

## A CRITICAL REVIEW OF LITERATURE ON MAMSA DHATU WITH IT'S CLINICAL ANATOMY AND PHYSIOLOGY

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Article Received on 16/07/2025

Article Revised on 06/08/2025

Article Accepted on 27/08/2025

### INTRODUCTION

Mamsa Dhatu is very essential Dhatu in body responsible for manifestation of proper nourishment signs and well and proportionate development of organs of body. Mamsa Dhatu is whole and sole responsible for the strength, stamina and power of body. Also well developed musculature is necessary for fulfilment and performance of any action inside and by the organs of body.

Mamsa Dhatu can be compared to Muscular tissue in modern science but Ayurvedic texts reveal that Mamsa Dhatu has much broader concept than Muscular tissue. It maintains the metabolism of Mamsa Dhatu in body by Mamsadhara Kala which is also concerned with the same. Irrespective of Panchabhautik origin, Mamsa Dhatu has Prithvi Mahabhuta in its dominance, Vasa (Omentum) and Tvacha (skin and its layers) as its Updhatu (Accessory tissue) and Kha Mala as its excretory product. The well build musculature of a person indicates good and proper nourishment of the individual.

The most unique feature of ayurvedic concept of tissue formation is that each human tissue is formed from the previous tissue in ascending order of complexity. Thus when food is ingested it is digested. Until in the small intestine, it becomes the liquid chyme-like material known in Ayurveda as aha rasa, or food essence. Each dhatu has its own agni, i.e. dhatvagni. Our food intake is converted into life sap or rasa by rasadhatvagni and rasa dhatu is produced. Likewise, agni of rakta dhatu prepares rakta dhatu out of rasa dhatu and so on. Every dhatu is precursor of the next dhatu. Rasa is transformed into rakta, rakta prepares mamsa, mamsa is further transformed into meda, meda is used to make asthi, asthi forms majja and majja produces the ultimate dhatu i.e. sukra.

Upadhatu are not meant for transformation, they are produced as essence part of stable dhatu.

According to its vyutpatti and niruktti mamsa is said in the meaning of the pisitam, tarsam, palalam, kravyam,

amisham, palam, asrajam, jangalam and kiram. Mamsa is one of the seven dhatu of the human body covering sira, snayu, asthi and samdhi. Snayu and tvak are together said to be principle site of formation and control of mamsa dhatu in body. However, it is present throughout the body along with osseous tissue the next dhatu viz., asthi. Along with this principle site it manages the components of mamsa dhatu present all over the body through its micro circulating channels namely raktavahi dhamani. According to Sabda kalpa druma mamsa appears in the eight month's of intrauterine life, but bhagavat grantha clined that it appear in the 4th month. According to modern science, the embryonic period occurs from the third to the eighth weeks of development and is the time when each of the three germ layers, ectoderm, mesoderm and endoderm, gives rise to a number of specific tissues and organs. All muscles of the body are developed from mesoderm, except the arrector pilorum, muscles of the iris and the myo-epithelial cells of salivary, sweat and lacrimal glands which are derived from ectoderm. This process is known as myogenesis. By approximately the 17th day paraxial mesoderm is formed which becomes segmented to form a number of somites that lie on the either side of neural tube. The somite is divisible into three parts. The ventromedial part is called the sclerotome which give rise to the vertebral column and ribs. The lateral part is called the dermatome which gives rise to the dermis of the skin and to subcutaneous tissue. The intermediate part is myotome. It gives rise to striated muscle.

## MATERIALS AND METHOD

### Conceptual review

**Mamṣa dhatu utpatti:-**According to all acarya mamṣa dhatu is produced from rakta dhatu.

**Mechanism of mamṣa dhatu utpatti:-**The rakta accompanied by vayu, jala, teja and ūṣmaṇa attains compactness and gets transformed into mamṣa.

According to Bhavaprakāśa śonita cooked by its own agni and solidified by vayu is to be understood as mamṣa.

### Mamṣa dhatu karma

- Mamṣa furnishes nourishment to the body and also to meda.
- Mamṣa covers the body.

### Mamṣa dhatu – kṣaya, vṛddhi lakṣaṇa

The words kṣaya and vṛddhi, denote the diminution and increase respectively. The vṛddhi means more than normal while the kṣaya means the opposite i.e. less than the normal. Mamṣa kṣaya shall lead to the wasting of the mamṣa especially in the sphik, gaṇḍa, oṣṭha, upastha, uru, vakṣa, kakṣa, piṇḍika, udara and grīva; dryness of the body, debility, pricking pain and the dhamanī saithilya. Charaka has highlighted the wasting, particularly in the sphik, grīva and udar region, samdhi sphuṭana and the akṣa glani.

The vṛddhi in the mamṣa dhatu leads to the increase in the musculature of the sphik, gaṇḍa, oṣṭha, upastha, uru, bahu, jaṅgha and heaviness in the body etc.

Vagbhata again specifies the diseases occurring due to the mamṣa dhatu viz. arbuda, granthi, gaṇḍa, udar vṛddhi, adhimamṣa of the kaṇṭha, et al.

**Mamṣa dhatu pradoṣaja vikara:-**When the dhatu are extremely vitiated by the doṣa then it is called as "dhatu pradoṣaja vikara"

"Dālhaṇa" in his commentary mentioned the need behind explaining the dhatu pradoṣaja vikara separately.

- 1) Cikitsa viśeṣa vijñanārtha
- 2) Sukhasadhyatvadi karma bodharthaṃ

Acharya have mentioned adhimamṣa, arbuda, arśa, adhijihva, upajihva, upakuśa, galaśuṇḍika, alajī, mamṣa samghata, oṣṭha prakopa, galagaṇḍa, gaṇḍamala, kīla, galaśaluka, putimamṣa and upajihvika in mamṣa pradoṣaja vikara.

**Mamṣa vaha srotas:-**Mamṣa vaha srotas are the channels through which the mamṣa dhatu circulates. Snayu, tvak and rakta vaha dhamanī are the mulasthana of mamṣa vaha srotas.

### Causes of vitiation of mamṣa vaha srotas

Mamṣa srotamsi get vitiated by the intake of deliquescent, gross and heavy food and by sleeping immediately after meal.

### Characters of vitiated mamṣa vaha srotas

When channels are vitiated, it produces śvayathu, mamṣa-śoṣa, sira-granthi, or maraṇam.

### Characters of mamṣa sara puruṣa

Sara is basically term indicating the excellent features of any particular dhatu which are manifested throughout the body physical as well as psychological level. Individuals having the excellence of the mamṣa are characterized by stability, heaviness, beautiful appearance and plumpness of samkha, lalaṭa, kṛkaṭika, akṣi, gaṇḍa, hanu, grīva, skandha, udar, kakṣa, vakṣa and joints of paṇi-pada being covered with mamṣa. Such individuals are endowed with forgiveness, patience, non greediness, wealth, knowledge, happiness, simplicity, health, strength and longevity.

Who has well grown body, bones and bony joints concealed and well developed mamṣa as of mamṣa sara puruṣa has excellence of mamṣa.

### Mamṣa marma

Marma are vital points that when injured may be fatal or produce pain or deformity that is equal to death. Based on the predominance of structures involved in its formation, marma are classified as mamṣa, sira, snayu, asthi and samdhi marma.

Mamṣa marma are eleven in number, viz. tala hṛdaya (4), indrabasti (4), guda (1) and stanarohita (2).

### Clinical anatomy

Shalya tantra deals the extraction of salya and application of kṣara and agni. A thorough knowledge of body and fatal spots are essential for a surgeon. Hence it is said that knowledge of fatal spots are half of the knowledge of salya tantra.

- 1) Talahṛdaya Talahṛdaya is situated at the middle of sole/palm along a straight line drawn from the middle finger. An injury to this marma results in pain and lead to death.
- 2) Indrabasti The indrabasti marma is situated in the middle of jaṅgha/ prabahu. Injury may cause excessive bleeding and lead to death.
- 3) Guda Guda is the end segment of sthulantra and serves as exit door for vata and mala. Injury to this marma leads to death.
- 4) Stanarohita The stanarohita marma are situated two aṅgula above the nipple. An injury causes effusion of blood in the pleural cavity, cough and dyspnoea and lead to death.

### Mamṣa dhatu nirmaṇa and poṣaṇa

All the body structures are composed of sapta dhatu and because they maintain the body they are called dhatu. There are basically two aspects of these dhatu: dharaṇa and poṣaṇa. Dharaṇa denotes that these dhatu are said to make the structural architecture of the body. These sapta dhatu are being continuously formed, destroyed and reformed with necessary materials derived from ahara

and thus maintaining a state of equilibrium. Ahara rasa metamorphosed by māṃsavaha srotasagni get transformed into three parts:

- 1) **Sthula aṃsa-** is used for the maintenance and growth of the māṃsa dhatu.
- 2) **Sukṣma aṃsa-** meant for the genesis of upadhatu and the next dhatu i.e. meda.
- 3) **Mala aṃsa-** which is meant for the genesis of waste products of that dhatu i.e. kha-mala.

## DISCUSSION

Acarya Caraka while describing the nutrition of body elements defines a separate group of elements, but has not entitled them. Further while analyzing this unit commentator Cakrapāṇi entitled them as upadhatu. These seven components are stanya, rakta, kaṇḍara, sira, vasa, tvak and snayu. Cakrapāṇi has also quoted the opinion of acarya Bhoja in this regard. Bhoja has mentioned only five components of this unit, which are sira, snayu, raja, stanya and tvak. Acarya Susruta has not mentioned these components collectively and also not used the term upadhatu. In sutrasthana while explaining the nourishment of dhatu in successive manner acarya Susruta has used the term "prajayate". Elucidating this term revered Ḍalhaṇa shed a light on upadhatu. Here commentator has enlisted the same components as stated by acarya Caraka and further added saṃdhi to the list. He has nomenclated this unit as upadhatu. Revered oracle of next era Aṣṭāṅga Saṃgrahakara has not used the term upadhatu. While explaining the dhatu metabolism revered acarya has mentioned the components as a "prasadaja part" but not nomenclated them as upadhatu. Revered acarya adds saṃdhi in these prasadaja entities for the first time, which is accepted by Ḍalhaṇa as mentioned previously. In this context they have not mentioned raja and stanya. Acarya has considered these two entities separately while elucidating the "anjali pramaṇa" of body elements.

### Upadhatu of māṃsa

Acarya describes that formation of vasa and the tvak as the upadhatu of māṃsa.

**Vasa upadhatu:-** Vasa is the unctuous portion of suddha māṃsa.

**Vyutpatti and nirukti-** Vasa is derived from "vas" dhatu, which means to live or to cover and it is derived from māṃsa dhatu.

### Sanskrit-English dictionary (Monier Williams)

Shining, White, the serum or marrow of the flesh (considered by some as distinct from that of the bones, by others as the same), marrow, fat, grease, lard, suet, melted fat, any fatty or oily substance. (p. no. 930)

### Utpatti

Vasa is derived from essence of māṃsa dhatu. It is nothing but the extract of māṃsa dhatu.

There are three types of sneha located at various places in the body. They are majja, meda and vasa.

1. **Majja-**It is the sixth dhatu of the body. It is produced by asthi dhatu. The vayu mahabhuta creates hollow spaces in the long bones and these spaces are filled up with snigdhamśa of the meda which is called as majja dhatu.
2. **Meda-**Meda is the fourth dhatu of the body. Māṃsa after being cooked by its own agni becomes meda, it is atiguru, snigdha, bestows strength and highly nourishing/stoutening the body.
3. **Vasa-**Bhavaprakasa opines that sneha of meda dhatu is also termed as vasa. Pramaṇa of vasa is three anjali in normal person.

### Functions of vasa

1. Snehana- Vasa is a lubricant for the body tissues.
2. Varṇya- It adds complexion.
3. Brhāṇa-It nourishes other tissue of the body.
4. Balya- It strengthens the tissues.
5. It alleviates the vata doṣa.

### Tvak upadhatu

#### Vyutpatti and nirukti

**Utpatti:-** When the fertilization takes place, the fetus develops very rapidly through the process of transformation. Each and every molecule is involved in this process. The formation of seven layers of the tvak exhibit in the similar manner as the different layer of the skin on the surface of boiled milk occurs.

Tvak is mentioned as upadhatu of māṃsa by all the seers except Saṅgadhara.

**Layers of tvak:-** Great seer Caraka has defined the six layers of tvak as follows-

- 1) Udakadhara – The external layer of the tvak is known as udakadhara. This layer holds up the udaka and provide substratum for its functioning.
- 2) Aśṛgdhara The second layer of the tvak is known as aśṛgdhara. It provide substratum for rakta dhatu.
- 3) Third layer - It is the site for the manifestation of sidhma and kilasa. This layer of the tvak is the place where the vitiated doṣa give rise to kilasa and sidhma.
- 4) Fourth layer - The fourth layer is the site for the manifestation of dadru and kuṣṭha.
- 5) Fifth layer - It is the site for the manifestation of alajī and vidradhi.
- 6) Sixth layer - This is the innermost layer of the tvak. The excision of which causes trembling, person may enter into darkness like a blind man. Arumṣika, which is having thick root manifests at this layer. These are extremely difficult for treatment.

These are the six layers of the tvak, which covers the entire human body. Acharya Susruta in the context of 'garbhavyakaraṇa sarīra' illustrates the seven layers of tvak along with their measurements.

- 1) Avabhasini - The first outer layer of the tvak is called avabhasini. It reflects all the colors. At the

level of this layer five shades come into the light. The thickness of this layer is described as 1/18th of vrihi. This layer is described as the seat of sidhma and padmakantaka.

- 2) Lohita - The second layer is known as lohita. Its thickness is described as 1/16th of the thickness of the vrihi. It is the seat of tilakalaka, nyaccha and vyamga.
- 3) Sveta - The third layer of the tvak measures 1/12th of the thickness of vrihi. It is the site of carmadala, ajagalli and maṣaka.
- 4) Tamra - Fourth layer of the tvak named tamra measures 1/8th of the thickness of vrihi. Different types of kilasa and kuṣṭha manifest in this layer.
- 5) Vedini - This fifth layer of the tvak measures 1/5th of the thickness of vrihi. It is described as the seat of kuṣṭha and visarpa.
- 6) Rohiṇi - The sixth layer is labeled as rohiṇi. It is equal to the thickness of vrihi. The granthi, apaci, arbuda, slipada and galagaṇḍa types of diseases take place in this layer.
- 7) Maṃsadhara - The seventh layer named as maṃsadhara has double the thickness of vrihi and it is a seat of bhagandara, vr̥ṇa and arsa.

These measurements as mentioned above are specially found in fleshy parts of the body and not in the forehead or smaller parts like fingers.

## CONCLUSION

Mamsa Dhatu is one of the significant of all seven Dhatus in body. Mamsa Dhatu viz. Muscle tissue in terms of modern sciences also states the importance of cellular respiration occurring especially in muscle tissue. The most of amount of glucose in the form of glycogen is stored in muscle tissue which is essential for muscular activities and used later when it is needed. Well developed musculature shows good nourishment status of an individual. Thus it provides a significant strength and immunity to any individual and also provides the resistance against any diseased ailment affecting body.

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