WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 9, Issue 11, 158-166. Review Article ISSN 2277– 7105

A REVIEW ON RELATION OF PITTADHARA (MAJJADHARA) KALA WITH SATIETY CENTER IN AHARA KALPANA (DIET)

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Article Received on
22 July 2020,

Revised on 12 August 2020,
Accepted on 02 Sept. 2020

DOI: 10.20959/wjpr202011-18505

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ABSTRACT

Ayurveda gives more importance to prevention of disease and maintenance of health. As given in Ayurvedic classic text, the *Ahara* has prime most importance in maintaining good health. A good appetite results in a healthy individual. Also, the disease of all disease is *Mandagni* (low or hampered appetite) as per Ayurvedic texts. *Agni a*nd *Pittadhara kala* having close relation in *Ayurveda*. As both do the same work of having *Prakrut kshudha. Prakrut kshudha* leads to healthy diet and healthy body. Where as *Aprakrut, Tikshna, Mand*, and *Vishamagni* leads to unhealthy appetite that results into a diseased body. Therefore, in *Ayurveda, Agni* and *Pittadhara kala* having foremost importance when it comes to keeping oneself healthy. Satiety center in brain also have the same effect on body. If the satiety center works well, it will produce right signals at the right time to cause the sensation of hunger that may lead to healthy appetite and healthy body. Whereas in terms of disease this satiety centers have disturb in the functioning that leads to an uneven hunger and unhealthy meal hours therefore unhealthy well being. Hence, it is very important for us to know how exactly the *Pittadhara kala* works according to *Rachana-Sharir* and how it is related to *Majjadhara kala.* Also, how *the Majjadhara kala* is related to the satiety center in brain as per modern and Ayurvedic concepts. It will lead to understand relation between *Agni, Pittadhara kala, Majjadhara kala,* satiety centre and hunger which is having utmost important while treating patients. As it is said in ayurvedic classics –

रोगा: सर्वेऽपि मन्देऽग्नौ ॥ (अ. हृ. नन. १२/१)

KEYWORDS:– *Agni, Pittadhara kala, Majjadhara kala,* satiety centre, *Ahara matra.*

INTRODUCTION

The Ayurveda also known as the science of life has treasured innumerable secrets of health since ages. It states that there are 3 important pillars in life – the *Ahara, Nidra* and *Brahmacharya*.[1] *Ahara* being the basic need of living beings, is the storehouse of energy. However, quantitative *Ahara* implies more to the health. *Ahara matra* is altered by vitiated *Agni.* The *Agni* is the seat of *Pitta* and causes the metabolism of the ingested *Ahara*.[2] The *Pittadhara kala* lines the seat of *Agni* and helps in the metabolism of food.[3]

Why do we eat?

We eat for the reason that we feel hungry. This hunger is a physiological internal drive to want for food. It is a feeling that prompts thought of food and motivates food consumption. But very often, these thoughts of food occur without hunger.

In today's modern era the concept of over-eating and binge eating are widely popular. Binge eating is to eat without hunger. Mostly outcome of stress eating. The *Kshudha* (hunger) have seem to lost its importance in such contexts. Hence, a thorough study to evaluate the concept of *Ahara* and its *Matra* is essential.

AIM

To review the relation of *Pittadhara (Majjadhara) kala* with Satiety Center in *Ahara Kalpana* (Diet).

OBJECTIVES

1. To collect and analyze the literature review of *Ahar matra vichar*.
2. To collect and analyze the literature review of *Pittadhara kala-Majjadhara kala*
3. To collect and analyze the literature review Satiety centre.
4. To correlate *Ahar-matra* with *Pittadhara kala* & *Majjadhara*-kala and Satiety centre function.

METHODOLOGY

To fulfill the aims and objectives of the study this work has been carried out in the following phase wise manner.

1. Conceptual study
2. Comparative study
3. Discussion

4. Conclusion and summary

Concept of *ahara* in *ayurveda*

The *Ahara* resembles all the food we intake through our mouth. In ancient Ayurved texts, *Ahara* is described in its unique ways. The *Shabda- Kalpadruma* explains *Ahara* as a substance which is swallowed through throat after eating.[4]

The *Ahara* is broadly classified into 4 types:-

a) *Ashana* - To be eaten. (Cha.su. 25/303)
b) *Bhakshya*- To be chewed
c) *Lehya*- To be licked
d) *Pana* - To be drunk.

When these four types of food are consumed by the individual – it is transformed into the *Ahara-rasa* and the into the '*Rasa'* and that is divided into three parts:-

i. The essence part of this Rasa works as nutrition to our subtle body i.e. mind, intellect, ego etc.
ii. The Second part, which is of middle type, nourishes the 'Seven Dhatus' of the body.
iii. The third part, which actually is the waste material, is thrown out of the body through various passages – such as Co2 is thrown out of the lungs, sweat from skin, urine and stool from their respective organs**.**

Concept of *ahar matra*

The *Ahara* being the whole and soul of living beings, is important and so is the quantity of *Ahara*. The Ayurveda not only emphasis on *Ahara* the but also on its *Matra* (quantity), *Desha* (land) and *Kala* (time). The *Desha* and *Kala* being unavoidable factors, an individual has no control over them. But the *Matra* of *Ahara* (quantity of food) should be assessed by an individual for a healthy life.

An ideal *Ahara-matra* is that amount of food which gets digested as well as metabolized in proper time without disturbing the equilibrium of the *Dhatus* and *Doshas.*

In the 2nd chapter of *Vimanasthana, Acharya Charaka* states that the *Amashaya* (stomach) can be divided into 3 parts to decide *Ahara-matra*[5]

- 1 part for solid food
- 1 part for liquids.

- 1 part left empty for the *Doshas*.

Whereas, *Acharya Vagbhata* in the 8th chapter of *Sutrasthana* explains the 4 parts of *Amashaya* (stomach)[6]

- 2 parts for solid food
- 1 part for liquids.
- 1 part left empty for the *Doshas*.

The above statements clearly depicts that the quantity of *Ahara* taken should be 1 part left empty for the *Doshas* to perform their activites on the ingested food.

The *Ahara-matra* in resembalance to the type of *Ahara*, decides the capacity as to how much food can be intaken more to attain fullness of *Amashaya (aashayapurti*). *Aashayapurti* means all the above said parts of *Amashaya* to be full with food and water to create a feeling of fullness in order to stop eating food. This feeling of fullness is known as *Trupti* (satisfaction). If this *Trupti* was not achieved, it would be difficult to assess as to much food an individual should eat.

This means the *Ahara-matra* changes accordingly with the type of *Ahara* eaten. If *Ashana* (solid food) is intaken when hungry it is definitely going to provide fullness of the *Amashaya* than *Pana* (liquid) food. For instance, eating a sandwich will provide more fullness than drinking tea/ coffee when hunger craves.

But, considering the type of *Ahara* with its *Guna* will be more beneficial to study the concept of *Trupti*. The *Gunas* to be considered here as *Guru* and *Laghu Gunas*. It is observed that eating *Guru* foodstuffs attains satisfaction in a small quantity and short time. Whereas eating a large amount of *Laghu Guna* food could not reach the satisfaction needed. For instance, eating a bowl full of popcorn will never cause fullness as attained by eating 2 *Rotis*. Both foodstuffs vary in the quantity to be eaten to attain the feeling of satisfaction. They also vary in their calories.

Thus, *Ahara-matra* is prime important to consider the level of *Trupti* (satisfaction).

मात्राशी स्यात् । आहारमात्रा पुनरग्निबलापेक्षणी ॥ (च. सू. ५/३)

Matra [quantity] of diet should be the one that does not harm the body. The quantity depends on the strength of the *Agni* (digestive fire) of each individual.[7]

Concept of *agni*

अग्निरेव शरीरे पित्तान्तर्गतः कुपिताकुपितः शुभाशुभानि करोति ॥ (च.सू.१२/११)

Acharya Marichi in *Charak sutrasthana* has explained that the *Pitta* in body is a form of *Agni.* The *Pitta* performs its functions of digestion and heat in the body. When in normal state, it keeps the body healthy, and when vitiated it harms the body.

Agni is the invariable agent in the process of *Ahara-paka* (metabolic transformations). The seat of Agni is the *Grahani.*[8] It is located between the *Amashaya* and the *Pakwashaya.*[9] Thus, *Agni* is a substance responsible for digestion and metabolism of *Ahara* in the body.

Concept of *pittadhara kala*

Kala is the membrane or layers in the body. *Kala* is defined as a separator between *Dhatus* (tissues) and its *Ashayas* (organ or viscera). The *Amashaya* is made up of *Mamsa Dhatu* or muscle tissue. The layers or membranes which separate the muscle tissue from the cavity of the organ is called *Kala*. There are 7 *kala* designed in human body.[10]

षष्टीपित्तधरा नाम्, या चतुर्विधमन्नपानमुपयुक्तम् आमाशयात्प्रच्यतं पक्वशयोपस्थितं धारयति ॥

(सु. शा. ४/१७)

Pittadhara kala is on sixth number which is said to lie in between *Amashaya* and *Pakwashaya* i.e. *Grahani,* which is correlated as small intestine.[11] *Grahani* does not only store the *Chaturviddha Anna* propelled from the *Amashaya* and on its way to the *Pakvashaya* but also promotes complete digestion, assimilation and absorption with the help of *Pachaka pitta* which is secreted by the *Pittadhara kala*. The *Amashaya* is the part before the small intestine i.e. stomach in modern anatomy. *Grahani* is a site of *Pachakagni* which helps in digestion of food. After digestion of the food, the *Ahara* is converted into the *Ahara-rasa,* which is then absorbed by the *Pittadhara kala* for the further nourishment.

The integrity of *Pittadhara kala* depends on proper function of the *Agni*. So, it can be termed as *Agnidhara kala*. Thus, it can be said that there is *Ashraya* and *Ashrayee* relation between *Pittadhara kala* and the *Agni* (digestive fire). If the physiology of *Pittadhara Kala* is maintained normal, then only function of Agni will be conducted properly. All the diseases are caused due to impaired functions of Agni. Hence to maintain normal functions of *Pittadhara Kala*, it is essential to understand wide range of functions of *Pittadhara Kala* in

the body.

Concept of *majjadhara kala* and its correlation with *pittadhara kala*

Acharya Dalhan has stated that *Pittadhara kala* is *Majja dhara Kala*.[12] When *Vishvega* enter sixth kala i.e. *Majjadhara kala*, it vitiates the *Grahani* causing symptoms like *Jadata* (heaviness in the body), *Atisara* (dysentery), *Hruta-shoola* (pain in heart), *Kampa* (tremors) etc. From, the above it can be said that there is some relation between the *Majjadhara kala* and the *Grahani* (seat of *Agni).*

Concept of satiety centre

Satiety

Satiety is a sense of fullness after eating. The key neurotransmitters controlling appetite, at least in vertebrates, are serotonin (5-HT) and catecholamine. These neurotransmitters act to reduce feeding behavior and consequently food consumption. Carbohydrate intake can result in both increased levels of serotonin and catecholamine, and also changes in the number of their receptors. One effect of increased carbohydrate intake is to elevate raw materials available in the brain for neurotransmitter synthesis; this feeds back in the form of suppressed appetite. However, the relationship is complex and carbohydrate intake does not always result in satiation.

The situation concerning satiation in insects is much simpler. Stretch receptors detect the degree of stomach expansion that accompanies feeding. At least in the insects most studied for satiation (mosquitos, houseflies, and honeybees), feeding stops when the stomach is fully stretched. Making a small incision through the body wall and piercing the stomach so that ingested fluids drain out result in continuous unregulated feeding, as does severing the nerve that serves the stretch receptors.

The hypothalamus is a region of the brain that controls satiety, or satisfaction.[13] There are two centers of the hypothalamus

i. The one that controls feeding is known as the Feeding centre.
ii. It is situated in the lateral nuclei of Hypothalamus. Its stimulation causes the animal to eat voraciously (Hyperphagia).
iii. The one that controls satiety is known as the Satiety centre.

It is situated in the ventro-medial nuclei of Hypothalamus. The electrical stimulation of this

centre gives a complete nutritional satisfaction even in presence of highly appetizing food.

(Aphagia)

They work together to maintain feeding and satiety in balance.

Neural signals from the GI tract

One method that the brain uses to evaluate the contents of the gut is through vagal nerve fibers that carry signals between the brain and the gastrointestinal tract (GI tract). Stretch receptors work to inhibit appetite upon distention of the GI tract by sending signals along the vagus nerve afferent pathway and inhibiting the hunger center.

Hormone signals

The hormones insulin and cholecystokinin (CCK) are released from the GI tract during food absorption and act to suppress feeling of hunger. CCK is key in suppressing hunger because of its role in inhibiting neuropeptide Y. Glucagon and epinephrine levels rise during fasting and stimulate hunger. Ghrelin, a hormone produced by the stomach, is an appetite stimulant.

Psychological factors

Two psychological processes appear to be involved in regulating short-term food intake: liking and wanting. Liking refers to the palatability or taste of the food, which is reduced by repeated consumption. Wanting is the motivation to consume the food, which is also reduced by repeated consumption of a food and may be due to change in memory-related processes. Wanting can be triggered by a variety of psychological processes. Thoughts of a food may intrude on consciousness and be elaborated on, for instance, as when one sees a commercial or smells a desirable food.

DISCUSSION

The food ingested by an individual is assimilated and metabolized by the form of Pitta known as the *Pachaka Pitta* seated in between the *Amashaya* and the *Pakvashaya.* This is also the location of *Grahani* which consists of the *Pittadhara kala*. The *Pittadhara kala* is observed to be in accordance with the mucus lining of the (end part) of *Amashaya* and *Pakvashaya*, responsible for digestion. Thus, it can be said that a healthy *Pittadhara kala* produces healthy *Pachaka pitta* and this further causes a normal digestion of food. Also, the regulation of the *Pachka pitta* in accordance with the quality (*Gunas*) and quantity (*Matra*) of the food is done by the *Pittadhara kala.* Hence, the *Pittadhara kala* performs a regulatory mechanism in the

digestion of the food and to decide how much more food can be intaken. The vagus nerve (cranial nerve X) being the main nerve of the parasympathetic nervous system plays an important role in the rest and digest system of the body. It is a communicator between the brain, gut and cardiovascular system. It stimulates the digestion and encourages the brain to produce various hormones and neurotransmitters. The afferent vagal fibers detects various gastrointestinal effects in the periphery and generated appropriate response. There are vagal nerve endings into the upper gastrointestinal tract and duodenum. Thus, it can be said that the *Pittadhara kala* and the vagal fibers reaching the satiety center are inter-related.

CONCLUSION

From the above study, we can conclude that the *Ahara-matra* is equally important as the *Ahara* itself. The *Pittadhara kala* is the *Majjadhara kala*. So, it can be depicted that the *Majjadhara kala* is responsible for the assimilation, digestion, deciding the quantity (fullness) of food. Thus, we can say that the *Majjadhara kala*- lining a part of the G.I.tract and satiety center in the hypothalamus are correlated.

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