fig, guava, lime, orange, peaches, grapes, pine-apple etc are recommended.

**Negative or low caloric fruits**– Apple, papaya, orange, musambi, wood apple (Elephant fruit) etc should be consumed.

#### **Don't s**

**Alkaline fruits** – Banana, mango, chiku (Sapota), jack fruits, custerd apple etc are restricted.

- Processing of fruits, include drying and cooking, may result in a reduction in water content,
- Addition of sugar or other substances may increase the energy density of the fruit product.

#### **Oils and Fats**

Fats and oils are not just a caloric powerhouse but they also serve many chemical, physical, and nutritional functions in body.

#### **Importance of oils in food**

**Appearance** -Fats and oils can alter a food's appearance by creating a glossy or moist visual texture

**Emulsion**- Emulsifying fat into a liquid produces unique flavour and texture.

**Flavour** - Fat has the unique ability to absorb and preserve flavours.

**Heat Transfer** -Hot oil is able to transfer high levels of heat to the surface of food without overheating the interior portions.

**Melting point** - The type of fat used in a product often determines the melting point of the final product. Saturated fats are solid at room temperature and vegetables are liquid. Saturated fats are perfect for preparing solid foods like chocolates and frosting. Whereas vegetable oils which are in liquid and are best for salad dressing.

**Nutrition** - Fat is an effective method of delivering calories when needed. Fats are also important for delivering fat soluble vitamins such as Vitamins A, E, D, and K.

**Satiety** - Fats play an important role in making foods satisfying or making us feel full. Because fats take longer to digest than carbohydrates or proteins, high fat foods stay in the stomach longer and delay the feeling of hunger

**Solubility** -While fats and oils are not soluble in water, there are other chemical compounds that are only soluble in fats. Many of these fat- soluble compounds are responsible for food flavour and even vitamin content.

These above facts force dietician to think twice before restricting oil and fat intake by obese. To get complete healthy effect of oils, alteration is essential rather than advising the restriction.

#### **Selection and preference of edible oils**

General idea for selection of oil is that, oil which remains solid at room temperature indicates rich in saturated fatty acids and Tran's fat which have tendency to make an individual hefty. Contrast to this, oil which remains liquid at room temperature are endowed with mono unsaturated (MUFA) and poly unsaturated fatty acid (PUFA) which does not adds up body fat.

All vegetable oils are good for consumption because of MUFA, PUFA, omega 3 fatty acid (which lowers cholesterol level), except Palm oil and coconut oil which

are more in saturated fatty acids. In a series of genuine selection of oil, rice bran oil stands first, next to this is olive oil, Soya bean oil, sunflower oil, safflower oil, sesame oil, corn oil and flax seed oil are advisable.

Butter, cheese, margarine and all animal oils are strictly prohibited. If one can't avoid delicious food on special days like festival, marriage, party, happy occasions, then here are certain general guidelines which may assist in easy digestion and assimilation of tasty fatty, oily and high carb diets.

- Drink near about 200ml of hot water or lemon water soon after consumption of oily and fatty food.
- Skip next meal or go for light liquid food.
- Increase the duration of physical exercise, more than the usual time.
- Avoid day sleep.

#### **General guidelines to maintain appropriate body weight**

- Enjoy your food, but eat less, avoid oversized portions.
- Make half your plate fruits and vegetables.
- Drink luke warm water instead of neutral water.
- Avoid day sleep.
- Maintain the gap of 2 hours between food and sleep.
- Regular physical exercise, preferable brisk walk for more than 30min daily.
- Dry or liquid fasting once in a week.

#### **CONCLUSION**

Obesity being a multi-factorial disease gives way to other major non-communicable diseases like cardiac disorder, diabetes mellitus etc which puts a additional burden over the medical fraternity. To handle such condition medicine is not the ultimate measure. Food being a major cause, part and parcel of the human race, there is need of intake of food in calculated manner. That is not by restricting the daily foods, but by advising the alteration starting from the selection of comestibles (cereals, pulses, vegetables, fruits and oils & fats) to the preparation of comestibles. These alterations help every obese and even to those who don't want to become prey to obesity to enjoy the every occasion with their food choice. So above emphasized guidelines can be considered as the aesthetic choice to tackle burning disease obesity.

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