



RASA VIKRUTI WITH RESPECT TO TRIDOSHA AND AGNI

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ABSTRACT

The normal structure and function of the seven *dhatu*s depend upon the balanced state of three *doshas* and *agni*. When the balance of three *doshas* is disturbed, the impact is immediately felt on the condition of the seven body constituents (*dhatu*s). *Dhatu*s react to the disturbance of *doshas*. The *vikruti* of *dhatu*s is in the form of *kshaya* (decrease) or *vriddhi* (increase). The health of *rasa dhatu* determines the health of remaining *dhatu*s, *upadhatu* and *mala*, because *rasa* is the first *dhatu* to be formed after digestion. And the health of *rasa dhatu* depends upon the state of *Agni*. *Agni* is an important factor for the state of homeostasis of *dosha dhatu* and *mala*. Health is compromised if the functions of *Agni* are impeded. The condition of *agni* and *dosha* has to be taken into account while treating *rasa kshaya* and *vriddhi*. Understanding the relationship between *dosha* and *dhatu* and its excess and deficiency is helpful in diagnosis, prognosis and treatment of the diseases. Management of diseases involves providing food or medicine or regimen that strengthens the *dhatu*s to resist the aggression of disturbing *doshas*. In the present paper the *Rasa dhatu vikruti* i.e. *kshaya vriddhi* are summarized and analyzed with reference to *dosha* and *agni* for its proper management.

KEYWORDS: *Dhatu, vikruti, Rasadhat kshaya vriddhi, dosha, agni, dhatwagni, rasayana.*

INTRODUCTION

Health (*swasthya*) in ayurveda is defined as the balance in the proportions and functions of body constituents (*dhatu*s), three energies (*doshas*), transformation processes (*agni*) and excretory processes (*mala*).^[1] For normal physiology and health, all the basic elements in the body must be in a state of equilibrium and must work in coordination. Disease (*Vyadhi, vikruti, Vikara* or *Vaishamy*) is defined as the disturbance of this balance, caused by deficient, excessive or improper organization of seasons, mode of consciousness and object of senses.^[2,3]

Rasa dhatu, the first tissue, and *kapha dosha* one of the three eminent bioenergies are closely related. There is mutual interdependent relationship (*ashrayashrayi sambandha*) between *rasa dhatu* and *kapha dosha*.^[4] This relation is due to its *panchbhoutik* composition (*jala mahabhuta* pradhan), properties and functional similarities. Hence; their excess and depletion is directly proportional.^[5,6]

AIMS AND OBJECTIVES

1. To understand the symptoms of *Rasadhatu* and *Kapha dosha kshaya* and *vriddhi*.
2. To study the role of *agni* in *rasa vaishamy*.
3. To rationalize the role of *deepan, pachan* and *rasayana* chikitsa in *rasa vaishamy*.

MATERIALS AND METHODS

1. Major compendiums-*Charak Samhita, Sushrut Samhita, Ashtanghrudaya, Ashtang Samgraha*.
2. Research articles on increase and decrease of *Rasadhatu*.

REVIEW AND DISCUSSION

The formation and health of the *rasa dhatu* depends on *agni*. If the *agni* is dysfunctional, formation of *rasa dhatu* and consecutive *dhatu*s will be affected. Normal condition of *agni* is responsible for strength, health, longevity and vital breath.^[7] The consumed ahara gets digested under the action of *jatharagni* and *bhutagni* (digestive biochemical mechanisms) in *annavaha Srtotas* (channel for transportation of food) and is differentiated into *Sara* (*annarasa/* useful portion) and *kitta bhaga* (discardable portion). Under the action of *rasadhatwagni* and *bhutagni* in *rasavaha srtotas*, *annarasa* is differentiated into *sthulamsha* (*poshya* or major) and *sukshmamsha* (*poshaka/* minor). *Sthulamsha* nourishes the *rasadhatu* proper, whereas *sukshmamsha* further leads to the synthesis of *raktadhatu* under the action of *rakta dhatwagni*. *Rasa upadhatu* (*stanya* and *artava*) and *mala* (*kapha*) are formed in the metabolism of *rasa dhatu*.^[7] The state of *agni* is root cause of altered *dhatu* *poshana*, resulting in the formation of altered properties in the formed *Dhatu*.^[8]

Quantity of rasa dhatu

The normal quantity of *rasa dhatu* is said to be 9 *anjali* of the individual.^[9] *Anjali* is the measure by space created by joining both palms together like a cup. 1 *anjali* is equal to approximately 180ml. so the quantity of *rasa dhatu* is approximately 1620 ml. This quantity is highly variable, depending on the food, water intake, physical activity, constitution and temperament of the person, age, sex, seasonal and diurnal variations, health and illness. Body functions continuously to maintain this quantity. 9 *anjali praman* is the parameter which suggests the normal balanced state -homeostasis of body fluids in which all the cell can function properly. Any increase or decrease may lead to symptoms that can be mild to severe depending upon the amount of increase or decrease of *rasa*. Even in the physiological condition, there is some discordance or *Kshaya Vriddhi* occurs naturally in these biological factors i.e. *Dosha, Dhatu, Mala*, which is not harmful because they do not produce any disease.^[10] Only when the *Kshaya Vriddhi* exceeds beyond the physiological limit, the disease is produced. The prakruti-constitutional temperament of the individual determines the quantity of *rasa dhatu* of the person. *Kapha* prakruti person would naturally have more *rasa dhatu*. In *kapha* prakruti person depletion of *rasa dhatu* (*rasa kshaya*) would be less likely and excess of *rasa dhatu* (*rasa vriddhi*) would be more likely to occur. *Vata* prakruti person on the other hand would naturally have lower amount of *rasa dhatu* and would be more susceptible to depletion. Person with a *pitta* prakruti tend to have a little more *rasa* than those with a *vata* nature, as *pitta dosha* naturally contains some water. However the quantity of *rasa dhatu* would be still maintained at 9 *anjali* of that person in normal condition.

Relationship between dosha and dhatu vikruti

'*Dosha dushya sammurchana janito vyadhi*' - Combination of abnormal *dosha* and abnormal *dhatu* creates diseases.^[11] *Kshaya* (deficiency) *vriddhi* (excess) are the types of *vaishamya* which can be understood as qualitative (*gunataha*), quantitative (*dravyataha*) and functional (*karmataha*) dysfunction (*vaishamya*) of body constituents, and resulting into disruption in their normal functioning and leading to redundant effects.^[12] The symptoms mentioned under the *kshaya* or *vriddhi* of a particular *dhatu* are not just the decrease or increase in the normal functions (*karma kshaya/vriddhi*) of that particular *dhatu*, but also decrease or increase in the properties (*guna kshaya /vriddhi*). *Vata Kshaya* symptoms (hypo functioning of *Vata Dosha*), are similar to *Kapha Vriddhi* symptoms (hyper functioning of *Kapha dosha*) and *vata vriddhi* symptoms are same as *kapha kshaya* symptoms. Similarly *rasa kshaya* symptoms are same as *kapha kshaya* symptoms and *rasa vriddhi* symptoms are similar to *kapha vriddhi lakshanas*. The hypo or hyper functioning of *Dosha* may be independent to each other or relative to each other.^[13]

Relationship between Tridosha and Rasa dhatu vikruti

Vata dosha: *Vata dosha*, which is made up of air and ether, when increased causes *rasa kshaya*, dries the *rasa dhatu* through its ruksha guna and shoshana Karma and leads to manifestation of symptoms like *karshya* (leanness) *karshnya* (darkness of skin) and *twak parushya* (dryness of skin, hair) indicating the decrease of *rasa dhatu*.^[14] In old age *rasa kshaya* symptoms are evident on the body in the form of dry, wrinkled, lusterless skin, sparse hair, loss of strength, loss of functions of sense organs, etc. That is because there is dominance of *vata dosha* and metabolic dysfunction (*Dhatvagni nash*) in old age.^[15] Other *dhatu*s also gradually undergo *kshaya* due to *rasa kshaya* and *vata vriddhi* during old age. *Prana, samana* and *vyana vayu* are responsible for the circulation of *rasa dhatu*. In pathology the functions related to the circulation are affected.

Pitta dosha: *Pitta dosha* when increased causes excessive thirst which is a symptom of *rasa kshaya*. Increased *pitta* has fire element dominance and *ushna, tikshna* properties that causes burning and *kshapana* of *rasa dhatu*. And decreased *pitta dosha* causes *mandagni* or *agni sada* which is mentioned in *kapha* and *rasa vriddhi* symptom.^[16] *Pachak pitta* is responsible for synthesis of *rasa dhatu* and functions related to synthesis are affected in pathological conditions.

Kapha dosha: Due to mutual dependant relationship between *kapha dosha* and *rasa dhatu* their increase and decrease is directly proportional.^[17] In childhood there is *kapha* dominance and the prenan karma of *rasa* is exhibited very well. *Rasa* is the site for action of *kapha*. So the manifested signs and symptoms of *kapha kshaya* and *rasa kshaya* are similar and the signs and symptoms of *kapha vriddhi* are similar to *rasa vriddhi*. *Avalambak* and *tarpak kapha*, are responsible for strength and regulation of heart and these are affected in pathology.

Relationship between kapha dosha kshaya and rasa dhatu kshaya

Vagbhatt mentioned distinct symptoms of *rasa kshaya* but while mentioning *rasa vriddhi lakshanas* he mentioned '*rasopi shleshmavat*'.^[18] When a body constituent is deficient, it is unable to carry out its normal basic functions. Normal basic function of *rasa dhatu* is prenan (providing nourishment) and in *rasa kshaya* this function is not carried out properly.^[19] The symptoms of *rasa kshaya* depict the loss of prenan function on body and mind.^[20] Normal basic function of *kapha dosha* is *sandhi sanshlesha* (adherence, compactness of any union), *Snehana* (lubrication, elasticity, flexibility) *ropan* (regeneration), *puran* (filling), *bala* (strength, immunity), *sthairya* (stability, firmness), *udaka karmanugraha* (formation and maintenance of body fluids), *kshamadi* (forgiveness).^[21] The symptoms of *kapha kshaya* depict the loss of normal basic functions locally, as *shleshmashaya shunyatva*

(emptiness in chest, head and joints), *shlathya sandhita* (flaccidity of joints) and *hrutdrava* (rapid throbbing of the heart).^[22] These symptoms express the deficiency of *kapha* on specific sites of *kapha* while deficiency of *rasa*

is expressed on whole body and mind in general. Table I illustrates the Symptoms of *kapha kshaya* and *Rasa Kshaya* according to Charak, Sushrut and Vagbhatt.^[23,24,25]

Table I: Kapha and Rasa kshaya lakshanas.

	Kapha Kshaya Lakshanas	Rasa Kshaya Lakshanas
Ashtang	<i>Bhrama</i> (delusion), <i>Shleshmashaya shunyatva</i> (emptiness in chest and other places), <i>Hrid drava</i> (rapid throbbing of the heart), <i>Slatha-sandhita</i> (flaccidity of joints)	Raukshya (dryness), <i>shrama</i> (exhaustion), <i>shosha</i> (Emaciation, dryness of mouth, throat), <i>Glani</i> (debility, weakness, fatigue of sense organs, giddiness) shabdaasahishuntva (Sound, noise, speech Intolerance)
Sushrut	<i>Kapha kshaya lakshanas</i> mentioned by Sushruta include Rukshata (dryness), <i>Antardaha</i> (heat in gastrointestinal tract), <i>Amasayotara slesmashaya shunyatva</i> (emptiness in chest, throat, head, joints) Trishna (thirst), <i>Daurbalya</i> (weakness), <i>Prajagara</i> (wakefulness, insomnia).	Hrutpida (Pain in heart region), <i>Kamp</i> (Palpitation in heart, tremors), shunyata (Feeling of emptiness), Trishna (thirst, polydipsia),
Ashtang sangraha/Charak	<i>Kapha kshaya lakshanas</i> mentioned only in Ashtang Sangraha are <i>Udweshana</i> (contractions, cramps), <i>Anidra</i> (insomnia), <i>Angamarda</i> (body ache), <i>Pariplosa</i> (burning sensation), <i>Toda</i> (pricking pain), <i>Dava</i> (burning pain), <i>Daha</i> (burning sensation), <i>Sphotana</i> (bursting), <i>Vepana</i> (tremors) and <i>Dhumayana</i> (smoke sensation).	<i>Ghattate</i> , hrudayamdravati , <i>Tamya Srama</i> (Feeling of tightness and giddiness after mild exertion Fainting or drowsiness Restlessness, cardiac pressure Fainting or drowsiness) Shabdaasahishuntva (Sound, noise Intolerance)

Relationship between *kapha vridhhi* and *rasa vridhhi*

There is no mention of *rasa vridhhi lakshanas* in Charak Samhita. However, detail description of *dosha vridhhi* is expounded. In the chapter 17 of sutra sthan Charak mentions that *doshas* have three states or pathways; *kshaya*, sthan, *vridhhi*.^[26] Sthan is the normal physiological state while *kshaya vridhhi* are the pathological states. *Vridhhi* state can be *svasthan vridhhi* (chaya) or *margagamita* (prakopa).^[27] There are 62 types of permutations and combinations of *doshas* that are pathological.^[28] Charak elaborated 18 types of *kshaya*; 3 *kshaya* of *doshas*, 7 *kshaya* of *dhatu*, 7 *kshaya* of their respective *dhatumalas* and 1 *oja kshaya*.^[29] But Charak did not mention the *vridhhi* of *sapta dhatu*, *sapta mala* and *oja*. In 62 types of combinations; *dosha vridhhi* is of 25 types, 25 types of *ksheen dosha* and 12 types of miscellaneous combinations. Charak says that one should know the state of *dosha* by the symptoms. *Vridhha* (increased) *doshas* exhibit symptoms according to their strength, *ksheen* (decreased) *doshas* abandon their characteristics and *Sama* (balanced) *dosha* do their work properly.^[30]

Vagbhatt mentioned '*rasopi shleshmavat*' for *rasa vridhhi* symptoms. The symptoms of *rasa vridhhi* should be understood according to *kapha vridhhi* due to the *ashrayashrayi sambandha* (mutual interdependent relationship) between *Kapha dosha* and *Rasa dhatu*. *Rasa dhatu* is *ashray sthan* of *kapha dosha*. *Vridhhi lakshan* of *kapha*, are not local (sthan specific) but general. Due to *Kapha vridhhi* there is *agnisadan* that is

lowering of digestive strength. *Kapha dosha samaan ahar vihar* increases *sheet* and *guru guna* of *kapha* and decreases *laghu*, *ushna*, *tikshna guna* of *pitta dosha*. Therefore *jathar agni* becomes *manda* (low) and results into *aamajirna* and *mand* (low) *rasadhatwagni* results into *rasa vridhhi*.^[31] Sushrut mentioned nausea and ptylism, due to increase in *drava guna* of *rasa* as the symptoms of *rasa vridhhi*. *Shlathangatva* (flabbiness) the symptom of *kapha vridhhi* is due to increase in *medo dhatu* which also has *asharyayashrayi sambandha* with *kapha*. The symptoms that are related to *rasa* and its *moola sthan hridaya* are described in *rasa vridhhi lakshanas* along with its effects on lungs. *Swasa* and *kaasa* are caused due to obstruction of airways. *Ati nidra* is caused due to increase in *guru* and *manda guna* of *kapha* and increase of *tamo guna*.^[32]

Table II: Kapha and Rasa Vriddhi Lakshanas.^[33]

	Kapha Vriddhi Lakshanas	Rasa Vriddhi Lakshanas
Sushruta Samhita	Ati nidra (sleepiness, drowsiness) Sthairya (immobility, stiffness) and Avasada (lassitude, decrease in body functions) Swasa (breathlessness) and Kaasa (cough), Tandra (dizziness) and Sandhivishlesha (dissolution or disjunction of unions)	Praseka (Increased salivation, ptyalism) aruchi (Anorexia), hrullas , utkleda (Nausea) gaurav (Heaviness) alasya (Laziness, lassitude)
Ashtang Hridaya and Ashtang Sangraha	Agnisada (slow digestion and metabolism), Praseka (hyper salivation, nausea), Aalasya (laziness, lethargy), Gaurava (heaviness), Shwaiitya (pallor), Shaitya (coldness, frigidity), Shlathangatva (flabbiness), swasa , kaasa , atinidrata Swasa (breathlessness) and Kaasa (cough), Tandra (dizziness) and Sandhivishlesha (dissolution or disjunction of unions) Sthaulya (stoutness or largeness, obesity) Angasada (body pain, decrease in body functions bodily exhaustion) Pidhana (covering or closing). Sroto pidhana can be understood as obstruction or congestion of the channels in the body), Murcha (fainting), Hrullasa (nausea).	Shlathangatva (Flaccidity of joints and body) Kaasa (Cough) swasa (Breathlessness) Ati nidra (Sleepiness) Shaitya (Sensitive to cold) Shwaiitya (Pallor)

Rasa kshay and *vriddhi* symptoms can be seen either generalized or localized. For e.g. in *rajyakshma* (tuberculosis), *rasa kshaya* is generalized; the symptoms of *rasa kshay* are visible on entire body while in case of *balpakshvadh* (poliomyelitis) or *pakshvadh* (paralysis) it is localized; regional atrophy occurs on the affected part where there is obstructed or restricted supply of *rasa*. *Rasa kshay* and *vriddhi* symptoms can be acute or chronic. Acute *rasa kshaya* caused due to excessive physical labour or due to hot climate can be reversed instantly whereas chronic *rasa kshaya* takes longer to replenish. If *kshaya* or *vriddhi* of *rasa dhatu* is not soon brought into normal or equilibrium state then it produces *rasaja vikara* or other complications of diseases. *Rasa kshay* and *vriddhi* symptoms are seen according to the degree of excess and depletion.

Relationship of *rasa dhatu vikruti* with *agni*

The quality of the *rasa dhatu* is dependent upon the health of *agni*. *Rasa dhatu* is produced from the digestion of food and liquid by *jatharagni*. Food and liquid are initially digested in the digestive system and turned into *ahara rasa*. This fluid is then further digested within the *sleshma dhara kala* by the *dhatu agni* of *rasa* (*rasagni*). The state of *rasagni* is dependent upon *jatharagni*--the main digestive fire. If *jatharagni* is healthy, *rasagni* will be healthy too. The health of *rasagni* determines the quality of *rasa* produced. When the *rasagni* is ideal, healthy *rasa dhatu* is produced along with healthy *updhatu* and *mala kapha*.^[34]

Table III: Effects of *bhutagni* and *dhatwagni* on *annapachan* and *dhatu parinaman*.^[41]

Agni	Jatharagni (annapachan)	Dhatwagni (dhatu parinaman)
<i>Sama</i> (balanced)	<i>Jeerna</i>	<i>Sama dhatu</i>
<i>Manda</i> (low due to <i>kapha</i>)	<i>Amajeerna</i>	<i>Dhatu vriddhi</i>
<i>Tikshna</i> (high due to <i>pitta</i>)	<i>Vidagdhajeerna</i>	<i>Dhatukshaya</i>
<i>Visham</i> (erratic due to <i>vata</i>)	<i>Vishtabdhajeerna</i>	<i>Dhatuvikruti</i>

Management of *rasa vikruti*

The knowledge of features of normalcy or abnormalcy of *Dosha* and *dhatu* is very important for its management.^[42] The general principles regarding the

The substances and mechanisms involved in intermediate metabolism of *rasa dhatu* are comparable to *rasa dhatwagni*. The synthesis of *rasa dhatu* and its entire business is carried out by *rasa dhatwagni*.^[35] The formation of *rasa dhatu* (*rasa dhatu utpatti*) can be compared to the protein synthesis, *rasa dhatwagni* can be correlated to the enzymes complexes of DNA and RNA and the *poshaka rasadhatu* is comparable to the substrate available in cytoplasm.^[36]

Jatharagni can be variable depending upon the role of *doshas* over it. It can be *manda* (low) due to *kapha*, *tikshna* (high) due to *pitta*, *vishama* (irregular) due to *vata* and *sama* (balanced) due to *vatapittakapha*. These states of *agni* lead to different reactions and formation of different end products.^[37] So the state of *agni* is very much important to decide the transformation.

Vaghbatta described two variables in the state of *dhatwagni*; *tikshnatwa* (high) and *mandatwa* (low).^[38] He stated that the *dhatu vriddhi* (increase) occurs when its *agni* becomes *manda* and the *dhatu kshaya* (decrease) takes place if the *agni* is *tikshna* and in *sama* condition the proper metabolism takes place.^[39] The *vishama avastha* (irregular nature) is due to the effect of *vata* on the *Agni*. Increased *vata* causes the *Vishama Agni*. This *Vishamagni* is the cause for improper digestion and formation of intermediate end products.^[40]

management of *vikruti* is i) the depleted factors should be increased, ii) the increased factors should be decreased or removed, iii) the vitiated (*kupita*) factors should be suppressed, and iv) *Sama* factors should be

maintained.^[43] The principle of *Samanya- Vishesh* explains that the similar (*Samanya*) factors are responsible for increase and opposite factors (*Vishesha*) are responsible for the diminution.^[44] So for treating *rasa* and *kapha vridhhi*, *vishesha* (opposite) factors are employed while *samanya* (similar) factors are utilized in case of *rasa* and *kapha kshaya*. These principles act through the receptor mechanism, the *samanya* factors supplements the *dhatu* through agonist action while *Vishesha* factors diminish the *dhatu* by antagonizing their action. To manage *rasa vikruti* all the aspects of *dosha*, *agni* and properties of *rasa* should be taken into consideration.

In *rasa kshaya* enhancement of *rasa dhatu* is done by *snigdha*, *madhura*, *amla*, *lavan rasa*, *drava*, *sheet*, *santarpna* and *rasayana chikitsa*. *Rasayanas* like *haritaki*, *amla*, *guduchi*, *shatavari*, *shilajit* and *chyavanprash* are ideally best to build *rasa*. *Rasayana Chikitsa* nourishes and strengthens all the seven *dhatu*s. The specific actions of *Rasayana* drugs on the *Poshaka Rasa* level (nutrient supplement), *Agni* level (metabolic appreciation) and *Srtotas* level (tissue nourishment) are well proven.^[45] In *Kapha kshaya* treatment it is advised to first address the *vridhdha dosha*.

Management of *kapha vridhhi* and *rasa vridhhi*: *Ahar*: food that is easily digestible (*laghu*), dry (*ruksha*), pungent (*katu*), bitter (*tikta*), salty (*lavan*) in small quantity. *Vihar*: increase in physical activity, exercise, and less sleep. Therapeutics: *langhan*, *vaman*, *trifala*, *trikatu*, *guggul*, *honey*, warm water as *anupana*. Impaired *jatharagni* and impaired *rasa dhatu agni*, can be elevated by *langhan*, *deepan* (kindling *agni*), *pachan* (breaking down burning toxins) by ginger, cumin, black pepper, pepper longum, and *chitrak agnitundi vati*, *aampachak*, *chitrakadi vati*, etc.

CONCLUSION

Lot of associations and interactions exist between bodily factors like *dosha*, *dhatu*, *mala* and *agni*. Changes and adjustments are continuously being made in the body to keep it normal. When the *doshas* are disturbed, they in turn disturb the *dhatu*s. When the power of disturbing *doshas* is greater, and the *dhatu*s are weaker, the reaction or resistance offered by the *dhatu*s become insignificant and the disease develop. When the strength of *dhatu*s is overpowering, the disturbance of *doshas* become inconsequential and the health is restored. The state of all the preceding *dhatu*s depend on the state of *rasa dhatu*. *Rasa Dhatu* may have pluripotent cell differentiating lineage responsible for the development of all *Sapta Dhatu*. Thus, each *Dhatu* carry the potency to regenerate further *Dhatu*. If the *rasa Dhatu* is of poor quality or quantity, the subsequent *dhatu*s will be poor. Hence, it is imperative to maintain balanced state of *rasa dhatu* for optimum health. And the balanced state of *rasa dhatu* can be achieved by protecting the normalcy of *agni*. Further studies need to be carried out to study the complex processes involved in the *kshaya* and *vridhhi* of

dosha and *dhatu* in the light of modern science and technology.

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