

Concept of Sukshma Srotas (Microchannels) and Channelopathies

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ABSTRACT

In Ayurveda, srotas refers gross channels which transport biological substances like dosha, dhatu and mala it also serves as micro molecular channels like minute opening in cell membrane. In this article Sukshma srotas is taken as microchannels and the attempt is made to understand srotodushti in terms of various channelopathies, in light of contemporary knowledge on ion channels, exploring their structure, function, dysfunction.

Keywords: Srotas, Sukshma Srotas (Microchannels), Ion Channels, Channelopathies, Srotodushti and channelopathies,

INTRODUCTION

Purush is an organization of Srotas every structural entity has srotas neither Synthesis nor the decay of any dosha, dhatu can be materialized without the existence Srotas. Srotas are innumerable just like cells in our body. Srotas are the body channels through which various substances dhatu, dosh and Mala flow or transport. These are responsible for transportation, transformation and excretion.

If we observe the synonyms of srotas; these are Channel, ducts, tubular conduits, Passage, orifice, open or blind passages. Srotas are visible and Invisible channels that transport Dosh dhatu and Mala in their colour and form of dhatu they transport. They may be sthula (Macroscopic, gross) Sukshma or Anu (Microscopic or subtle) Srotas is generic term applied to macro as well as micro channels of the body. Acharya Charak has a vast concept that srotas are not only gross anatomical structures but they are energy pathways very much similar to cellular, molecular and even neural signaling pathways through which dosha and dhatu transported.

Srotas has the colour of the Dhatu (Tissue) that they are transporting. They are of different shapes and sizes it may be cylindrical, Sthula, (Macroscopic), Anu (Microscopic), Dirgha (Large), Pratanvarti (branched).

According to Acharya Charak srotas represents internal transport system of the body. nutrient substance (Poshak rasa) which nourish the dhatu undergo paka (metabolize) by the ushma (agni) of dhatus, they are then made available to the dhatus through their own srotas, this implies the selective and specific nature of Srotas. This is very much similar to mechanism and dynamics of the exchange of the material from one side to the other side of membrane or capillaries

Any impairment in functional integrity of srotas leading to hamper the transport across the membrane. *Khavaigunya* or *sroto dushti* produce *srotoavarodh* (obstruction of Srotas) Acharya Charak has mentioned four types of *srotodushti*-

1. *Atipravritti* (Excessive flow)
2. *Sanga* (Blockage or obstruction)
3. *Vimarg gamana* (diversion of the flow)
4. *Sira granthi* (dilatation of vessels)

Channelopathies are group of disease caused by dysfunction of ion channels (sodium, potassium, calcium and GABA) subunit or their interacting proteins. This disease can be inherited or acquired by the other disorders, drugs and toxins. Mutation in genes encoding ion channels which impair channel functions are the most common cause of channelopathies.

Types of Channelopathies

- Cardiac channelopathies: Affecting the heart, such as long QT syndrome.
- Neurological channelopathies: Affecting the nervous system, such as epilepsy and migraine.
- Muscular channelopathies: Affecting muscles, such as myotonia congenita and periodic paralysis

DISCUSSION

Sukshma srotas are similar to ion channels, neural pathways both are responsible for regulation of body function. Due to unwholesome dietic regimen and life style dosha vitiates srotodushti and srotoavarodh occurs this is akin to inactive or overactive channels. Acharya Charak has discussed *Manovahi* srotas in *Nidan Sthan* which transport our emotion or psychological feeling (*Mansik bhava*), any vitiation of doshas leads to secretion of certain unwanted chemicals can develop neurological channelopathies. Likewise, *Srotodushti* of *Pranvaha srotas*, *Rasavahasrotas* and *Mansvaha srotas* leads to blockage and disruption of normal function, dysfunction of ion channel leads to various channelopathies.

CONCLUSION

From above discussion it is clear that *srotas* are not only systems in modern parlance but can be interpreted as biochemical and bioelectric channels that maintain cellular and systemic equilibrium. The *Sukshma* srotas are subtle structure described in *Sushruta Samhita* and *Charaka Samhita* are microscopic in nature. Located at the junction of *dhatu*s (tissues) and *srotomula* (origin points). They are responsible for cellular exchange, nutrient diffusion, communication, and sensory perception.

In this review attempt has made to correlate the *Sukshma* srotas mentioned in ayurvedic compendia and ion channels. Blended learning with molecular biology can be done for more documentation is needed for further study.

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