

## CONCEPT OF RASA SAMVAHAN IN AYURVEDA

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## ABSTRACT

Rasa is the primary *Dhatu* formed from ingested food. *Rasa Samvahan* is the system of conveyance of *Ahara Rasa* (food extracts) via *Strotas* to all the *Dhatus* (tissues) of the body for their nourishment. It includes all the transportation and exchange of *Poshaka Rasa* from *Aahara Rasa* at cellular levels to the *Dhatus* (tissues). The *Rasa* (nutrient fluid) is circulated continuously in the entire body at the same time by the *Vyana Vayu* by virtue of its proprietary nature (*Guna*) of spreading.<sup>[1]</sup> *Rasa Samvahan* has been found comparable with *Shabda* (sound), *Archi* (fire), *Jala* (water) as per the direction, motion and formation of the *Dhatus*. The function of *Rasa* is *Preenana* (nourishment) which is said to be variable with age. During childhood, it performs *Vardhan Karma*, *Tarpan* in adults and *Yapan* in geriatric age.

**KEYWORDS:** *Rasa, Strotasa, Prana Vayu, Vyana Vayu, Saman Vayu, Jatharagni, Hridaya, Rasa Samvahan.*

## INTRODUCTION

Rasa *Dhatu* is one amongst all the seven *Dhatus* described in Ayurvedic text. *Rasa* is the first *Dhatu* which is formed after action of *Jatharagni* on ingested food. It is very subtle and can move through minute channels. The state of health of all the seven *Dhatus* depends upon the food intake. Better the quality of *Rasa* better will be the nourishment to various tissues (*Dhatu*) for their development. According to Acharya Sushruta the place of *Rasa* is *Hridaya*<sup>[2]</sup> but it is circulated throughout the body with enormous speed. This circulation of *Rasa* is triggered by *Vyana Vayu*.

The main function of *Rasa* is *Preenana* (Nourishment to tissues). Depending upon the age *Preenana* executes the following functions in the body - In the initial age of life, *Rasa* leads to growth and development of the tissues nourished, and this property of *Rasa* is called *Vardhayati*. In the adults, *Rasa* maintains the equilibrium of the *Dhatus*. This maintenance of homeostasis by *Rasa* defines its property of *Dharyati*. During the geriatric age *dhatu* tends to get diminished. At this age, *Rasa* prevents diminution of these *Dhatus* this property is called *Yapayati*.<sup>[3]</sup>

As per the modern view, blood circulation in the body could be depicted as follows-

Absorption of nutrients (intestine)	Portal veins	Liver	Inf. Vena cava
Lungs (oxygenation)	Pulmonary Artery	Right ventricle	Right atrium
Pulmonary Veins	Left Atrium	Left ventricle	Aorta
Heart	Venacava	Veins	Peripheral tissues

Nutrition plays a central role in health as well as disease. Balanced nutrition produces state of health and faulty nutrition leads to disease. Body tissues are continuously nourished and replenished by the nutrients obtained from food after its proper digestion and metabolism, thus *Dhatu samyata* is maintained.

The nutrient fluid '*Rasa*' from the heart enters into the 24 arteries which are then circulated throughout the body by the *Vyana Vayu*. Out of 24, ten arteries move upward, ten move downward and four laterally. These arteries spread in the body and circulate the nutrition (*Rasa*) to each and every part of the body.<sup>[4]</sup>

In the modern view twenty upward and downward moving arteries are Superior venacava, Inferior Venacava, Right Atrium, Right Ventricle, Pulmonary Artery, Pulmonary Vein, Left Atrium, Left Ventricle, Aorta and Thoracic duct.

The four arteries moving laterally have its branches up to skin (hair follicles). These arteries receive the sensory perceptions. The hair follicles excrete the waste product in the form of sweat.

## DISCUSSION

The food we eat enters the *Kostha* by *Prana Vayu*. In the *Kostha*, *Jatharagni* ignite the process of digestion which results in formation of *Ahara Rasa*. *Ahara Rasa* is absorbed from intestine with the help of *Samana Vayu*. This *Rasa* reacts with its own *Rasagni* and gets differentiated into *Prasada* and *Kitta* parts by the action of *Saman Vayu*. *Kitta* is the waste product but helps in formation of *Kapha (Mala)*. The *Prasada* part gets differentiated into *Sthula* and *Sukshama* parts, which is further transformed as *Rasa Dhatu* and *Rakta Dhatu* respectively.<sup>[5]</sup> *Ahara Rasa* or the nutrient portion of properly digested food<sup>[6]</sup> after being absorbed from the intestine get divided into two portions i) one portion reaching *Hridaya* ii) the other portion being conveyed to the *Yakrit* (liver) by the portal vein, where it is acted upon by *Ranjaka pitta* and converted into *Rakta* and reaches to *Hridaya* later on to join the *Rasa*.<sup>[7]</sup> So *Rasa* and *Rakta Dhatu*s are always found to be circulating together, the *Rasa* portion being watery carries the *Rakta* with it which is slightly thicker. In modern view, the fluid portion of blood called the plasma is comparable to *Rasa Dhatu* & the formed element portion to *Rakta Dhatu*. So, this *Rasa cum Rakta* has the *Poshakamsa* (nutritive elements) required for all the *Dhatu*s of the body for their growth & maintenance.

The *Rasa Samvahan* is the circulation of *Rasa Dhatu* as a *Poshaka Rasa* that circulates within the *Rasavaha strotas* for the *Preenana* of *Poshaya Dhatu*s. *Poshaka Rasa* first goes to *Yakrit* and then to *Hridaya*. From *Hridaya* it will be circulated throughout the body by the *Vikshepana Karma* of *Vyana Vayu*.

*Acharya Dalhan* has described the circulation of *Rasa* comparable with these three entities i.e. *Shabda* (sound), *Agni* (flame) and *Jala* (water) depending upon the variable characteristics like direction, motion, and formation of the *Dhatu*s.<sup>[8]</sup>

As the sound waves proceed with high velocity in circumferential direction and is produced very rapidly, the comparable *Shabda Santanavata Rasa* circulates with higher velocity, lateral direction and is formed rapidly due to high *Agni* content (*Tikshanagni*).

As the flame tends to move in upward direction with a moderate velocity but is formed not very rapidly. The similar *Agni Santanavata Rasa* also moves in upward direction, with moderate velocity as compare to sound waves and is formed with moderate speed due to moderate *Agni* content (*Madhyamagni*). Above description shows a hypothetical transportation of *Rasa Dhatu* in body in different directions by comparing its direction with flow of *Shabda*, *Archi* & *Jala*.

As the water has the tendency to flow towards the depth, with slow velocity. The similar *Jala santanavata Rasa* circulate slowly and downwards within the body. These

*Jala santanavata Rasa* has the least *Agni* content as it is formed during *Mandagni*.<sup>[9]</sup>

The motion entity of *Rasa Samvahan* can be compared with the rate of flow of blood in different parts of body. Blood circulating in arteries moves with higher pressure to perfuse the body tissues whereas the blood within veins moves with a comparatively lower pressure. The vessel walls of arteries are thicker to withstand higher pressure whereas the walls of veins are comparatively thin with valves within its lumen to prevent the backflow of blood.

The mean arterial pressure of blood is about 70-110 mmHg. The total volume of blood throughout the body is approximately equal to the total blood circulating within a minute i.e. the cardiac output. Different organs of body are supplied with different rate depending upon requirement. About 30% of this volume (1500 ml/min) reaches the liver and about 26% (1300 ml/min) reaches the kidney. 15% of cardiac output (750 ml/min) perfuses the head and remaining portion supplies to the rest of the body.

These normal limits of tissue perfusion results in proper development and functioning of tissues and organs. Any deviation from the normal limits may derange the homeostasis and impair the physiological functioning resulting underdevelopment and malfunctioning of the organs.

Circulation of the *Rasa* is also influenced by the *Agni*. Power of *Agni* determines the quantity of food to be consumed and formation of the *Rasa*. Better the *Agni*, better will be the digestion and larger amount of *Rasa* will be formed. This leads to increase in the flow rate. The diminishes *Agni* leads to lowered formation of *Rasa* and lesser pulse rate.

Our health depends on how best the *Poshaka Rasa* is formed, how uninterruptedly it circulates throughout the body and how it nourishes the *Dhatu*s. Insufficiency of *Rasa Samvahan* may lead to palpitation, emptiness of heart, darkness of vision, cardiac pain etc. This could be caused by starvation, improper diet, *Mandagini* (Improper digestion) or any obstruction in *Rasavaha strotas*.

## CONCLUSION

*Rasa Samvahan* is important for nourishment of *Dhatu* so we should always put effort to protect *Rasa Dhatu*.<sup>[10]</sup> The concept of *Rasa Samvahan* in *Ayurveda* exactly resembled with modern Blood circulation by the function of heart and liver. *Ayurveda* describes scientifically the concept of *Rasa Dhatu* in precursor of *Rakta Dhatu*. Blood circulation depends upon fluid level in the blood. The *Multhana* of *Rasa* is *Hridaya* and 24 *Dhamani* and that of modern is Heart and Arteries which are responsible for *Rasa Samvahan*.

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