



CRITICAL STUDY OF MAJJA DHATU W.S.R. TO MAJJADHATU KSHAYA

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ABSTRACT :

Ayurveda postulates the unique principals of *Tridosha*, *Dhatu* and *Mala* for homeostasis of the body. *Dhatu* nourishes the body, supply nutrients to other vital tissue, supports the body and keeps the body healthy. During formation of *Asthi Dhatu* or Bone, *Vata* creates spaces in bones. These spaces are filled with nourishing tissues of *Medas* or fat which is known as *Majja* or Bone marrow. *Majja Dhatu* is the second last *Dhatu* formed as - unstable(poshaka) *Asthi Dhatu* flows through the *MajjaVaha Srotas* into the *MajjaDhara Kala* and is digested by the *Majjagni*. *Majja Dhatu* nourishes body, strengthens body, fills bones and nourishes *Shukra Dhatu*. Due to *Pragyaparadha*, *Asatmyendriyarth Samyoga* and *Parinama*, the equilibrium of *Doshas*, *Dhatus* and *Malas* is disturbed and homeostasis in the body is altered. When *Majja Kshaya* takes place due to disturbed equilibrium of *Tridosha* then *Asthi Dhatu* is most affected, because *Asthipuranam* is done by *Majja Dhatu*. *Asthi Saushirya*, *Asthi Daurbalya*, *Asthi Laghuta*, *Asthi Nistoda*, *Pratamat Vata Roga*, *Alapshukrata*, *Bhrama*, *Timir Darshnam* etc. occur in *MajjaKshaya*. The symptoms of *Majja Kshaya* can be correlated in Modern Science with osteoporosis, vertigo, hollowness and lightness in bones and oligospermia etc. The management of *Asthi-Majja* related diseases is unique because of the *Ashrayaaashrayi* relationship of *Vata Dosha* and *Asthi Dhatu* which is fundamental base to understand any pathological condition related to *Majja Dhatu*. Thus this review study gives complete glimpse of knowledge about every aspect of *Majja Dhatu* and its vitiation effects described in Classical texts.

Key words: *Majja Dhatu*, *MajjaKshaya*, *Majjavaha Srotas*, *Majja Utpatti*, Osteoporosis

INTRODUCTION: Ayurveda postulates the unique principals of *Tridosha*, *Dhatu* and *Mala* for homeostasis of the body.^[1] In *Samyavastha* the *Tridosha* regulate all physiological functions of the body. Only *Vata* is capable of mobility and its force keeps the other two *Dosha*, *Dhatu* and *Mala* in motion. *Dhatu* nourishes the body, supply nutrients to other vital tissue, supports the body and keeps the body healthy. According to *Acharya Susruta*^[2] & *Vaghbhata*^[3] there are seven *Dhatu*'s in body- *Rasa*(lymph), *Rakta*(blood), *Maamsa*(muscles), *Medas*(fat or adipose

tissues), *Asthi*(bone), *Majja*(bone marrow), *Sukra*(semen, sex hormone). *Majja Dhatu* is the second last *Dhatu* formed as - unstable(poshaka) *Asthi Dhatu* flows through the *MajjaVaha Srotas* into the *MajjaDhara Kala* and is digested by the *Majjagni*. During formation of *Asthi Dhatu* or Bone, *Vata* creates spaces in bones. These spaces are filled with nourishing tissues of *Medas* or fat which is known as *Majja* or Bone marrow as mentioned by *Acharya Charaka*^[4]. The final essence of the *Asthi Dhatu* which is a semisolid substance becomes *Majja* in the

process of metabolism. *Majja Dhatus* nourishes body, strengthens body, fills bones and nourishes *Shukra Dhatus* as described below by Acharya Sushruta.^[5] For a healthy body it is important that these *Dosha*, *Dhatu* and *Mala* should remain in *Samyavastha*. Due to *Pragyaparadha*, *Asatmyendriyarth Samyoga* and *Parinama*, the equilibrium of *Doshas*, *Dhatus* and *Malas* is disturbed and homeostasis in the body is altered. When *Majja Kshaya* takes place due to disturbed equilibrium of *Tridosha* then *Asthi Dhatus* is most affected, because *Asthipuranam* is done by *Majja Dhatus*^[6], as described by Acharya Charaka. *Majja Dhatus* nourishes *Shukra Dhatus*, so when *Majja Kshaya* occurs, it causes *Alpa Shukrata*, as described by Acharya Sushruta^[7]. Also, as per *Astanga Hridya* due to *Majja Kshaya*, *Timira Darshanam* which can be due to hypoxia.^[8]

LITERAL REVIEW:

Majja: Ayurveda considers *Majja* as the sixth *Dhatu* of the body. All the bones contain this jelly like material. Charak enumerates the *Asthi* (bones) and *Sandhis* (joints) as the *Moola* of *Majjavaha Srotas*. The *Majja* fraction has been defined by *Vaidhya Shabdha Sindhu*, as *Shudha – Sneha* or pure –fat. Charak also refers to the filling up of the bones with *Medas*, which is *Majja*. According to Sushruta, *Majja* contributes to the formation of and an increase in the *Shukra Dhatus*; it fills in the internal cavities of bones and is the chief source of body strength.^[9]

Majja Swarupa: *Vayu* causes porosity in the interior of bones and this porous space gets filled up with *Medas* (fat). This unctuous substance is called *Majja* (Bone-marrow).^[10] *Majja* resides in long bones middle part specially.^[11] According to Ayurveda, brain is made from *Majja*^{[12][13]}.

Majjagni Swarupa and Karma: By virtue of their respective seven categories of *Agni* (enzymes), *Dhatu* (tissue elements), the sustainers of the body, undergo metabolic transformation in two different ways – *Kittapaka* (transformation of waste products) and *Prasada-paka* (transformation of nourishing material).^[14] *Majjagni* as like other *Dhatwaagni* is *Pittoshma* inside *Majja*. It is the combination of *Ushna* and *Aagney Dravya* of *Pitta* group. *Pitta Gana* or *Aagney Dravya* resides as secretion of liver and pancreas in our *Mahasrotas*. These secretions in the intestine perform *Agnikarma* and with *Anna-rasa* and *Rasa-Rakta* circulates in the whole body. Parts of *Pachakagni* (*Pachakansh*) reach to the fatty particles inside bones. There these *Pachakagni* are in the form of *Dhatwagni* i.e. *Majjagni*. Due to *Majjagni* fatty particles inside bones are transformed to yellow marrow and red marrow. All changes in *Rupa* and *Guna* are done by *Agnikarma* that is ultimately performed by *Majjagni*. During formation of bone, with the help of *Vata*, *Majjagni* acts on the particles of *Meda* present in pores of bones, which results in the formation of WBC and yellow marrow. The shape and characteristics of *Meda* particles changes i.e. *Majja*.

Utpatti ^[15] ^[16] ^[17] The successive development of the fundamental or root principles of the body follows a distinct order. The essence of the assimilated food matter under the heat of digestion goes towards the formation of chyle and is ultimately transformed into it, its residue being passed out of the organism in the shape of stool etc. The chyle thus produced is called the immature *rasa* or the *rasa* in its nascent stage. Subsequently it enters into the bodily principle of *rasa*, becomes

mature by the native heat of *rasa* and is resolved into three factors – its excreted matter is transformed into phlegm, its thick or condensed portion is transformed into and assimilated in the mature *rasa* of body, whereas its subtle essence is metamorphosed into blood. The blood thus newly generated is merged into fundamental organic principle of blood and there by the heat of blood it is again resolved into three factors – that is its excreted portion is transformed into bile, its thick or condensed portion is transformed into the fundamental organic principle of blood and its subtle essence is metamorphosed into flesh. Then flesh by the same order resolved into three factors – excreted portion goes towards the formation of such excreta as are found to be deposited in the corners of eyes and inside the integuments of prepuce or about the region of glance penis, its thick or condensed part is transformed into organic principle of flesh and its subtle essence is metamorphosed into fat. Again by the same order newly generated fat is resolved into three factors – excreted portion is discharged through the pores of skin in drops of perspiration, its condensed portion is assimilated in the organic principle of fat and its subtle portion is metamorphosed into bones. Again the

bone in its nascent stage enters into the organic principle of bone and thereby the inherent heat of that principle is resolved into three factors – its excreted portion contributes towards the formation of hairs, moustache etc. Its thick or condensed portion is assimilated into the organic principle of bone and its subtle portion is metamorphosed into *Majja*. The *Majja* in its nascent stage enters into the organic principle of *Majja* and there matured under the native heat of that principle is resolved into three factors – its excreted portion contributes towards the formation of gelatinous matter deposited into the corners of the eyes and the oily secretion of the skin, its condensed portion is assimilated into the organic principle of *Majja* and the subtle portion is metamorphosed into semen. The semen again in its nascent stage enters into the organic principle of semen and there matured under its native heat is resolved into two factors – that is thick and thin, the thick portion is assimilated into the organic principle of semen and the thin one being metamorphosed into semen, like gold a thousand times purified, cast off no dregs. Thus *rasa* is converted into semen or into menstrual blood in women in the course of a month.

Table No. 1

DHATWAGNI	RAW MATERIAL	PRASAD	KITTA
<i>Rasagni</i>	<i>Ahara rasa</i>	<i>Sthayi rasa</i>	<i>Shlesma</i>
<i>Raktaagni</i>	<i>Poshaka rasa(Raktasama Aaharansha)</i>	<i>Sthayi rakta</i>	<i>Pitta</i>
<i>Mamsaagni</i>	<i>Poshaka rakta</i> <i>Mamsa sama aaharaansha</i>	<i>Sthayi mamsa</i>	<i>KhaMala</i>
<i>Medogni</i>	<i>Poshaka mamsa</i> <i>Medasama aharaansha</i>	<i>Sthayi meda</i>	<i>Sweda</i>
<i>Asthyaagni</i>	<i>Poshaka meda</i> <i>Asthisama aharaansha</i>	<i>Sthayi Asthi</i>	<i>Kesha,Loma</i> <i>Nakha</i>

Majagni	Poshak Asthi, Majjasama, Aharaansha	Sthayi Majja	Akhi Snehyam Twacha Vitta
Shukragni	Poshak Majja, Shukrasama Aharaansha	Sthayi Shukra	Oja

Parinati Kala (Time taken for formation of *Majja Dhatus*): Acharya Parashara says that food becomes *Rasa* on next day, *Rakta* on third day, *Mamsa* on forth day, *Meda* on fifth day, *Asthi* on sixth day, *Majja* on seventh day and *Shukra* on eighth day. According to Acharya Charaka *Dhatu* formation takes place continuously.^[18]

Charaka has compared *Dhatu* formation to fetching of water with pulley from well. Charaka further elaborates that *Dhatu* formation depends on activity of *Dhatwagni*. Due to hyperactivity of *Dhatwagni*, the process of *Dhatu* formation becomes rapid. On the other hand *Dhatu* formation will slow down if there is hypoactivity of *Dhatu-Agni*.^[19] According to Charaka Samhita in one week all seven *Dhatu* are formed. *Rasa Dhatus* is formed on first day after ingestion of food & *Shukra Dhatus* is formed on the 7th day. The digested food (*ahara rasa*) remains for 1015 kala in each *Dhatu*. It takes 1 month for the formation of *Shukra/Artava* from *rasa Dhatus*. According to Acharya Sushruta after formation of *Ahara rasa* every *Dhatu* is formed serially on every 5th day. *Rasa Dhatus* is formed on 1st day of ingestion of food & on every 5th day, other new *Dhatu* is formed. In this way *Majja Dhatus* is formed on 25th day.^[20]

Types of Majja: According to Mahamahopadhyaya Kaviraj Gananath Sen, *Majja* is also of two kinds^[21],

- 1) *Peeta Majja*
- 2) *Rakta Majja*

Peeta Majja is found in the *NalakAsthi* (tubular), while the *Rakta Majja* is found in other Bones. *Majja* is the grosser form

and is not dissimilar to *Medas*. Because of specialization in their functions, *Medas* and *Majja* have treated separately. According to Sushruta small *Asthi* have *Meda* and *Sthula Asthi* specially have *Majja* in their cavity.^[22]

Majja Dhatus Guna (Properties of Bone Marrow): The marrow enhances strength, *Sukra* (semen), *Rasa Dhatus*, *Kapha*, *Medo-Dhatu* (fat) and *Majja* (marrow). It adds to the physical strength, especially of the bones and is useful for oleation. It is heavy and unctuous.^[23]

Measurement of Majja In the Body

(Quantity) - *Anjali pramana* of *Majja Dhatus* is one *Anjali*^[24] (160-170gms)

Panchbhautik Constitution of Majja Dhatus - There is predominance of *Jala Mahabhuta* in *Majja Dhatus*.^[25]

Majja Dhatus and Mastulunga (Brain): Indu teeka says it is *Medodhatu*, which turns into *Mastulunga* and it is *Medodhatu* again which gets turned into *Majjadhatu*. *Mastulunga* is a *sadyahpranahara marma*. *Mastulunga* is present inside the flat bones of skull. Astanga Sangraha describes *Mastulunga* as a *Majja Dhatus* and appearance of *Mastulunga* is like solid *ghee* (*Avilina Ghrta*).^[26]

Updhatus (Secondary Tissue) of Majja- According to Sharngadhar, hairs are *Updhatus* of *Majja Dhatus*.^[27]

Waste (Mala) Products of Majja Dhatus - *Sneha* (oily substance) excreted through eyes, faeces, and skin is a waste product of *Majja Dhatus*.^{[28][29][30]}

Majjavaha Srotas - Bones and joints are the sites of origin of channels carrying *Majja*.^[31]

1. *Majja Dhatus* resides in the long bones, *Poshaka Majja Dhatus* is obtained from *Asthi Dhatus*, and hence bones are roots of *Majjavaha Srotas*. *Asthi Dhatus* is very light and dry. The hollow part in *Asthi Dhatus* is the main site of *Vata Dosha*. Long bones have cavity (*Akasha*) inside them. Unctuous *Majja Dhatus* inside the long bones keeps the balance between *Asthi Dhatus* and *Vata Dosha*.

2. Joints are also root of *Majjavaha Srotas*. The sixth *Pittadharma Kala* is considered as *Majja Dhara Kala*.^[32]

FUNCTION OF MAJJA DHATU ^{[33] [34]} [35] [36]

1. Snehanam Karoti- *Majja Dhatus* is known as best for *Snehan* (oleation). So the special indications are given for *Majja-pan*. It oleates and nourishes body organs.

2. Balakrita- It is the main source of strength in body, especially for bones. Bones contain small pores due to the activity of *Akasha* and *Vayu Mahabhuta* and *Majja* fills the porous gap with fatty tissues and provides strength to the bones of the body and thus strengthens the whole body. In the absence of *Majja*, *Asthi Daurbalya*, *Shunayta*, *Laghuta* etc arises in the bones.

3. Shukra-Pushtim: Nourishment of *Shukra Dhatus* is the function of *Majja Dhatus*. *Poshaka Shukra Dhatus* is formed during the metabolism of *Majja Dhatus*.^[37]

4. Asthnam Puuranam Karoti: Bones contain small pores due to the activity of *Akasa* and *Vayu Mahabhuta* and *Majja* fills the porous gap with fatty tissue and provides strength to the bones of the body otherwise due to *Ruksha Guna* in bones, *Vata Dosha* increases and *Asthi Bhangurta* will occur.

FACTORS AFFECTING ASTHI-MAJJA DHATU:

(1) Prakriti- *Prakriti* plays a major role in determining the quality of *Dhatu* which is indicated by description of specific characteristics of persons possessing *Vata*, *Pitta* and *Kapha* dominant *Prakriti*. This indicates that persons with *Kapha* dominant *Prakriti* possess better quality of *Asthi Dhatus*. *Vata Prakriti* persons are *Alpa Sarira*, possess *AnavAsthita*, *Asthi Sandhi* (Movable), *Alpa* and *Parusha Kesha*, *Roma*, *Nakha*, *Dashana*.^[38] This represents inferior quality of *Asthi Dhatus*. So, *Majja Pusti* is also of inferior quality. Persons of short stature and less body weight have low bone mass. *Vata Prakriti* persons are lean and thin- *Alpa Sarira*.^[39]

(2) Age- Because of diminishing *Agni* in older age, all the *Dhatu* decrease in quantity and quality.^[40] Bone favours synthesis in youth and in old age favours resorption. Also peak bone mass is achieved at the age of 20 years and then bone loss begins which is accelerated in old age.

(3) Nutrients- *Asthi-Majja* is formed from *Ahara Rasa* in the process of formation of *Dhatu*. Hence quality and quantity of *Ahara Rasa* can interfere with quality and quantity of *Asthi-Majja Dhatus*. According to *Ashraya Ashrayi Sambandha* of *Asthi* and *Vayu*, *Vata Prakopaka Ahara* will cause *Kshaya* of *Asthi Dhatus*. *Asthi-Majja Dhatus Posaka Amsa Alpata* in *Ahara* also leads to poor formation of *Asthi* and *Majja Dhatus*. Calcium and vit-D (*Asthi Dhatus Posaka Amsa*) plays an important role in bone formation. Decreased lifetime calcium intake is a factor causing risk for developing osteoporosis

(4) Physical Activities- Exercises etc. illuminate *Dhatavagni*. Bone responds to mechanical stimuli. When placed under mechanical stress, bone tissue increases deposition of mineral salts.

(5) Bala- Overall body weight affect *Dhatu* metabolism. In strong persons rate of bone formation is more. Compared to men and women, men possess better strength, bone mass is more in men whereas bone loss is more in women. The living body can function normally only when its *Dosha*, *Dhatu* and *Mala* are in a state of equilibrium. These *Dosha*, *Dhatu* and *Mala* constitute the basis of the physiological and pathological doctrines of *Ayurveda*. *Dosha*, *Dhatu* and *Mala* are equally important for health. *Ayurveda* has proved to be effective in managing and preventing chronic ailments till date. Concepts of *Ayurveda* have been helpful in treating new diseases arising due to changing lifestyles and environment. This study was an attempt to understand the Disease in *Ayurvedic* concept and find an effective therapy in preventing the disease.

Characteristics of Majja Sarata Purusha: Individuals having the excellence of *Majja* or marrow are characterised by softness of organs, strength, unctuous complexion and voice and robust long and rounded joints. Such individuals are endowed with longevity, strength, learning, wealth, knowledge, progeny and honour.^[41] A man with a thin and sinewy body and who exhibits traits of excessive strength and possesses a deep resonant voice and who is successful in every walk of life, should be looked upon as one in whom the principle of marrow preponderates.

According to *Sushruta*, big eyes (*Maha-Netra*) are a differentiating symptom of *Majja Sarata*.^[42]

Causes for Vitiation of Majjavaha Srotas

- a) *Abhigata* (injury)
- b) *Utpesa* (crushing) of bone
- c) *Prapidanat* (internal injury)

d) *Ahar* (food) *Viruddha* and *Abhisyandi* (foods which are unhealthy, contraindicated and which cause moisture inside the body).^[43]

Cause of Majjakshaya : *Aharaja*, *Viharaja* and *Manasaja Nidanas* which cause aggravation of *Vata Dosha* are said to be responsible for *MajjaKshaya*. On the other hand, *Vata Prakopa* also takes place due to the *DhatuKshaya* in the *Parihani Kala* that is the *Vriddhavastha* can be described as *Kalaja Nidana* of the disease. *Vata Doshas* plays main role in the disease. Due to *Nidana Sevana* (*Vata Vardhaka Nidana* and *Kalaja Nidana* both), there is occurrence of *Vata Prakopa* leads to *Asthi-Majja Vaha Srotodushti*. Due to this *Asthi-Majja vaha Srotodushti* which is due to *Atipravarti*, *Sthanasamshraya* of *Dosha* occurs in the *Asthi-Majja* where *Kha-Vaigunya*, is already present and *Dosha Dushya Samurchhana* takes place in the *Asthi-Majja*, gives rise to a *Sthanika KaphaKshaya* and *Vata Vriddhi*. *Vatavriddhi* leads to *MajjaKshaya*.

Chief Symptoms: *Asthi Saushirya*, *Asthi Daurbalya*, *Asthi Laghuta*, *Asthi Nistoda*, *Pratitm Vata Roga*, *AlapShukrata*, *Bhrama*, *Timir Darshnam* etc. occur in *MajjaKshaya*. The symptoms of *Majja Kshaya* can be correlated in Modern Science with pain in joints, seeing dark in day light, extra hard root like formation in joints, vertigo, hollowness and lightness in bones and oligospermia etc. There is no exact clinical entity mentioned in classics for the above symptoms. *Asthi Saushirya*, *Asthi Daurbalani*, *Asthi Laghuni*, *Asthi Shirnta*, all these symptoms shows resemblance with osteoporosis. *Asthi Kshaya* is decrease in the bone tissue and *Asthi Saushirya* means 'porous bones'. *Hemadri* as commented on the word

‘Saushirya’ as “Sarandhratvam” which means ‘with pores’. These symptoms are explained in the context of *Majja Kshaya*.^[44] Osteoporosis means the decrease in the bone tissue. Osteoporosis is defined as a ‘systemic skeletal disease characterized by low bone mass and micro-architectural deterioration of bone tissue with a consequent increase in bone fragility and susceptibility to fracture.’^[45] Primary, i.e., involutional, osteoporosis is clearly the most frequent and also, clinically, the most important bone disease. Osteoporosis must therefore be viewed as the consequence of a specific imbalance of bone remodelling, which leads to net bone loss because formation of new bone by osteoblasts for several reasons does not match the extent of bone resorbed by osteoclast activity.

DISCUSSION: *Dhatu Nirmana* is a continuous process going on in body. The nourishment to all *Dhatus* is supplied through *Ahara Rasa* and preceding *Dhatu* of that particular *Dhatu*. For proper nourishment of *Majja Dhatus*, *Majja Poshaka Amsa* in *Ahara Rasa* is necessary. Other way of its nourishment is from *Asthi Dhatus* (preceding *Dhatu*). This signifies the importance of *Asthi Dhatvagni*. Imbalance in *Asthi Dhatvagni* leads to improper formation of *Sthayi Asthi Dhatus* from *Poshaka Asthi Dhatus*, and improper *Majja* formation. *Meda Dhatus* which resides between bones in the formation of *Asthi Dhatus* is known as *Majja Dhatus*. So, *Meda Dhatus* also plays an important role in nourishment of *Majja Dhatus*. *Majja Dhatus* resides in the *Asthi Dhatus*. The *Ashrayaashrayi* relationship of *Vata Dosha* and *Asthi Dhatus* forms a fundamental base to understand any pathological condition related to *Majja Dhatus*. Also the management of *Asthi-Majja* related diseases is unique because of

this relationship. *Majja* is *Apya Pradhan Dhatus*. Vitiated *Vata* decreases *Majja*, means *Kshaya* of *Majja Dhatus*. *Vata Prakopa* and *Kshaya* of all *Dhatus* are a natural phenomena occurring during *Jarawastha* in men and women and also *Vata Prakopa* occurs by two processes either *Santarpan Janya* or *Aptarpan Janya*. *Aptarpan Janya* *Vata Prakopa* is due to taking *Ahara* and *Vihara* which vitiate *Vata* or due to *Jara Janya* and *Santarpan Janya* is due to creating *Margavrodha* causing vitiation of *Vata*. *Vata Dosha* is very much potent for the occurrence of *Asthi-Majja* related diseases because of unique relationship of *Vata* and *Asthi*. *Gambhira Dhatus*, *Svabhavabalaprvritta Vyadhi* and *Bhedawastha* make *Majjakshaya Asadhyam*. This disease can become *Yapya* by intervention at proper level, followed with *Pathyapathaya*. For minimizing *Majja Kshaya* and preventing, ideal period of intervention can be the beginning of age of *Hani* (approx. 40 years)^[46] i.e. last phase of *Madhyamawastha* when *Kshaya* of all *Dhatus* begins. As the Nourishment to all *Dhatus* through *Ahara Rasa* is minimal in old age and it just supports life.^[47] In this stage *Pitta Dosha* is still dominant and *Vata* is yet to increase its activity and to overpower *Pitta* and *Kapha*.

CONCLUSION: Very little matter is available in our classics regarding *Majja Dhatus*. The nourishment to all *Dhatus* is supplied through *Ahara Rasa*. Imbalance in *Asthi Dhatvagni* leads to improper formation of *Sthayi Asthi Dhatus* from *Poshaka Asthi Dhatus*, and improper *Majja* formation. The management of *Asthi-Majja* related diseases is unique because of the *Ashrayaashrayi* relationship of *Vata Dosha* and *Asthi Dhatus* which is fundamental base to understand any

pathological condition related to *Majja Dhatus*. *Vata Prakopa* and *Kshaya* of all *Dhatu* are a natural phenomena occurring during *Jarawastha*. For minimizing *Majja Kshaya* and preventing, ideal period of intervention can be the beginning of age of *Hani* (40 years) i.e. last phase of *Madhyamawastha* when *Kshaya* of all *Dhatu* begins. As the Nourishment to all *Dhatus* through *Ahara Rasa* is minimal in old age and it just supports life.

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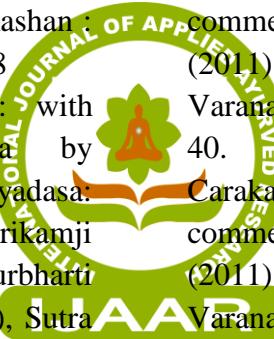
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