A STUDY OF Pittadhara Kala AND ITS ASSOCIATION WITH INNER LAYER OF SMALL INTESTINE

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ABSTRACT

Ayurveda has given rise to many concepts. Kala is also one of them. There are many scattered references regarding a Kala. Pittadhara Kala is sixth in order. There is an association of Agni i.e. Pachakagni and Pittadhara kala (Aadhar Aadhey Bhava). This is an effort to emphasize the critical association of Agni and Pittadhara Kala and its correlation with digestive enzymes according to modern point of view.

KEYWORDS:  Kala, Pittadhara kala, Grahani, Aamapakwashayamadhya, Pachakagni, Small intestine.

INTRODUCTION

Word ‘kala’ described by Chakrapani teeka in ‘Vat kalakaleey adhyay means a ‘Guna’ i.e. a Quality.[1] Biologically active quality of one dhatu giving birth to another type is termed as kala.

Kala is defined as a separator or demarcation line between dhatu and its Ashaya. Kala forms a junction between Aashay (viscera) and contained dhatu (tissue).[2]

According to theory of Dhatu Poshan and Parinaman, Dhaturasa of purva Dhatu by the action of Dhatwagni gets converted into uttardhatu. During this process of transformation some kleda remains in the Ashaya. This kleda being less in quantity doesn’t get developed into purva or uttardhatu. It gets covered by Snayu and Jarayu and smeared with Shleshma and becomes Kala.[3][4][5]
If we consider Ashaya as an organ then Kala can be correlated to Mucous, Submucous membrane and Epithelium enveloping an Ashaya. Taking into consideration Ashaya as an Avasthan Pradesh, at a minute level, (Anutwah) a cell can also be considered as an Ashaya.

There are seven numbers of Kala described in Samhitas. From these, sixth kala is called as Pittadhara Kala.⁶⁷⁸

AIMS AND OBJECTIVES
To re-evaluate, discuss and elaborate the various references regarding Pittadhara Kala.
To enumerate the Digestive enzymes.
To find the relation between Pittadhara Kala and Digestive enzymes.

MATERIAL AND METHODS
This article is the review of Pittadhara Kala. Materials related to Pittadhara Kala, Grahani and related references have been collected. The main Ayurvedic text used in this study are- Susrut Samhita Dalhan Teeka Sharir sthan Garbh vyakaran Sharir, Kalpa sthan Sarpa veg Chikitsa, Uttar tantra Atisar pratishedh adhyay.

Charak Samhita Sutra Sthan Vat kala kaleey adhyay Chikitsa sthan Grahani chikitsa adhyay.
Ashtang Hriday Sharir sthan.
Sharangdhar Samhita purvakhand Aahargatih adhyay, Kaladikaakhyan adhyay.

We also referred to the modern texts and related articles on various websites

Concept of Pittadhara Kala
Pittadhara Kala is situated in between Aamashaya and Pakwashaya (Pakwaamashayamadhyastha). This portion is Grahani and is the site of Pittadhara Kala where Pachakagni works.

According to Modern Science aspect, we compare the grahani with small intestine which lies between stomach and large intestine.

Functional point of view, Pittadhara Kala takes part in the digestion of four types of food (Ashit, Khadit, Peet, Leedh).⁹ As described in Ayurvedic context, food semidigested in Aamashaya is hold by the action of Pitta and then propelled to the next part of Grahani for
another function like Shoshan and Mumchan. Thus functions of Pittadhara Kala are simulated as below:

Grahan - Collection of food
Dharan - Holding the food particles.
Pachan - Digestion
Shoshan - Absorption
Mumchan - Separation and propelling action.

In the Pachan karma of Pittadhara Kala, specifically Pachakagni digests the food and then after digestion, digested food is absorbed. Saman vayu helps for this function. Absorbed food is propelled with the help of Saman vayu and unabsorbed towards large intestine. This is called as Mumchan or Vimumchan karma

**According to Modern**
As per modern concern, in the process of digestion in the stomach, closure of Pyloric orifice results in Retropulsion and Churning for better activity of Acid Pepsin Mixture (APM) for digestion. This can be correlated to Dharan karma of Pittadhara Kala. Muscular layer and muscles of Pyloric orifice help there for this action.

Gastric Peristalsis results in ‘Squirting’ i.e. ejecting gastric chyme, small in quantity at a time into the Duodenum.

In the Duodenum, Cystic duct of gall bladder and common hepatic duct from liver unite together to form Common Bile Duct. Pancreatic duct unites with Common Bile Duct at its terminal portion and this opens in the second part of Duodenum through ampulla of vater. This carry Bile and Pancreatic juice to duodenum which mainly takes part in the digestion process.

Below is the table showing enzymatic role played in the digestion process in the small intestine.[10]

<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>Type of Food</th>
<th>Enzymes</th>
<th>Site for Digestion and Absorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carbohydrates</td>
<td>Pancreatic Amylase, Invertase, Maltase, Lactase, Alpha –limiting dextrinase</td>
<td>Brush border of Enterocyte</td>
</tr>
<tr>
<td>2</td>
<td>Proteins</td>
<td>Pancreatic proteases, Dipeptidases, Trypsinogen,</td>
<td>Brush border of Enterocyte</td>
</tr>
</tbody>
</table>
Water is absorbed by transcellular pathway.

In case of vitamins, water soluble vitamins get absorbed with water through Passive diffusion and Fat soluble vitamins get absorbed as like lipids.

In this way Grahan Pachan and Shoshan karma occurs at the level of small intestine.

Here the enzymes secreted in the Gastric juice, Bile, Pancreatic juice play the master role in the process of Digestion. Thus these enzymes can be correlated to the ‘Agni’ which is the power of Grahani.

In another way if we assume a cell as an Ashaya he Enterocyte and its Brush border may be called as Pittadhara Kala as Digestion and Absorption occurs at the level of enterocyte.

CONCLUSION
Considering above references, we can compare Pittadhara Kala with inner layer of small intestine including Villi and Microvilli. Pachakagni can be referred with various enzymes present in Digestive juice in the small intestine.

REFERENCES


