

A REVIEW ON CONCEPTUAL STUDY OF ANNAVAHA SROTASA

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ABSTRACT

Srotasa are channel system for transportation and transformation of *sharirbhava* and *dhatu*. *annavahasrotasa* is associated with digestion and flow of food material which later forms *rasadhatu*. *Annavaahasrotasa* forms basic for maintaining good health and treatment measures like *shodhan* and *shaman chikitsa*. *Ayurveda* epics describes *pachan* (digestion) process from different perspective including the the concept of *grahani*, *pittadharakala*, *aharparinamkarbhav*, *rasa* (taste), *vipaka* and their effect on body and mind etc. All these *shaarir* (anatomical and physiological) concepts form basic for disease pathology and treatment. Therefore efforts have taken for critical analysis of *AnnavaahaSrotasa* and its correlation to modern science.

Keywords: *AnnavaahaSrotasa*, *srotasa*, *Grahani*, *annavahinidhamanya*

INTRODUCTION

Ayurveda is a science of life which aims towards maintenance of good health and cure from diseases. It is based on its own fundamental concepts like *triguna*, *tanmatra*, *panchamahabhuta*, *tridosha*, *saptadhatu*, *agni*, *rasa*, *vipaka*, *srotasa*, *aashaya* etc. which are distinctly different from modern medical science. These form the basis for understanding pathology and treatment of disease. *AcharyaCharaka* indicate the need of detail study of body and body parts to the *chikitsaka* (physician) for expertise.⁽¹⁾

Srotasa is a *shaarir* (anatomical and physiological) concept related with flow and transformation of *sharirbhava* and *dhatu*. *Annapachan* (digestion of food) with *agni* (digestive fire) and formation of *rasa dhatu* is one of the basic essential process carried out in *AnnavaahaSrotasa*. *AnnavaahaSrotasa* also gains importance as basic for *shodhanshamanadichikitsa*.

Though *Ayurveda* is most ancient science of life, health and cure, its usefulness in present time is beyond doubt. It has become the need to study the fundamental and applied aspects of *Ayurveda* in depth with comparison to the science of today.

Srotasa: *Srotasa* is important and unique concept described in *Ayurveda* epics. *Acharya Charaka* described *Srotasa* as the channels for transportation/ flow and *parinaman* (transformation) of *dhatu*. All the *sharirbhava* (bodily substances) cannot form or decay without *srotasa*. The types of *srotasa* are as many as *murtimantabhava* or *sharirbhava* (bodily substances).⁽²⁾ *Acharya Dalhan* in his commentary described *parinaman* (transformation) as formation of next *dhatu* from its previous one. *Murtimantabhava* present in *Sharir* (human body) are *prana* also called *vayu* (air), *anna* (food), *udaka* (water), seven *dhatu*, three *mala*, three *dosha* and *artava*

which represent *shukra* in female. These are seventeen. Three *dosha* are present in whole of the body and thus they do not have separate *srotasa*. Therefore *Charaka* had described fourteen types of *srotasa*.⁽³⁾

Sushrutacharya described *Srotasa* as structures within the body in the form of channels performing *vahankarma* (transport) of *dhatu*, and it is different from *Sira* (vein) and *Dhamni*(artery).⁽⁴⁾ The characteristics of the *srotasa* are it resembles in color to its *dhatu*, these are variable in size *anu* (small) or *sthula* (large) and also variable in shapes like *vritta* (tubular), *dirgha* (long), *pratana* (branch like).⁽⁵⁾ *Sushruta* have not described *asthivahasrotasa*, *majjavahasrotasa* and *swedvahasrotasa*. *Dalhana* explain it as *moolasthanana* of these three *srotasa* are *sarvasharigata* (pertaining to whole body) and the *sushrutsamhita* being surgical authority cannot explain symptoms created by puncture of their *moolasthanana*.⁽³⁾ Verma et al describe *srotasa* as structural and functional unit of the body designed to carry specific material, molecules, masses, impulses, emotions and thoughts.⁽⁶⁾ *Srotasa* are described in *Ayurvedic* epics to understand disease pathology and their treatment.

AnnavaiaSrotasa: *AnnavaiaSrotasa* is one of the type of *srotasa* described in all important *samhita*. As the concept of *srotasa* denotes the channel for transportation/ flow and transformation of *dhatu* or *sharirbhav*, *annavahasrotasa* can be considered to Alimentary tract except colon from modern medical science. The *pakwashay* (colon) and further part of alimentary tract is included in *Purishvahasrotasa*.⁽⁷⁾

Moolasthanana of AnnavaiaSrotasa: *Acharya Chakrapani* described *moolasthanana* as *prabhavasthanana*⁽⁸⁾ meaning anatomical seat of respective *srotasa* where disease

pathology of that *srotasa* begins. *Moolasthanana* of *srotasa* are described in terms of their abnormality, disease pathology and its treatment. As per *Sushrut*, *Amashaya* (stomach) and *annavahinidhamanya* are *moolasthanana* of *annavahasrotas*. Injury to these produces fullness in abdomen, pain in abdomen, loss of appetite, vomiting, thirst, vertigo and death.⁽⁹⁾ As per *Charak* these are *Amashya* (stomach) and *vamaparshwa* (left upper quadrant of abdomen). Affection of *annavahasrotasa* shows symptoms like loss of desire to food, anorexia, indigestion and vomiting.⁽¹⁰⁾

Organs of AnnavaiaSrotasa: The digestive system is composed of two groups of organs – the gastrointestinal tract and accessory digestive organs. The gastrointestinal tract is a continuous tube extending from mouth to anus. The organs of gastrointestinal tract include mouth, most of pharynx, esophagus, small intestine and large intestine. The accessory digestive organs include the teeth, tongue, salivary glands, liver, gall bladder and pancreas. The digestive system perform basic processes of ingestion, secretion, mixing and propulsion, digestion (mechanical and chemical digestion), absorption and defecation.⁽¹¹⁾ *Ayurveda* epics describe *Purishvahasrotasa* separately including formation and propulsion of *purish* (stool), causes and symptoms of its diseases and their treatment.

Mukh (mouth): *Yogaratanakara* described it as *saptangamukhmuchyate*. It extends from lips to the pharynx and can be divided into vestibule and oral cavity. It perform mechanical processing through action of teeth tongue and palatal surface and also mixes food bolus with mucous and salivary gland secretions. The pharynx connect mouth to the esophagus.

Annalika(Esophagus): The esophagus is a narrow tube, passage between pharynx

and stomach transporting food bolus from mouth to stomach. It gains importance in terms of its function and its diseases like esophageal varices, achalasia cardia, mediastinal syndrome causing dysphasia, trachio esophageal fistula etc.

Amashay (Stomach): AcharyaCharak described location of *amashaya* in between *nabhi* (umbilicus) and *stana* (nipples). It perform the function of *pachan* (digestion) of all type of food material.⁽¹²⁾ Stomach is a muscular bag forming widest and most distensible part of digestive tube.

Grahani: Sushrutacharya described that *grahani* is located between *amashaya* (stomach) and *pakwashaya* (large intestine) and it is the site of *pittadhara-kala*.⁽¹³⁾ AcharyaCharaka described *grahani* as a seat of *agni* and it is called so because of holding up the food. It holds up the food and release it after it is digested.⁽¹⁴⁾ This description of *grahani* indicate it to be whole of the small intestine including duodenum, jejunum and ilium.

Pittadharakala: AcharyaVagbhat described its location in between *amashaya* (stomach) and *pakwashaya* (large intestine) and it is the site of *antaragni*. It receives food bolus from *amashay* and performs *shoshan* (absorption) and *pachan* (digestion), then transmit *pakwa anna* to *pakwashaya*. If it became weak by *dosha* then transmit *apakwa anna* to *pakwashaya*.⁽¹⁵⁾ Description of *kala* resembles to mucous membrane and epithelium.⁽¹⁶⁾

The process of Annapachan (digestion) according to Ayurveda: *Pranavayu* takes *anna* (food) to the *koshtha*. Here it is disintegrated by *drava* (fluid) and made smooth by *sneha*. *Samaanvayu* increases the *agni*. Thus the timely taken and balanced food get digested properly leading to promotion of life span. *Agni* performs the *pachan karma* (digestion) below *amashaya* for di-

vision into *rasa* (nutritive fraction) and *mala* (waste fraction) as the same cooks the rice grains with water kept in vessel into boiled rice.⁽¹⁷⁾

AharParinamkarBhava: *Ushma*, *Vayu*, *Cleda*, *Sneha*, *Kala* and *Samayoga* are 6 *aharaparinamkarbhava* (essential factors for transformation of food). Each of these have specific function such as *ushma* (heat) digest, *vayu* absorbs, *cleda* (moisture) generates looseness, *Sneha* produces softness, *kala* (time) brings sufficiency; *samayoga* (balanced use) brings about the equilibrium of *dhatu*. If the component under transformation are reconcilable, they are converted into respective body parts but if they are contradictory, they inflicts the body parts.⁽¹⁸⁾

Concept of vipaka: In *Ayurveda* Food materials are considered to have six *rasa* (taste). These are *madhura* (sweet), *amla* (sour), *lavana* (salt like), *katu* (pungent), *tikta* (bitter) and *kashay* (astringent).⁽¹⁹⁾ *Vipaka* is transformation of food material after ingestion by the action of *jatharagni* (digestive fire of stomach).⁽²⁰⁾ *Vipaka* is also described as *prapaka*. These are three, *madhurvipaka*, *amlavipaka* and *tiktavipaka*. During *pachan* (digestion) *Katu*, *tikta* and *kashay rasa* usually transformed into *katuvipaka*, *amla rasa* transform into *amlavipaka*, while *madhur* and *lavanarasa* transform into *madhurvipaka*. The effects of *vipaka* are *katuvipaka* adversely affect *shukra* (semen), obstructs elimination of *mala* (faeces) and *mutra* (urine), and aggravates *vata*. *Madhurvipaka* helps elimination of *mala* (faeces) and *mutra* (urine), and increases *kapha* and *shukra* (semen). *Amlavipaka* aggravates *pitta*, helps elimination of *mala* (faeces) and *mutra* (urine) and adversely affect *shukra*. Among these *madhurvipaka* is *guru* and other two *vipaka* are *laghu*.⁽²¹⁾

Stages of Annapachan (digestion): The food composed of six *rasas* after its ingestion undergoes the stages of *prapaka* (preliminary digestion). Firstly *MadhurPrapaka* (predominance of sweetness) arises because of *kapha* (mucus secretion) of frothy character. Thereafter *AmlaPrapaka* (predominance of acid) arises during the process of digestion of partially digested food because of secretion of *pitta* in *amashaya* (stomach). Lastly *KatuPrapaka* (predominance of pungency) arises when food reaches *pakwashaya* (large intestine) where it is absorbed by Agni and gets converted into *paripindit* (solid mass) and *va-yu*.⁽¹⁷⁾⁽²²⁾

DISCUSSION

The concepts of srotasa described in Ayurveda are the channel system for transportation and transformation of *sharirbhava* and *dhatu* pertaining to important phenomenon essential for continuity of life. *AnnavahaSrotasa* is related to structural and functional units associated with mechanical and chemical digestion in mouth, stomach and small intestine as well as absorption from stomach and small intestine. Here absorption of food material forms the first *dhatu* i.e. *rasa dhatu*. Pawar et al justifies *annavahasrotasa* as unique or super controller of all *srotas* as it form the basis for *vamanadishodhanchikitsa* as well as *dipanpachanadi shamanchikitsa*.⁽²³⁾ The view of description of *sroto-moolasthan* in *chikitsa-pradhan* and *shalyapradhan* *samhita* is different. *CharakSamhita* being the *chikitsapradhan* (physician authority) described the symptoms of affection of *moolasthan*. Whereas, *SusrutSamhita*, being *shalyapradhan*, (surgical authority) described the symptoms of *viddha* (puncture) of *moolasthan*. *Annavahinidhamanya* described as *annavahasrotasa moolasthan* in *SushrutSamhita* can be considered as por-

tal vein and cisterna chyli with thoracic duct as both of it carries blood rich in nutrient absorbed from the gastrointestinal tract. Glucose and galactose, fructose, amino acids, dipeptides, tripeptides, short chain fatty acids are absorbed by brush border of small intestine, diffuse to blood capillary of villus and ultimately carried through portal vein to the liver. While long chain fatty acids and monoglycerides diffuse to brush border (microvilli) of small intestine & then to the lacteal of a villus, later it is carried through cisterna chyli, thoracic duct and poured into blood stream in left subclavian vein.⁽²⁴⁾

The organs described in *samhita* text are *amashay* representing stomach and *grahani* representing whole of small intestine including duodenum, jejunum and ileum. The concept of *kala* resembles to mucous membrane and epithelium. *Pitta* is considered as *agnirupa*. *Pitta* can be considered to gastric secretion essential for partial digestion at stomach as well as pancreatic, biliary and intestinal secretion essential for digestion of food material in small intestine. *Pittadharakala* described to be present in between *amashaya* and *pakwashaya* that means in *grahani* (small intestine) is mucous membrane and epithelium of small intestine where digestion and absorption of food bolus takes place.

Ayurveda epics state the process and stages of digestion from its own perspective which is different from modern science. *Aharparinamkarbhava* plays important role in digestion. Concept of *vipaka* is unique and it is considered during selection of medicine.

CONCLUSION

With above discussion the following conclusion can be drawn

- 1) *AnnavahaSrotasa* described in *Ayurvedic* epics is related to structural and functional units associated with me-

chanical and chemical digestion in mouth, stomach and small intestine as well as absorption from stomach and small intestine where absorption of food material forms the first *dhatu* i.e. *rasa dhatu*.

- 2) *Annavahinidhamanya* described as *annavahasrotasa moolasthan* in *SushrutSamhita* can be considered as portal vein, and cisterna chyli with thoracic duct.
- 3) *Grahani* represent whole of small intestine including duodenum, jejunum and ilium.
- 4) *Pittadharakala* is mucous membrane and epithelium of small intestine where digestion and absorption of food bolus take place.
- 5) *Aharparinamkarbhav* and *vipaka* are unique concepts of *Ayurveda* forming basic for *chikitsa* (treatment)

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