

PHYSIOLOGICAL STUDY AND EVALUATION OF RASA DHATU KSHAYA W.S.R. TO “HYPOTENSION”

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ABSTRACT

As per *Ayurveda*, human physiology depends upon the balanced state of *Dosha-Dhatu-Mala*. These are the root of the body & equilibrium of above factors is known as Health. *Dosha* are the main bio-energies which are responsible for the physiological activities. *Dhatu*s or tissues can be called as the stabilizing pillars of the body. Body is constituted by seven types of *Dhatu* i.e., *Rasa*, *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja* and *Shukra*. *Rasa dhatu* is the first *dhatu* to be formed in the body after digestion of ingested food, being nourished from *Ahara-rasa*. *Dhatu* which is being continuously circulated in the body is known as *Rasa Dhatu*, which is *Jala mahabhuta* predominant. Proper functioning of *Rasa Dhatu* and absence of symptoms of *Rasa Vriddhi* or *Kshaya* indicates normal quantity of *Rasa Dhatu*. Symptoms of *Rasa Kshaya* has been described in *Ayurvedic* text like *Hrida Ghattana*, *Shabda asahatva*, *Hrita peeda*, *Hrita Kampa*, *Shosha*, *Hridaya drava*, *Spandana*, *Shunyata*, *Trishna*, *Tarsha*, *Rukshata*, *Alpha Cheshta sharma* and *Tamyati*.

In modern science, functions of plasma are as similar as *Rasa dhatu*. Normal pressure of blood is maintained by ions, plasma proteins, blood corpuscles and other solutes present in plasma. Blood pressure is the pressure exerted by blood on the vessel walls during contraction & relaxation of the heart muscle. An individual's blood pressure is expressed as systolic/diastolic blood pressure, for example 120/80 mm Hg. A decrease in the blood pressure below normal range is known as Hypotension. Hypotension is blood pressure that's lower than 90/60 mmHg^[6]

Keywords: *Rasa Dhatu, Dushya, Dosha, Mala*, Blood pressure, Hypotension.

INTRODUCTION

Body is constituted by seven types of *Dhatu* i.e., *Rasa, Rakta, Mamsa, Meda, Asthi, Majja* and *Shukra*. *Rasa dhatu* is the first *Dhatu* to be formed in the body after digestion of ingested food, being nourished from *Ahara-rasa*. *Dhatu* which is continuously circulated in the body is known as *Rasa Dhatu*^[1]. Proper functioning of *Rasa Dhatu* and absence of symptoms of *Rasa Vriddhi* or *Kshaya* indicates normal quantity of *Rasa Dhatu*. *Rasa* undergoing *Kshaya* (decrease) produces symptoms like *Hrida Ghattana* (rubbing/friction), *Shabda asahatva* (inability to withstand high pitched noise), *Hrita peeda* (chest pain), *Hrita Kampa* (tremor), *Shosha* (emaciation), *Hridaya drava* (Increase heart rate/ palpitation), *Spandana* (pulsations), *Shunyata* (feeling of emptiness of thoughts or opinion), *Trishna* (thirst), *Tarsha* (feeling of fear /anxiety), *Rukshata* (Dry skin), *Alpha Cheshta shrama* (exhaustion even by slight activity) and *Tamyati* (Blackout)^[2]
[3] [4].

In modern science, functions of plasma are as similar as *Rasa Dhatu*. *Acharya Sushruta* has described that Heart and twenty-four *Dhamanis* emerging from the heart are the site of *Rasa Dhatu*. When the formed elements are removed from the blood, a straw-colored liquid is left, which is called plasma. Plasma is extracellular fluid which consists of water and other solid constituents like plasma proteins, inorganic substances & enzymes etc. Plasma acts as a medium of transport for glucose, amino acid and fatty acids. Plasma conducts respiratory gasses, waste products like urea, uric acid, creatinine to the excretory organs. Chlorides, phosphates, carbonates are also transported in plasma^[5]. This century is the fastest one in the context of scientific research and pace of lifestyle. This type of lifestyle produced a lot of hazards also, in the form of some metabolic disturbances. Hypotension can lead to dizziness, syncope, orthostatic hypotension symptoms, ischemia of brain and heart. Hypotension is an abnormal condition in which an individual's blood pressure is too low for normal functioning. When the systolic pressure is less than 90 mmHg, it

is considered as Hypotension^[6]. Hypotension can be just as serious as hypertension. But the good news is that low blood pressure can be easily recognized by key signs and symptoms.

AIM & OBJECTIVES

- To assess the signs & symptoms of *Rasa Dhatu Kshaya* and Hypotension.
- To establish a relationship between *Rasa Dhatu Kshaya* and Hypotension.

NEED OF STUDY

In the present scenario lots of people are suffering from hypotension. Low blood pressure causes an inadequate flow of blood to the body organs and tissues causing hypo - perfusion & ischemic injuries, predisposing to sudden syncope, cerebral, cardiac and renal diseases, various tissue adaptations and multiple end organ failure. If people suffering from hypotension have similar symptoms of *Rasa Dhatu Kshaya*, then it will help to select an appropriate and effective treatment for hypotension. As we know, symptoms of Hypotensive people are as similar as *Rasa Dhatu Kshaya*. So, it might be a great relief to mankind because in spite of modern science there are lots of *Ayurvedic* diets & routines mentioned for the same. As many *Aahara & Vihara* have been described in *Ayurvedic* text in concern of *Rasa-Kshaya Chikitsa*. Keeping all these things in mind, I felt the need for this research.

MATERIALS

- Relevant *Ayurvedic* textbooks.
- Previous research papers.
- Previous thesis work.
- Various National or International journals or magazines.
- Various modern medical books.

METHODOLOGY

❖ **Type of Study-** Observational Study

❖ **Selection of Patients**

The study was conducted on randomly selected 100 patients suffering from Hypotension. Each patient was selected on the basis of low blood pressure measured

by mercury Sphygmomanometer & other inclusion criteria.

❖ **Inclusion Criteria**

- Patients with the age group 20-70 years.
- Patients with low blood pressure, below 100/60 mmHg.

❖ **Exclusion Criteria**

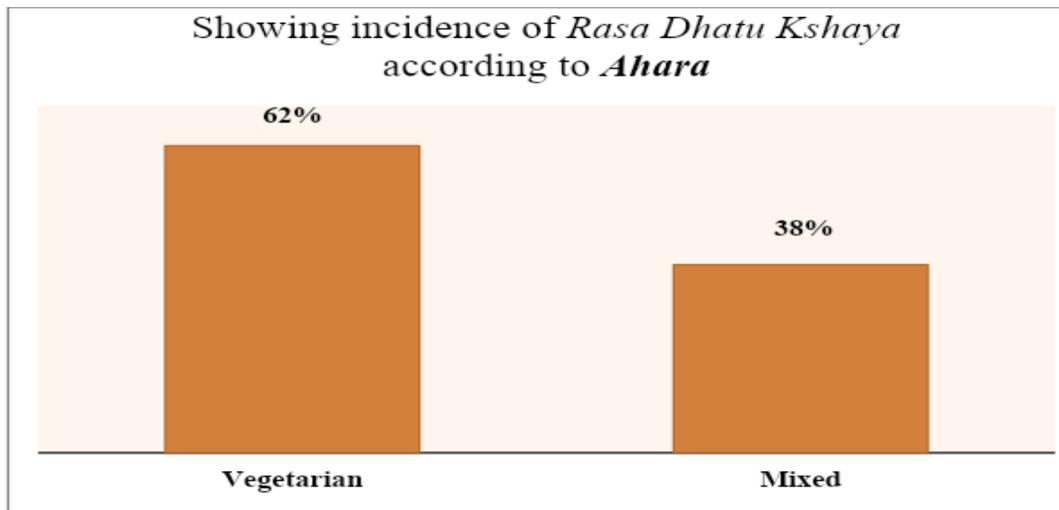
- Severe anemia or polycythemia patients.
- Patients with hormonal abnormalities such as

hypothyroidism, hypoglycemia etc.

- Patients with any addiction like alcohol, smoking etc.
- Patients with systemic illness like hepatic/renal failure, heart failure, hemolytic or hemorrhagic diseases.
- Pregnant women.
- Patients of postural hypotension.

OBSERVATION

Figure - 1



Ahara- In present study maximum number of patients. i.e., 62% were vegetarian. Diet with a low level of saturated fat, a high potassium / phosphorus ratio and a high level of vegetable fiber, as in vegetarian diets, was associated with a clear reduction in BP. It is also possible that a vegetarian diet is associated

with lower BP because this diet modulates baroreceptor sensitivity, leads to vasodilation, alters the catecholamine and renin-angiotensin system and reduce viscosity second thing is that fruits & vegetables are low in sodium but rich in potassium, characteristics that help lower blood pressure.

Figure - 2

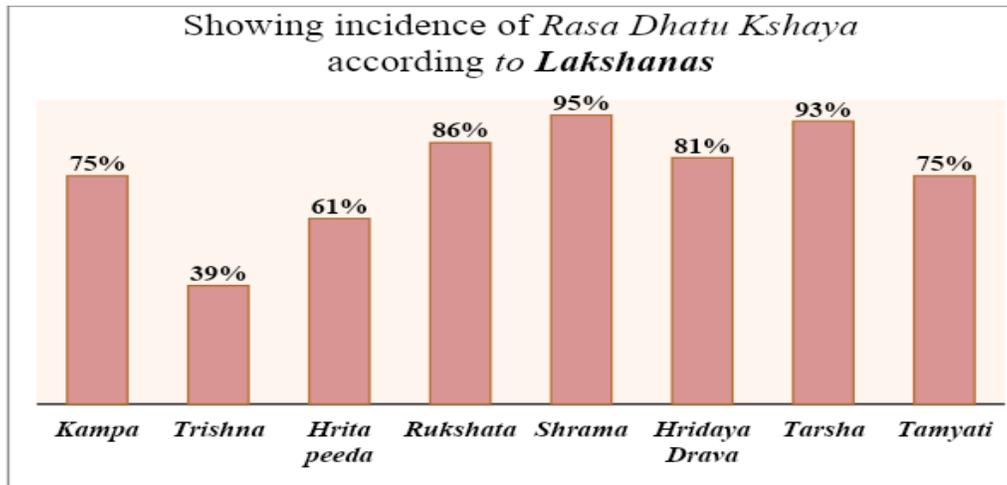


Table 1: Statistical value of Subjective Parameters of *Rasa Dhatu Kshaya* Symptoms

Symptoms	Observed number	Expected Number	χ^2	df	P	Result
<i>Kampa</i>	75	20	7.100	4	0.131	NS
<i>Trishna</i>	39	25	78.480	3	0.000	HS
<i>Hrita Peeda</i>	61	25	22.400	3	0.000	HS
<i>Rukshata</i>	86	25	17.200	3	0.001	HS
<i>Shrama</i>	95	20	44.500	4	0.000	HS
<i>HridayDrava</i>	81	20	15.600	4	0.004	HS
<i>Tarsha</i>	93	25	46.160	3	0.000	HS
<i>Tamyati</i>	75	20	15.500	4	0.004	HS

Table shows that out of 100 patients, *Rasa Dhatu Kshaya* Symptoms i.e., *Kampa* was observed in 75 patients. This symptom was statistically non-significant, and 39 patients were having *Trishna*, 61 patients were having *Hrita Peeda*, 86 patients were having *Rakshata*, 95 patients were having *Shrama*, 81 patients were having *Hridaya Drava*, 93 patients were having *Tarsha*, and 75 patients were having *Tamyati*. These all symptoms were statistically Highly significant.

Figure – 3

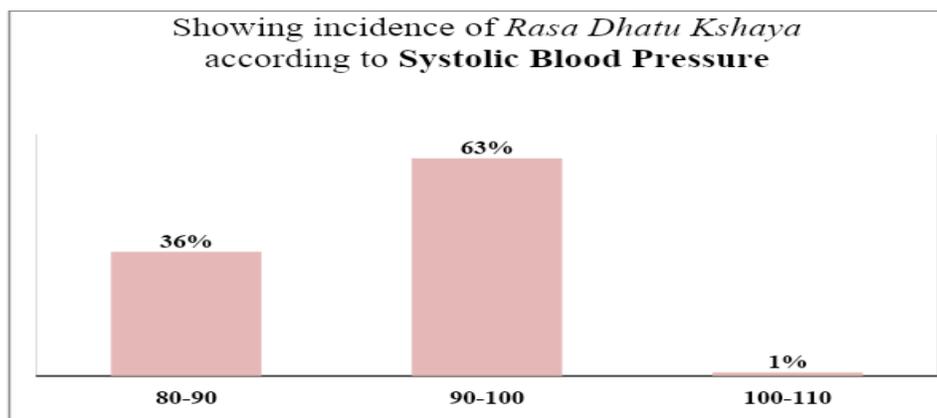


Figure - 4

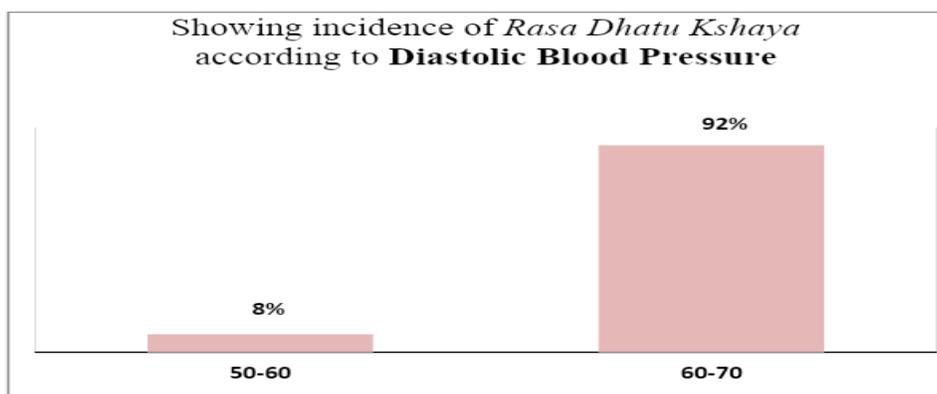


Table 2: Statistical value of Objective Parameters of Rasa Dhatu Kshaya Symptoms

Blood Pressure	Number of Patient	Mean	SD	SE Mean	Z	Df	P	Result
Systolic	100	95.65	5.413	0.541	44.984	99	0.000	HS
Diastolic	100	62.12	4.635	0.463	38.579	99	0.000	HS

In the present study, it was observed that the mean score of systolic blood pressure was 95.65. This was statistically highly significant ($P < 0.000$) and mean score of diastolic blood pressure was 62.12. This was also statistically highly significant ($P < 0.000$).

HS – Highly Significant

NS – Non-Significant

DISCUSSION

Vata can be held responsible along with Oja and Rasa Dhatu Kshaya for Hypotension.

From this study, it can be validated that the Rasa dhatu is one of the factors responsible to maintain the healthy internal body environment by maintaining body fluid and proper functioning of the heart or other tissues. Any manifestation of Rasavaha Srotas leads to inadequate supply to body tissue which is somewhat similar to the inadequate perfusion of tissues (Dhatu) due to Hypovolemia or Hypotension (Rasa Dhatu Kshaya).

Our study demonstrated that a vegetarian diet was significantly associated with lower systolic and diastolic BP because fruits & vegetables are low in sodium but rich in potassium, characteristics that help lower blood pressure. Vegetarian diets modulate baroreceptor sensitivity, lead to vasodilation, alter the catecholamine and renin angiotensin system and reduce blood

viscosity.

Patients showed statistically that the symptoms of Rasa Dhatu Kshaya i.e., Trishna, HritaPeeda, Rukshata, Shrama, Hridaya Drava, Tarsha and Tamyati, are highly significant accepting the symptoms of Kampa. Systolic and Diastolic Blood Pressures are also highly significant. All the above said symptoms were found in the patients of Rasa Dhatu Kshaya. On that basis we can establish a similarity between Hypotension & Rasa Dhatu Kshaya.

Loss of electrolytes along with fluid in mild conditions depletes the sodium level (Hyponatremia) later depletes the potassium levels as well. In severe dehydration, the intracellular K^+ ion moves out leading to paradoxical Hyperkalemia. This could be fatal as it causes fatigue, arrhythmia, chest pain, blurred vision syndrome.

Hypotension Correlation

As explained above there are Tridosha in the body which mainly control all the functioning of a body. Vata along with Rasa Dhatu Kshaya is mainly responsible for Hypotension. Reduced blood volume, hypovolemic is the most common cause of hypotension. This can result from insufficient fluid intake, as in starvation, Aam Purish Pravritti, excess work done in sitting position which all increases Vata in the body. Body may have enough fluid but does not retain

electrolytes. Absence of perspiration, lightheadedness and dark coloured urine are also indicators. Low blood pressure is sometimes associated with certain symptoms, many of which are related to causes rather than effects of hypotension: chest pain, shortness of breath, dizziness, nausea, unusual thirst, dehydration, lack of concentration, depression, irregular heartbeat, stiff neck, severe upper back pain, loss of consciousness, profound fatigue, temporary blurring vision which are the symptoms of increased *Vata* in body. *Angamarda* (pain in body), *Tama* (blackout), *Pandutva* (anemia), *Kampa* (tremor), *Trishna* (Thirst), *Hrita peeda* (chest pain), *Rukshata* (dryness), *Shrama* (fatigue) are due to

Rasa Dhatu Kshaya and *Daurbalya*, *Bhikshana Dhyayati* (tension), *Vyathita Indriya* (senses weak) can be seen in *Oja Kshaya*. *Vata* is a dominating factor of all *Doshas* in the body and controls all functioning of the body. Here the above mechanisms of autonomic nervous system, renin angiotensinogen and endothelin system are not able to increase blood pressure. It means this system is improper functioning and *Vata/Oja Kshaya* are the same. The mechanism by which hypotension is occurring in the body, can be understood through the line of treatments of these *Doshas*.

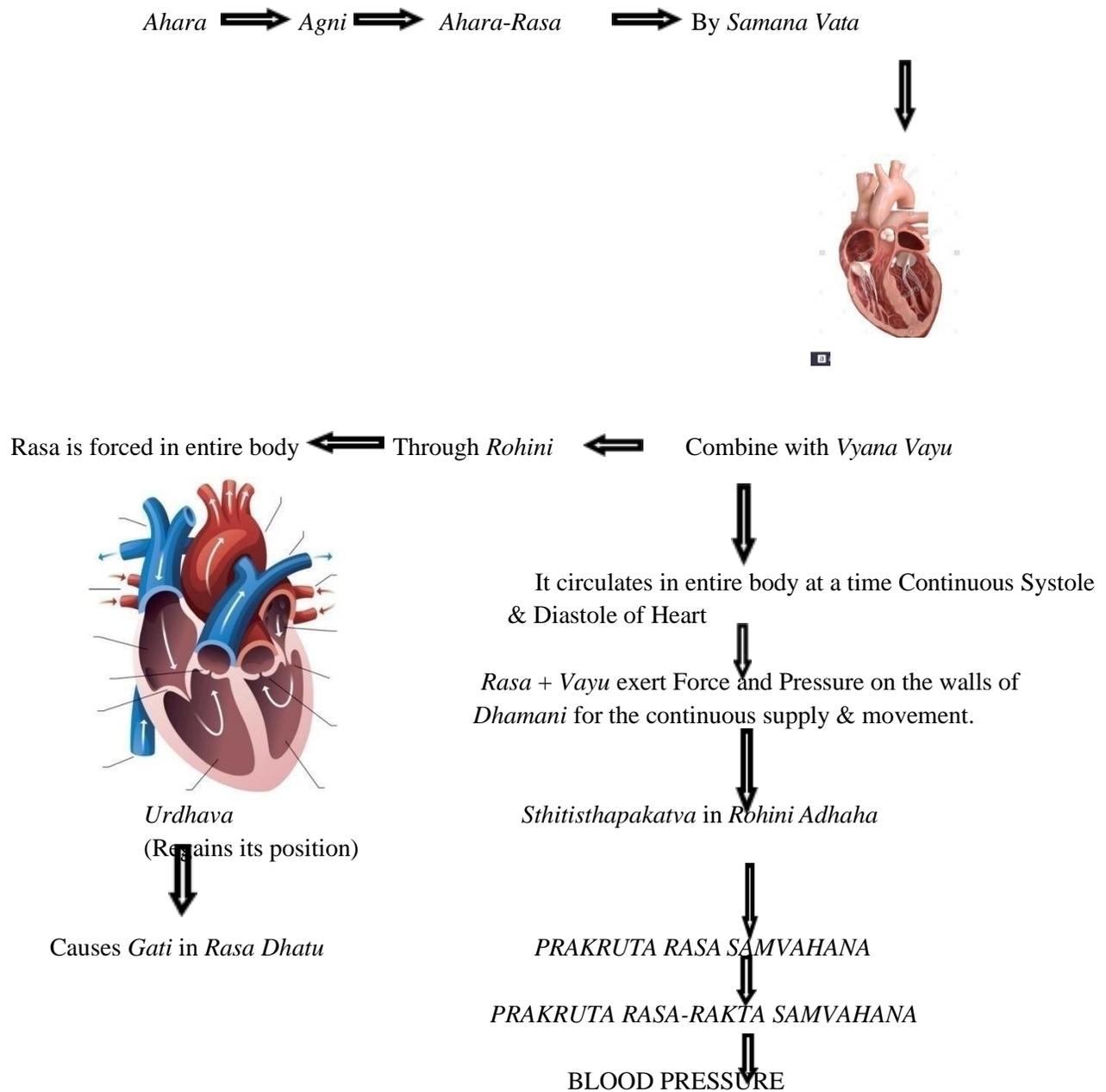


Figure 5: SCHEMATIC REPRESENTATION OF RASA VIKSHEPANA

CONCLUSION

Rasa Dhatu which is called the fluid of life is made up of *Ahara rasa*. Fluidity is present in it because of predominance of *Jala Mahabhuta* and it can travel in *Param Sukshma srotas* of the body *Rasa dhatu* provides core nutrition for the further *Dhatu*. *Rasa Dhatu* is compared with plasma. Normal pressure of blood is maintained by ions, plasma proteins, blood corpuscles and other solutes present in plasma. Serum albumin accounts for 55% of plasma proteins and is a major contributor in maintaining the osmotic pressure. Patients showed statistically that the symptoms of *Rasa Dhatu Kshaya* i.e., *Trishna, Hrita Peeda, Rukshata, Shrama, Hridaya Drava, Tarsha and Tamyati*, these are highly significant accepting the symptoms of *Kampa*. Systolic and Diastolic Blood Pressures are also highly significant. This study shows the symptoms of Hypotension are the same as the symptoms of *Rasa Dhatu Kshaya*. From which established the relationship between *Rasa dhatu kshaya* and Hypotension.

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