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Study of *Meda Dhatu* With Special Reference to Obesity

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ABSTRACT:

Basically, obesity is a lifestyle disorder and also most common nutritional disorders, defined as excess body weight and fat that possess health risk. In the present days *Sthaulya* or obesity is a very important disease, which is increasing very rapidly in the world. *Meda* acts as the main *Dushya* in *Sthaulya* which has an immense importance. *Sneha Dhatu* which has quite similarities to the concentrated *Ghrita* termed as *Meda*, which has been practically seen in the fat deposition sites like as subcutaneous tissue, superficial fascia and omentum. Any derangement of the normal pathophysiology of the *Meda Dhatu* leads to several disorders, obesity is one of them. The distribution and role of *Meda* in *Sthaulya* is the same as the adipose tissue in obesity. However, in modern medical science, any effective medicine is not found till today, so *Ayurveda* can help in this condition by its holistic approach and by maintaining the *Meda Dhatu* in a balanced state. It is obligatory to understand its roots, prior to the treatment of this disorder.

Key Words – Adipose tissue, *Meda*, Obesity, *Santarpanajanya Vyadhi*, *Sthaulya*.

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INTRODUCTION –

In the present era overweight and obesity is the chief complaint of the people. In obesity the size & number of fat cells and BMI are increased and the life longevity/expectancy decreased. Obesity was considered a lifestyle disorder previously, but now, due to its increased prevalence rate WHO classified it as a disease. Global incidence of morbidity and mortality is also highly alarming due to obesity. An obese person is always prone to has complications like Hypertension, Dyslipidaemia, Coronary heart disease, Diabetes mellitus, Infertility etc. *Sthaulya* or *Medovruddhi* is a very important disease, spreading very speedily in present days. *Acharya Charaka* has included *Atisthoola* in *Ashtaunindita Purusha*, *Santarpanajanya Vyadhi*, *Kapha-Nanatmaja Vikara* and *Medodhatu Pradoshaja Vikara*.

AIMS AND OBJECTIVE -

1. To explore *Meda Dhatu* given in *Ayurveda* literature.
2. To explore the relation of *Meda Dhatu* and Obesity.

MATERIAL AND METHOD –

1. Review of *Ayurveda* literature of *Meda Dhatu*.
2. Review of modern literature of obesity and fat metabolism.
3. Reviewing the previous research works, journals, magazines and internet materials.

LITERARY REVIEW OF *MEDA DHATU* –

Uttpati of Meda Dhatu -

Among *Sapta Dhatu*, *Meda* is one of the important *Dhatu*.

By the action of *Mamsagni* on *Mamsa Dhatu*, *Meda Dhatu* is formed along with *Updhatu*¹. *Mamsadhatwagni* and *Medadhatwagni* have important roles in formation in *Meda Dhatu*.

Swaroop and Sthana of Meda Dhatu -

According to *Acharya Sushruta*, *Meda* is a type of *Sneha Dhatu*. *Pruthvi* and *Ambu* are predominant in *Sneha*². According to *Acharya Charaka*, *Meda Dhatu* has dominancy of *Pruthvi*, *Jala* and *Teja Mahabhoota*³.

Acharya Charaka told about two types of *Meda*; *Abaddha Meda* and *Baddha Meda*, in chapter *Prameha Nidana*. *Abaddha Meda* (mobile in nature) gives nourishment to the *Baddha Meda Dhatu*. *Baddha Meda* (immobile in nature) is not used and stored in different parts of the body⁴.

Bind and compact form of *Meda* is *Baddha Meda* whereas circulating and non-compact, free form of *Meda* is *Abaddha Meda*. With the help of some points, the relation between these forms of *Meda* and lipids can be understood. There is a particular destination of the lipids which are carried by blood as-

- Deposit in Adipose tissue or
- Temporary storage in the liver or

- oxidise in tissue

Fat cells or adipocytes are the mesenchymal cells in which the depot fats are stored and this depot fat can be considered as only *Baddha Meda* nothing else. It is present particularly in the hip region, mammary glands and omentum etc. In the metabolism of lipids, the liver is greatly responsible. The phospholipid synthesis is continuous in the liver. Even though some phospholipids and cholesterol can be synthesized by tissue cells for their own use, but for oxidation, they use the bulk of fatty acids which are supplied from the phospholipids produced in the liver. So, these are the *Abaddha Meda*, circulate in the whole body through the blood⁵.

According to *Gananath Sen*, *Sneha Dhatu* which has quite similarities to the concentrated *Ghrita* termed as *Meda*, which practically also have seen that the subcutaneous tissue, superficial fascia and omentum are the fat deposition sites.

Upachaya or *Sthulata* and *Karshya* or *Tanuta* depend upon the *Meda*. *Meda* acts like covering for internal organs, so protects them from pressure and friction. *Meda* protects the body from the harmful effect of external cold so that's why obese person not feeling so cold.

Causative factors of *Sthaulya*:

In the various *Ayurveda* classical text, the etiological factors of *Sthaulya* are dispersed under many headings i.e. *Ati Sthaulya Hetu*⁶, *Santarpana Karaka Nidana*⁷, *Prameha Hetu*⁸ etc.

The obstruction of *Srotas* is produced due to accumulation of an excess amount of *Meda Dhatu*, which leads the movement of *Vata* into the stomach. So, the *Agni (Jatharagni)* is increased and digests the food speedily, thereby a person feels hungrier. Thus, the production of *Rasa* is increased due to over eating which causes excess production of *Meda* leading to *Sthaulya*⁹.

Eventually the *Meda* gets aggravated, when the person consumes excessive unctuous and fatty substances, causing *Meda Vruddhi* or *Sthaulya*. A person has a pendulous appearance of *Sphika*, *Udara* and *Stana* due to excess and abnormal deposition of *Meda*. It reduced zeal towards life, called *Atisthoola*¹⁰. *Meda* means 'fat of body' (*Sanskruta English Dictionary*) and the literal meaning of *Vruddhi* is the growth or increase etc.

Role of hormones in metabolism of *Meda Dhatu*:

The hormones secreted by endocrine glands, may be related to these *Agni*. The

digestion of carbohydrates regulated by the insulin hormone secreted by pancreas and it also helps to maintain the optimal level of *Meda* in the body. The storage amount of *Meda* and the metabolism regulated by the thyroid hormones. The pituitary hormones also play the role in the regulation of metabolism and deposition of *Meda*. A clinical condition *Medo-Arbuda* (lipomas) in which the lumps formation occurs, may arise due to abnormalities in these hormones¹¹.

Obesity -

The condition of excessive and abnormal accumulation and storage of fat in the body is termed as obesity. It is associated with many life threatening disorders¹².

The cause or aetiology of obesity is an imbalance between the energy intake and the energy expenditure. The overweight or an obese person has the fat cells which are enlarged in size or increase in number due to storage of this excess energy.

There are various etiological factors responsible for obesity i.e. –

Exogenous: Dietary habits, Overeating, Smoking, Drinking habits.

Endogenous: Various endocrine or hormonal disorders.

When adipose tissue deposits more in the lower body, it has been termed as lower body segment, female or gynoid type, pear distribution. Adipose tissue which is deposited mostly in the upper body has been termed as upper body segment, central, male or android type, apple distribution. Leptin is generated in the white adipose tissue and sends signals to hypothalamus. When leptin levels drop, hunger increases because the body interprets this as a loss of energy. Although, leptin plays a different role in humans and rodents regarding diet induced obesity. In human obesity leptin gene defects are very rare. In a study till July, 2010 a mutated *ob* gene (which is one of the causative factors responsible for genetic obesity in humans) was carried by only 14 persons from 5 families have been identified around the globe and 2 other families that carry a mutated *ob* receptor, have been identified. Others have been found as partial leptin deficient genetically, and in these persons, obesity can be predicted because leptin levels on the lower end of the normal range¹³.

Many diseases of bones, muscles, joints, connective tissue, skin and hypertension, heart disease, cancer, endocrine changes etc. are associated with excess accumulation of fat mass. There is a greater risk of

psychological dysfunction, sleep apnoea and alteration in pulmonary functions due to overweight¹⁴. In obese people, risk of various types of cancers are markedly increased^{15,16}. There is the storage of triglyceride (TG) in abundant amounts for a long time, for excess energy. The balance between the fat deposition and metabolism in adipocytes are regulated according to whole body energy balance. In the metabolism of fat, the growth hormones and cortisol also have an additional modulatory roles¹⁷.

CONCLUSION -

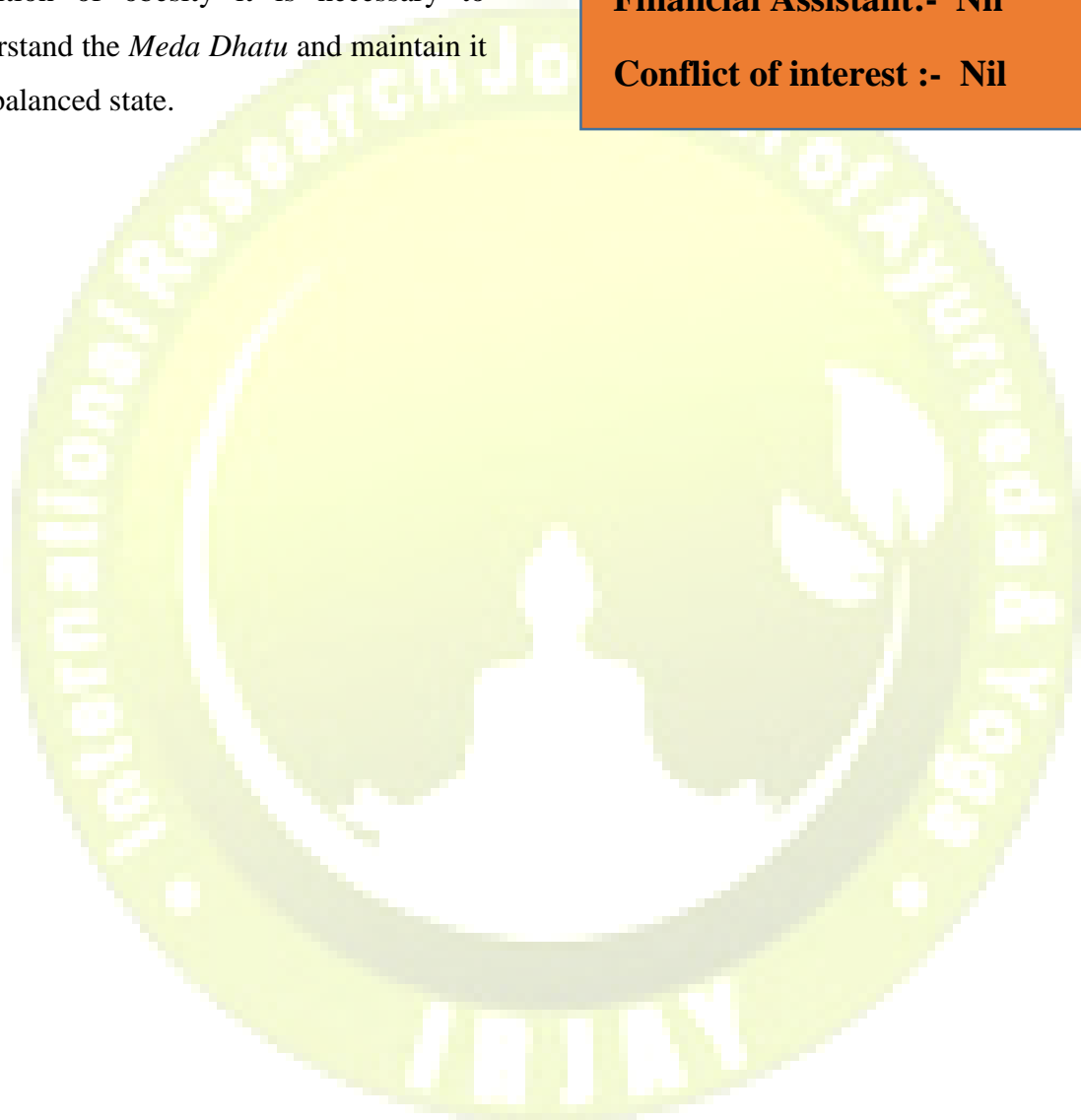
Meda Dhatu has an immense importance, any derangement of the normal pathophysiology of the *Meda Dhatu* leads to several disorders, obesity is one of them. The *Baddha Meda* and *Abaddha Meda* are the same as the depot fats which are stored in fat cells and circulating lipids (fatty acids) respectively, in modern science. The *Jatharagni Vriddhi* and *Medodhatvagni Mandhya* are the two phenomena in *Sthaulya* which can be correlated with lack of sensitivity of leptin receptors in modern science. The distribution and role of *Meda* in *Medovriddhi* or *Sthaulya* is the same as the distribution of adipose tissue in obesity. In *Sthaulya*, the appearance of *Sphika*, *Udara* and *Stana* is pendulous, which is

similar to the appearance of the body in apple and pear shape. Since the concept of *Meda* can be understood on the basis of modern science and it is actively responsible for obesity. So, to avoid the condition of obesity it is necessary to understand the *Meda Dhatu* and maintain it in a balanced state.

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