PHYSIOLOGICAL SIGNIFICANCE OF SROTASA

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ABSTRACT
The concept of Srotasa is broadly described in Ayurvedic Samhitas in both anatomical and physiological aspects. Srotasa are channels that convey the body elements which are undergoing metabolic processes that sub-serve the purpose of circulation. The internal transport system of body is represented by Srotasa both in healthy and diseased. Hence, any organ cannot be maintained or can’t get vitiated without Srotasa so there is a need to study the fundamental and applied aspect of Srotasa in order to understand Ayurvedic biology and disease processes in depth. A complete knowledge of Srotasa is must for an Ayurvedic physician to approach a patient in a holistic way. The concept of Srotasa indicates all macro, micro level description applicable to exchange, transportation and excretion. Srotasa mainly controls process of circulation in human body. The Srotasa perform many functions in body but when it gets disturbed may convey some pathological manifestation, therefore it is very essential to understand physiological concepts of Srotasa. In this article, the physiological significance of Srotasa is discussed.

Keywords: Srotasa, circulation, transformation

INTRODUCTION
The word Srotasa is derived from the Sanskrit root “Sru-Gatau” (Sru + Tasi =Srotas) which means exude, ooze, filter and permeate, etc¹. Dictionary meaning of Srotasa is a current, a stream and a river. Srotasa are the channels of circulation (Murtimantha-bhawwishesa) which carries the Dhatus i.e. tissue elements or their constituents undergoing transformation (Parinamapadhyamana) to the destination². The term Parinamapadhyamana indicates that the channels carry such of the tissue elements as are undergoing transformation from their previous states; viz. Rasa (plasma) to their subsequent states; viz. Rakta (blood) etc. The basic site of Srotasa with different functions are fixed depending on the biological material that they are carrying, their openings are innumerable³. The term Srotasa includes both Anu Srotasa and Sthula Srotasa. There existed a concept of minute and numerous individual living units in the body which are imperceptible by sense organs. Nowadays, such microscopic living units are known as cell which can be considered as “Anu Srotasa”. Tissue is a group of structurally and functionally similar cells which work together to form an organ system are called as “Sthula Srotasa” perceptible by sense organs. The concept of Srotasa of both the Acharyas has been mentioned differently in their views, Charaka broadly considered
the concept of Srotas on functional abnormalities whereas Sushruta considered on structural abnormalities.\textsuperscript{4}

**Genesis of Srotas**\textsuperscript{5} – In Intrauterine life Srotapatti takes place from Vayu Mahabhuta with appropriate Agni, differentiation takes place and creates Srotas.

**Synonyms of srotas**\textsuperscript{6} – Sira, Dhamanyaha, Rasyanyaya, Naadya, Panthana, Marga, Aashaya etc. In most of the texts it has been considered that all above mentioned are as synonyms of the Srotas. But when we consider them as synonyms of Srotas then they should perform the same functions of Srotas but it is not observed like that. The significance of Srotas is in single word i.e. “Sharirdhatuavkashanam” means all structures of the body are sites where Sharir Dhatu will reside and the functions of the Srotas can’t be perform by any other structures, so above all structures are only the Sharirdhatuavkashanam\textsuperscript{7}.

**Types of Srotas** – Chakrapani commentator mentioned “Srotomayam hi Shariram” that means as human body contains cluster of Srotas. The types of Srotas has been explained by Acharya Charaka as every Murtimanta Bhavas in the body should be considered as the types of srotas\textsuperscript{8}. Inspite of that the numerous Srotas, Acharya Charaka has explained 13 number of Srotas and Acharya Sushruta has explained 11 number of Srotas.

**Physical features of Srotas** – According to Acharya Charaka, the colour of Srotas is as same as Dhatu and circular in shape, large as well as small in size, large in length and reticular in structure.\textsuperscript{9} According to Acharya Sushruta, structure of Srotas except Sira and Dhaminis all Srotas are like a root of lotus flower.

**Physiological importance** – All body entities which are present in the body possess their own Srotas. At the time of Charaka Samhita, knowledge of the internal transport system of the body had reached a high degree of development. The living body is nothing but the resultant of aggregation of innumerable Srotamsi that are transporters of factors which causes Prakopas (excitation) or Shamana (alleviation) of Sharira-Doshas. Srotas are energetic channels within the body and are responsible to carry out lots of functions. Srotas are described as little rivers with continuous flow of Bhavas within the body, exploit nourishment and transportation in the body. It is essential to understand the functions of Srotas as per physiological condition. Every Dhatu is generated by Srotas.

**Nourishment** – Acharya Charaka says Srotasa serves as Ayannukhas to both the Mala and Prasada part of Dhatu. The word Ayana means to go or to move, that is, through which movement of materials takes place. The word Mukha means to leave or to be free. Also, Mukha is used as a synonym of Nihsarana, meaning, a structure through which nourish Sthayi Dhatu. After biotransformation, body entity is needed to shift from its place of origin to its place of destiny.\textsuperscript{10}

**Sravanam (oozing)** – The word sravana means flowing, trickling and oozing. Exchange of substance in the body at capillary level is because of Sravan Karma of Srotasa.

**Site of biotransformation** – Acharya Charaka stated that Srotasa carry Poshyabhavas (nutrients) which are ready to undergo transformation. In systemic circulation, all the Poshayabhavas circulate in the body which are in Asthayi Dhatu form, which can be used by all tissue but when those substance enter into the respective tissues they have to undergo many other processes where they will be converted into muscle tissue or fat tissue at their levels.\textsuperscript{11}

**Vahanam (transportation)** – Ahararasa is fluid, which circulates through different channels in entire body. This fluid reaches every Srotasa and supplies required nutrients for the purpose of nourishment of each Dhatu etc. The Srotasa are main tool for transportation of body components.

**Absorption** – Srotasa has property of selective absorption. Nutrients of different Dhatus are present in Aahararasa while travelling through it. But only concerned Srotasa’s nutrient gets selectively absorbed there. E.g. in the Mootra-Nirmiti process (urine formation), at the site of Pakvashaya only Mootraposha-ka part gets absorbed and Poshyabhavas ooze in Bassti (urinary bladder) where urine is stored.

**Excretion** – The term Malakhya Dhatu is used for waste products or the degraded elements of tissues, which are not meant to be discarded entirely. A part of Malakhya Dhatu is utilized for the synthesis of some...
structural elements of the body as well as sub-serves some of the vital functions of the organisms while a part is utilized to compose excrements which are periodically thrown out of the body. *Sthayi Dhatu* are seldom without *Malas*. E.g. *Mala of Asthi Dhatu* is *Kesha* (hair) and *Shanshru* (beard) are structural elements of the body while sweat is *Mala of Medo Dhatu* which is excreted out of the body. *Mutravaha, Purishvaha* and *Svedavaha Srotas* involved in excretion.

**DISCUSSION**

*Srotasa* is a processing unit in which function of bio-transformation of previous *Dhatu* into next *Dhatu* takes place. Entire range of life processes in health and disease depends on integrity of the *Srotasa* system. *Srotasa* are the inner transport system of the body which provides platform for activities of other important bio-factors like three *Dosha*, seven *Dhatu*, the *Oja*, the *Agni*, thought and emotions etc. *Srotasa* are not only the passages or channels for flow of various substances but also *Srotasa* are specific in their functions. All the *Dosha*, *Dhatu* and *Mala* represent on *Srotasa* for their formation, transportation and destruction. The internal transport system of the body, represented by *Srotasa*, has been given a place of fundamental importance in *Ayurveda* – both in health and disease. No structure in the body can grow or deteriorate independent of *Srotasa* that transport seven *Dhatus* which are constantly subjected to transformation.

**CONCLUSION**

*Srotasa* represent the inner transport system of the body in addition to that of circulatory system. *Srotasa* indicate all macro, micro level descriptions pertaining to exchange, transportation and excretion. *Srotasa* include all range of structural and functional units from gross to subtest designed to carry specific material, molecules, messages, impulses, emotions, and thoughts. Thus, *Srotovijnana* of *Ayurveda*, on one hand relates to physiological function while on the other hand it relates to the gross pathology and cure.

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