

A REVIEW ARTICLE ON THE RASA DHATU W.S.R. TISSUE FLUID**Dr. Shalini Chauhan^{*1}, Dr. Amita Chauhan² and Dr. Yuvraj Singh³**

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Article Received on
23 August 2022,

Revised on 13 Sept. 2022,
Accepted on 03 October 2022

DOI: 10.20959/wjpr202214-25790

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ABSTRACT

Ayurveda says that the beginning of body is from anna. After appropriate metabolic interaction the food materials changes into anna-rasa or adhyarasa dhatu, which helps in the development and sustenance of the other dhatus of the body. The fundamental job for the arrangement of rasa and mala is agni, which dwells in the stomach. Two sorts of rasa dhatu present in the body, one is sthayi dhatu and another is poshaka dhatu.^[1] Heart has been the primary spot of rasa dhatu. When rasa dhatu is working appropriately helps in the arrangement of other dhatus, supports the body and furthermore further develops skin surface. If rasa-dusti present either due to vridhhi (expansion in amount) or on the other hand due to kshaya (decline in amount) of rasa dhatu then different illnesses has been happened.

KEYWORDS: Rasa, stomach, sthayi dhatu, poshaka dhatu.

INTRODUCTION

As per ayurveda, "dosha dhatu mala mulam hi shariram" it implies doshas are the organic powers which work with the help of dhatus and malas. Dhatus and malas are the underlying units and the doshas are the energy structures. Thus the doshas are called as asrayees and dhatus called as asrayaas. "Sharira Dharanat Dhatvah" that is those which sustain and uphold the body are known as dhatu. Some creator expresses that according to the Ayurvedic perspective the beginning of body is from anna (food substance that individuals or on the other hand creatures eat or drink or that plants retain to keep up with life and development).

According to digestion process, the food material which is taken, after absorption is separated into two sections - helpful part and unuseful part. The unuseful parts are killed from the body as sweat, pee and stool and valuable parts is known as *anna-rasa*, or *Adhya rasa*, which helps in the arrangement and nourishment of the other *dhatu*s of the body. Acharaya Sushruta make sense of that the *shareera/body* is the "*pancha maha bhuta vikaara samudayatmakam*"² - it implies that the *dosha*, *dhatu*s and *malas* contribute for the arrangement of various organs and tissue of the body. Every one of these are comprised of *panchabhuta*'s and subsequently are known as "*pancha maha bhuta vikara*".^[3]

Fundamental *bhuta* of *rasa dhatu* is *jala* (*ap*) because of this power, *rasa dhatu* has propensity to circle in entire body.

Food is made out of either *panchbutas* (five essential elements *sprithvi*, *aap*, *tejas*, *vayu* and *akash*) or of four sorts (*peyadrinkables*, *lehya-lickables*, *bhojya-chewables* and *bhakshyaeatables*), or having six preferences (sweet, acrid, salt, impactful, unpleasant and astringent) and two potencies (hot and cold) or eight potencies (*sheeta*, *ushna*, *snigdha*, *ruksha*, *vishad*, *pichila*, *mridu* and *tikshna*) and handling numerous properties, when ingested goes through absorption in nutritious parcel, after it is processed appropriately (by the *koshtagni*-fire office present in the *pakvaamashyamadhyam*) there emerges its fundamental quintessence known as "*Rasa*" which is extremely inconspicuous and appropriate to move even through minute *srotamsi*. *Hridya* (heart) is its seat i.e., boss spot of stay, from the heart it goes through the 24 *dhamnis* (supply routes), ten of them going upwards, ten going downwards and four going side wards diagonally; sustains the whole body continually, make it develop, upholds and keeps up with it, by exercises which are because of undetectable causes. The diminished and increment of this *rasa* which is voyaging all around the body (continually) needs to be deduced by the sign and side effects delivered. This *rasa* is traveling through the whole organ and organ framework.^[5]

As per Acharya Sushrut, absolute number of *dhamnis* present in body is 24 and *rasa* additionally goes through each of the 24 *dhamnis*. Thus, this can be presumed that *rasa* voyages all around the body through all *dhamnis*. *Rasadhatu* courses all through the body in numerous ways like the progression of sound, fire and water. *Dhalhana* makes sense of this improvement deciphering the progression of sound as sideward development, that of fire as up development and that of water as descending development. *Shabd* (sound) has greatest conduction speed, *archi* has medium conduction speed and *jala* has least conduction speed so

there is slow decrease in speed as the rasa moves in forward heading. Similarly rasadhatu has greatest speed at aorta, medium in the courses and least in vessels implies conduction speed is least at vessels since vessels have most extreme cross-sectional area. The essential hypothesis of Ayurveda is to keep up with the condition of harmony of Tridosha, Saptadhatu and Trimala. Every one of these are fed well at first by the impact of intensity of individual Jatharagni and useful supplements (Ahara Rasa) are passed into each degree of Dhatu (substantial tissues) for sustenance. At last, essential supplements for the arrangement and advancement of tissues are provided by one stream of pool. They convey their help to the site, where Dhatus are found which is made sense of by kedari kulya nyaya.^[5]

Consequently, Rasa, Rakta, Mamsa, Meda, Asthi, Majja and Shukra Dhatus grow consecutively and support further Dhatus (ksheer dadhi nyaya). Rasadhatvagni assumes a significant part in the arrangement of Rasa Dhatu from Aahar Rasa which further feeds the Rakta Dhatu by the impact of Raktadhatvagni. Whenever strength of any degree of Dhatvagni decreases or hoists the matter of creation of next Dhatu is impacted. During this cycle Dhatumala (tissue excreta) is delivered. Any Atipravritti (extreme discharge) sang (complete or fractional hindrance) siragranthi (new development inside the srotas) or vimarg gaman (leaving its own way and going into others way) causes Srotodusti (vitiation of srotas) may prompt strange arrangement of dhatus. In Ayurveda, a few hypotheses of tissue development and improvement (Dhatu Poshana Nyaya) are explained in such manner. These speculations are Khale Kapota Nyaya, Ksheera Dadhi Nyaya, Kedari Kulya Nyaya and Ek Kala Dhatu Poshana Nyaya.^[11]

MATERIALS AND METHODS

Origin of Rasa Dhatu

In Ayurvedic perspective, the food substances which is made out of the five early stage components, is of four kind (masticable, consumable, electuaries and eatables), contain six rasa, forces either the two or the eight sorts of potencies and has numerous properties, when eaten, processed and used property and later nutritious quintessence of food which is retained from digestive system after assimilation which is very fine, is called rasa.^[3] So the primary job for the arrangement of rasa and mala, is agni, which has dwells in the stomach. In Ayurveda the idea of agni is portrayed in short. There are three sorts of agni - in particular jatharagni, bhutagni and dhatwagni. Exacerbation or lessening of jatharagni brings about irritation or reduction of bhutagni and dhatwagni. Therefore by all means one needs to

safeguard jatharagni by consuming appropriate dietetics and conduct since force of agni or typical state of agni is liable for strength, wellbeing, life span and crucial breath. Liver which is principal seat of bhutagni? As we prior say that body is comprised of pancha mahabhuta vikara and all the dravya present in the earth is panchabhautica.^[5] So material which we have taken as food is additionally panchbhutica material. Due to presence of bhutagni, the legitimate assimilation and digestion of food material first and foremost happen in the liver. Current science says that the liver is fundamental organ for digestion. As the food goes into the stomach and small digestive tract (sugars/protein/fat) is corrupted into little edible particles because of presence of predominantly pancreatic and stomach chemicals (which function as jatharagni according to Ayurveda). In small digestive tract retention of water by dissemination, particles by dynamic vehicle and the supplements (glucose, amino corrosive, and lipid) by means of gateway vein and through foundational flow arrives at up to the entire body tissue and muscles for arrangement and development. 80% of blood supply to the liver is through hepatic entrance vein which brings straightforwardly deoxygenated blood (annarasa) from stomach, spleen, pancreas and digestive system and blood from hepatic course (20%) blends in with blood from entryway vein in sinusoids. The hepatic cells acquire oxygen and supplements from sinusoids. The substances integrated by hepatic cells, the side-effects and carbon dioxide are released into sinusoids, then through hepatic vein comes into mediocre vena cava and into heart. Liver cells performs numerous imperative metabolic and homeostatic capabilities as digestion of starch, fat, nutrient, a huge number, stockpiling capability like glycogen, amino corrosive, iron, unsaturated fat; manufactured capability as all plasma protein and other thickening, supplements factors, haemopoietic capability; bile emission and furthermore carry out excretory role that is discharges cholesterol, bile colors, weighty metals, poisons etc.^[5] Here a significant Ayurvedic articulation likewise given in Charaka i.e. "kittam rasashya tu kapho" in view of cholesterol discharge by the liver cells. Thus rasa dhatus is the fundamental dhatu which is straightforwardly framed from annarasa and contain all supplements which are expected for advancement of remaining dhatus of the body.

TISSUE FLUID

Rasa or liquid present in the body contains 60-65% of water and 35-40% solids (natural and inorganic). As per Chakrapani "Dwividho rasah sthayi poshakashcheti" that implies rasa dhatu is separated into two sections, one is static i.e sthayi dhatu like the tissue liquid and digestive liquid and another is streaming for example poshaka dhatu very much like plasma

and lymph, which assist the supplements with arriving at the entire body tissue⁷. All out water present in the body is around 40 liters. It is chiefly partitioned into two sections; ICF (22 lit) contain enormous amount of K^+ , Mg^{2+} , PO_4^{3-} , SO_4^{2-} and proteins and ECF (18 lit) contain huge amount of Na^+ , Cl^- , HCO_3^- , glucose, unsaturated fat, oxygen. ECF again partitioned into five sections; Gastrointestinal liquid and lymph (20%), Plasma (7.5%), Liquid in bones (7.5%), Liquid in thick connective tissue like ligament (7.5%), and trans-cell liquid (2.5%). Thus from a higher place, we can reason that rasa dhatu is particularly like entire ECF, not just with lymph and plasma.^[8]

STHAN

Heart has been the principal spot of rasa dhatu. It very well might be so in light of the fact that every one of the supplements of anna (food) after digestion are retained from digestive system by means of entryway vein and this ventures into heart. Then, at that point, after refinement of blood, oxygenated blood with supplements circles into the entire body by means of foundational course. Again deoxygenated blood Returns into and through veins and arrives at the heart. This interaction remained proceed with like a chakra⁹. Sushruta says that rasa circle into the body entire time i.e constantly which supports, creates, keeps up with and keeps the whole body working constantly.

KSHAY- VRIDHI OF RASA DHATU

Ayurveda says that ordinary rasa dhatu brings skin surface smooth and delicate; individual turns out to be loaded with joy alongside appropriate working of tactile resources. Correspondingly the body liquid assists with keeping up with homeostasis, temperature of the body and support all body tissue by transport system so it's appropriate working is exceptionally vital for trademark structure and surface of different body tissues. For instance on account of parchedness (i.e over the top loss of water from the body) causes signs like loss of skin turgor, mucosa become dry, furthest points become cold and diminishing in perspiring and so on.^[10]

Acharyas depicted that the illness which are brought about by the dusti of rasa are either due to vridhhi (expansion in amount) or due to kshaya (decline in amount) or avarana(obstruction) as in the event of rasavrita vata. The side effects which are portrayed on account of rasa vridhhi are dyspepsia, queasiness, sluggishness, limpness, dyspnoea, hack, narcolepsy are especially comparative with side effects happen if there should arise an occurrence of acidosis for example H^+ particles expansions in body (profound and quick

breathing, fringe vasodilatation, increment intracranial strain); or hyperkalaemia i.e K⁺ particles increments, in the event of acidosis/serious hyperglycaemia/expanded potassium diet (sign and side effects are-heart arrhythmias, shortcoming, queasiness, gastrointestinal colic, the runs, strong touchiness, flabby loss of motion); or hypercalcaemia i.e Ca⁺ particles increments, in c/o hyperparathyroidism/increments vitamin D/thyrotoxicosis (sign and side effects are-polydipsia, laziness, anorexia, sickness, dyspepsia, sluggishness and weakened perception); or in persistent liver illnesses (as in cirrhosis-clinical highlights are shortcoming, exhaustion, muscle cramps, anorexia, sickness, retching) and so forth.^[11] Essentially, the side effects present due to rasa kshaya are dryness of skin, depletion, parchedness, disquietude and photophobia depicted in Ayurvedic messages are especially comparative with side effects of alkalosis i.e H⁺ particles diminishes in the body (serious and delayed regurgitating, over breathing and so on); hypokalaemia i.e K⁺ particles diminishes (clinical highlights are-normally strong shortcoming and related sleepiness, heart ventricular arrhythmias, polydipsia); hypocalcaemia i.e Ca⁺ particles diminishes in c/o hypothyroidism (side effects are shivering of hand and feet, tetany); hyponatremia related with hypovolaemia (clinical elements are-thirst, unsteadiness, shortcoming, dry mouth, postural hypotension, disarray); hypomagnesaemia i.e Mg⁺ particles diminishes (clinical highlights are-heart arrhythmias, tetany, hypertension) and so forth.^[12]

RASA-PRADOSHJA VIKARA

If kshaya or vridhhi of rasa dhatu isn't before long brought into typical or balance state then it produces rasaja vikara or different confusions of diseases.^[16] Infections brought about by the vitiation of rasadhatu are viz; reluctance for food, anorexia, disgeusia, ageusia, sickness, greatness, tiredness, fever with discomfort, blacking out, weakness, deterrent of the channels of course, impotency, asthenia, thinness, loss of the force of absorption and untimely appearance of wrinkles and silver hairs.^[17] These equivalent clinical elements are found in the event of constant liver illnesses as in liver metastasis and in cirrhosis (for example shortcoming, weariness, muscle cramps, weight reduction and vague stomach related side effects like anorexia, queasiness, spewing; jaundice, loss of moxie, balding, hepatic encephalopathy and so forth). Comparable clinical elements are likewise present if there should be an occurrence of pancreatitis and in pancreatic carcinoma. Check of the channels of course because of the development of occlusive blood clot at the site of crack or disintegration of an atheromatous plaque is the vitally causative elements for Myocardial dead tissue (clinical highlights are shortness of breath, spewing, sickness, whiteness, syncope

because of hypotension and so on). On the off chance that the unusual doshas go into the rasadhatu, it make anomaly into the rasadhatu and causes side effects as breaks and unpleasantness of skin due to vata dosha, visphota because of pitta dosha, and firmness and whitish discolouration of skin due to kapha dosha.^[15]

DISCUSSION

Accordingly, rasa is the principal dhatu in the body which produce straightforwardly from annarasa and it is one of the essential tissues for the sustenance and improvement of body. In view of this excess dhatus are framed, sustained and it helps for the general improvement of the body. Numerous illnesses happen in the body due to rasadusti. So the liquid present in the body, is rasayukta and this is fundamental component for the turn of events and beginning of illnesses in the human body. Dosha, dhatu and mala are the base of life "Dosha dhatu mala mulam greetings shariram". These are the organic powers which work with the help of dhatus and malas. Dhatus and malas are the primary units and the doshas are not. Thus the doshas are called as asrayees and dhatus called as asrayaas Dosha. Rasa 60-65 % of water and 35-40 % solids. Rasa is the essential significant dhatu in the body which helps in the development of other dhatus of the body. It circles into the body entire time and keeps the whole body working continually. Acharyas portrayed that the sickness which are brought about by the dusti of rasa are either due to vridhhi (expansion in amount) or due to kshaya (decline in amount). In this way, rasa is the primary dhatu in the body which produce straightforwardly from anna rasa and it is one of the essential tissues for the sustenance and advancement of body. Thus, all liquid present in the body is rasayukta and this is primary element for the Vardhan, dharna, tarpan and yapankarma in the human body.

CONCLUSION

Rasa is the essential significant dhatu in the body which helps in the development of other dhatus of the body. It flows into the body entire time i.e constantly which sustains, creates, keeps up with and keeps the whole body working continually. Rasa dhatu is separated into two sections, one is static i.e sthayi dhatu like the tissue liquid and digestive liquid and another is streaming i.e poshaka dhatu very much like plasma and lymph, which assist the supplements with coming to upto the entire body tissue. Absolute water present in the body is around 40 liters. It is fundamentally partitioned into two sections; ICF (22lit) and ECF (18 lit). The side effects which are portrayed on account of rasa vridhhi are especially comparable with side effects happen in the event of acidosis or hypercalcaemia or in constant liver

sicknesses. Side effects of rasa kshaya are particularly comparable with side effects of alkalosis or hypokalaemia or hypocalcaemia or hyponatremia or hypomagnesemia. Weakness, atherosclerosis, impotency and so forth are the infections manifest due to unusual rasadhatu.

Rasadhatu which is known as the liquid of life is comprised of Ahara rasa. Ease is available in it on account of transcendence of jala mahabhuta and it can go in param sukshma srotas of the body. It is essentially of two kinds' sthayi rasa and poshak rasa. Poshak rasa is the flowing one and convey the supplements for the sustenance of sthayi or static dhatu. Sthayi dhatu is rasadhatu just or we can say sthayi dhatu, rasa dhatu and poshya dhatu all are equivalent words. Structure of rasa dhatu is the game changer for sthauhya and karshya in the body. Rasa dhatu gives center nourishment to the further dhatus. Rasa dhatu is contrasted and plasma and it has three significant parts solids, water and gases. Solids are 7-8 % and contains natural substances like plasma proteins, carb, compounds, non protein nitrogenous substances, amino acids, interior emissions like chemicals and antibodies though inorganic substances incorporate sodium, calcium, potassium, magnesium, bicarbonate, chloride, phosphate, iodide, iron and copper. Water is 92-93 % and gases incorporate oxygen, carbon dioxide and nitrogen. Rasavaha srotas dushti can cause numerous illnesses in the human body so it is the need to keep up with the legitimate amount and nature of rasa in the human body. In this way, it is essential to have a fair eating regimen, so adjusted ahara rasa will framed and thus the decent development of rasa dhatu will happens in the sharir.

REFERENCES

1. Sushruta. Dosha Dhatu Mala Kshaya Vriddhi Vigyaneeya Adhyaya, In Ayurveda-Tattva Sandipika. Susruta Samhita (by Kaviraja Ambikadutta Shastri), Reprint. Varanasi, India: Chowkhamba Prakahsan, 2010; 73.
2. Sushruta. Vedottapatti Adhyaya, In Ayurveda-Tattva Sandipika. Susruta Samhita (by Kaviraja Ambikadutta Shastri), Reprint. Varanasi, India: Chowkhamba Prakahsanm, 2010; 9.
3. Sushruta. Shonitvardaneeya Adhyaya, In Ayurveda-Tattva Sandipika. Susruta Samhita (by Kaviraja Ambikadutta Shastri), Reprint. Varanasi, India: Chowkhamba Prakahsan, 2010; 61.
4. Byadgi P S. Agni, In Parameswarappa's Ayurvediya Vikriti- Vijnana and Roga vijana, 1st edition, Volume 1. Reprint. Varanasi, India: Chowkhamba Prakanam, 2009; 67-77.

5. Davidson's principles and practice of Medicine, edited by Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston; Churchill Livingstone Elsevier; 21st edition.
6. Agnivesha. Grahani dosha chikitsam adhyaya, In Acharya Trikamji Jadavaji. Charaka Samhita (Charaka and Dridhabala with Chakrapani), Reprint. Varansi, India: Chowkhamba Prakasana, 2007; 456.
7. Agnivesha. Grahani dosha chikitsam adhyaya, In Acharya Trikamji Jadavaji. Charaka Samhita (Charaka and Dridhabala with Chakrapanitika), Reprint. Varansi, India: Chowkhamba Prakasana, 2007; s 16.
8. Agnivesha. Grahani dosha chikitsam adhyaya, In Acharya Trikamji Jadavaji. Charaka Samhita (Charaka and Dridhabala with Chakrapanitika), Reprint. Varansi, India: Chowkhamba Prakasana, 2007; 457.
9. Sushruta. Shonitvardaneeya Adhyaya, In Ayurveda-Tattva Sandipika. Susruta Samhita (by Kaviraja Ambikadutta Shastri), Reprint. Varanasi, India: Chowkhamba Prakasana, 2010; 61.
10. Agnivesha. Rogabhishagjitiyam Viman, In Acharya Trikamji Jadavaji. Charaka Samhita (Charaka and Dridhabala with Chakrapanitika), Reprint. Varansi, India: Chowkhamba Prakasana, 2007; 278.
11. Sushruta. Dosha Dhatu Mala Kshaya Vriddhi Vigyaneeya Adhyaya, In Ayurveda-Tattva Sandipika. Susruta Samhita (by Kaviraja Ambikadutta Shastri), Reprint. Varanasi, India: Chowkhamba Prakasana, 2010; 78.
12. Vagbhata. Doshadivijaniyam adhyaya. In Kaviraja Atrideva, Astanga Hrdayam (by yadunandana Upadhyaya), Reprint. Varansi, India: Chowkhamba Prakasana, 2009; 183.
13. Agnivesha. Kiyantah-shirsiya adhyaya, In Acharya Trikamji Jadavaji. Charaka Samhita (Charaka and Dridhabala with Chakrapanitika), Reprint. Varansi, India: Chowkhamba Prakasana, 2007; 103.
14. Sushruta. Dosha Dhatu Mala Kshaya Vriddhi Vigyaneeya Adhyaya, In Ayurveda-Tattva Sandipika. Susruta Samhita (by Kaviraja Ambikadutta Shastri), Reprint. Varanasi, India: Chowkhamba Prakasana, 2010; 75.
15. Vagbhata. Doshadivijaniyam adhyaya. In Kaviraja Atrideva, Astanga Hrdayam (by yadunandana Upadhyaya), Reprint. Varansi, India: Chowkhamba Prakasana, 2009; 185.
16. Byadgi P S. Upadrava, In Parameswarappa's Ayurvediya Vikriti- Vijnana and Roga vijana, 1st edition, Volume 1. Reprint. Varanasi, India: Chowkhamba Prakasana, 2009; 218-221.

17. Agnivesha. Vividha-ashitapitiya adhyaya, In Acharya Trikamji Jadavaji. Charaka Samhita (Charaka and Dridhabala with Chakrapanitika), Reprint. Varansi, India: Chowkhamba Prakahsan, 2007; 561.