

CRITICAL ANALYSIS OF MAJJA DHATU IN THE CONTEXT OF AYURVEDA & MODERN SCIENCEVd. Apashchim Baranth^{1*} and Vd. Shubhangi Apashchim Baranth²¹Associate Professor, Department of Kriyasharir Sanjivani Ayurveda College & Research Centre Kopargaon Maharashtra India.²Associate Professor, Department of Swasthavritta Surajmal Medical College of Ayurveda Kichha (Udham Singh Nagar) Uttarakhand India.***Corresponding Author: Vd. Apashchim Baranth**

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ABSTRACT

Ayurveda the holistic science suggest the unique principals of Tridosha, Dhātu and Mala for maintenance of the healthy body. Dhātu nourishes the body, supply nutrients to other vital tissues through Srotas, supports the body and keeps the body healthy. During formation of Asthi Dhātu, Vata creates spaces in bones. These spaces are filled with nourishing tissues of Medas. This is known as Majja or Bone marrow. Majja dhātu is formed as poshak (unstable) Asthi dhātu flows through the majja vaha srotas in to the majja dhara kala and is digested by the majjaagni. In addition to the formation of the marrow, the sclera and the sclerotic fluids of the eye are formed. These are the updhātu's of the production of majja dhātu. The waste products (malas) of this metabolic process are eye secretions. This concept of Srotas will further help in the critical interpreting of physiological aspects of human body. It is said that the entire functioning of our body is dependent on Srotas as they carry Sukshma and Sthula Bhava and fulfil the wear and tear of the body. Asthipuranam is done by Majja Dhātu. That's why Majja Kshaya takes place due to disturbed equilibrium of Tridosha then Asthi Dhātu is most affected. And Asthi Saushirya, Asthi Daurbalya, Asthi Laghuta, Asthi Nistoda, Pratatm Vata Roga, Alapshukrata, Bhrama, Timir Darshnam etc. are developed. The symptoms of Majja Kshaya can be correlated in Modern Science with osteoporosis, vertigo, hollowness in bones and oligospermia etc. The management of Asthi-Majja related diseases is irreplaceable because of the Ashrayaashrayi relationship of Vata Dosha and Asthi Dhātu which is fundamental base to understand any pathological condition related to Majja Dhātu. Thus this review study gives broad glimpse of knowledge about every aspect of Majja Dhātu and its vitiation effects described in Classical texts.

KEYWORDS: Majja Utpatti, Majja, Majjavaha Srotas, Osteoporosis.**INTRODUCTION**

Ayurveda the holistic science suggest the unique principals of Tridosha, Dhātu and Mala for maintenance of the healthy body. In Samyavastha the Tridosha regulate all physiological functions of the body. Only Vata is capable of movement and its force keeps the other two Dosha, Dhātu and Mala in motion. Dhātu nourishes the body, supply nutrients to other vital tissue through srotasaa, supports the body and keeps the body healthy. According to Acharya Susruta & Vagbhatta there are seven Dhātu's in body- Rasa (lymph), Rakta (blood), Maamsa (muscles), Medas (fat or adipose tissues), Asthi (bone), Majja (bone marrow), Sukra (semen, sex hormone). Majja Dhātu is the second last Dhātu formed as – unstable (poshaka) Asthi Dhātu movements through the MajjaVaha Srotas into the Majjas Dhara Kala and is digested by the Majjaagni. During formation of Asthi Dhātu or Bone, Vata creates

spaces in bones. In Ayurvedic classics, three laws have been explained for the formation, nourishment and replenishment of dhatus as dhātu poshannayaya. Ingested food material (Ahara) being digested by jathragni makes the final product known as ahara Rasa and kitta (waste product). The functions of ahara rasa tarpan (nourishment), vardhan (to increase), dharan (maintenance) and yapan (to give support in the old age). This ahara rasa undergo transformation with the help of Bhutagni and dhatvagni to nourish subsequent dhatus. They just undergo continuous nourishment and replenishment. Dhatvagni acts upon ahara rasa, sthaya dhātu and poshak dhātu amsa (precursor for next dhātu), updhātu and mala (the sthula entity) are formed and very sukshama entity mana, and ojas are nourished. Sthaya Posya dhātu (permanent) forms the structural architecture of body. Asthaya Posak dhātu (nutrient part) comprise of nutrients and forms the precursors of subsequent posya dhātu. Dhātu Poshaka Amsha

nourishes one after another from Rasa dhatu to Sukra Dhatu. In this way the seven kinds of Poshak Ansha (Asthai Dhatu) is transported to the respective Poshaya (Sthayi) Dhatu through their respective Srotas (channels) specific to each Sthayi Dhatu. Majja dhatu is the sixth dhatu to be nourished in sequence of dhatu poshan.

Review of majja

Derivation of Majja

word Majja is word originated Sanskrit word from 'Majjatoti Majja'. 'Majj + Ach + TAP' form the word Majja. The term Majja can be looked in different angles as it pervades all over the body.

Etymology of Majja word:- Majja Dhatu is considered to be the Sara of Asthi just like the Sara found inside the tree according to Vachaspathyam and Shabda kalpadruma declare Majja is the unctuous part found inside Asthi (bone).

Synonyms of Majja Dhatu:- Asthi Sara, bone marrow, Some other similar words can help to understand the meaning of Majja Word. Majja Ras = Sukra Majjajah = Majjaya Jayate Iti = Bhumij Gugguluh. In Raj Nighantu Majjasaram, (Majjayam Saro Yasya) Jatiphalam. Majja means which is in boney cavity.^[1] Majja is one among four type of sneha (ghrita, taila, vasa, Majja) which provide strength. Mastulunga is also Majja Dhatu^[2] with its appearancelike Avilina (Uncondensed) Ghrita). Chakrapani also described "mastishkam sirahstho majja".^[3] There is predominancy of Jala Mahabhuta.^[4] MajjaDhatu performs physical strength, especially of the bones and is useful for oleation. It is heavy and unctuous.^[5] Special function of Majja is Purana (filling of Bones).

UpDhatu (Secondary Tissue) of Majja

According to Sharngadhar, keshis the Updhatu of Majja Dhatu^[6] but according to others kesha is updhatu of asthi. Two different opinion for considering kesha as Updhatu (biproduct) to different Dhatus may be because kesha is the intermediate biproduct of asthi and Majja.

Mala (Waste) of MajjaDhatu

Mala (Waste) of Majja Dhatu are Sneha (oily substance) excreted through eyes, and skin.^[7] Majja Pradoshaj Vikara are Pain in Joint, vertigo, syncope etc.

Kriyasharir of Majja Dhatu

1. Snehanam Karma Majja Dhatu is known as best for Snehan (oleation). So, the special indications are given for Majjapan. 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 strengthen the whole body. In the absence of Majja, Asthi Daurbalya, Shunayta, Laghuta etc arises in the bones.

3. Shukra-Poshana Nourishment of Shukra Dhatu is the function of Majja Dhatu. Poshaka Shukra Dhatu is formed during the metabolism of Majja Dhatu.

4. Asthi poorana 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 Bhanganurta will occur.

Characteristics of Majja Sara Purusha: Individuals having the dominancy of Majja 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 honor.^[8] According to Sushruta, big eyes (Maha-Netra) are a differentiating symptom of Majja Sarata.^[9] Chief Symptoms: Asthi Saushirya, Asthi Daurbalya, Asthi Laghuta, Asthi Nistoda, Pratatm Vata Roga, AlapShukrata, Bhrama, Timir Darshnam etc. occur in MajjaKshaya. Lipid and the nervous system Lipids are classified into three groups (i) simple or homolipids (ii) Complex or heterolipids and (iii) derived lipids. On further division, Simple lipids are triglycerides and waxes, Heterolipids are glycolipids or glycosphingolipids, proteolipids, and phospholipids. The nervous system is the organ with the second largest concentration of lipids. Nervous tissues contain about 50 to 60% of their dry weight as lipids, and approximately 35 to 40% of these lipids are polyunsaturated fatty acids (PUFAs) rich phospholipids. The four major classes of glycosphingolipids are the cerebrosides, sulfatides, globosides and gangliosides. Galactocerebrosides are found predominantly in neuronal cell membranes. Gangliosides that is also more abundant in the nervous system. Study had been done suggesting that GalNAC gene affects gangliosides decreased myelination, neural degeneration and synaptic remodeling. As elements of the nervous system, ocular tissues such as the optic nerve and the neural retina display similar characteristics. Phospholipids represent about two-thirds of total lipids in these structures and are characterized by species rich in PUFAs. The ratio of different PUFAs influences neurotransmission processes for normal brain function. This ratio can be affected by dietary intake. This shows linkage between majja dhatu with its mala (akshi vit)

Factors Affecting Asthimajja 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 Dhatu. Vata Prakriti persons are Alpa Sarira, possess AnavAsthita, Asthi Sandhi (Movable), Alpa and Parusha Kesha, Roma, Nakha, Dashana. This represents inferior quality of Asthi Dhatu. 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.

2. 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 AsthiMajja Dhatu. According to Ashraya Ashrayi Sambandha of Asthi and Vayu, Vata Prakopaka Ahara will cause Kshaya of Asthi Dhatu. Asthi-Majja Dhatu Posaka Amsa Alpata in Ahara also leads to poor formation of Asthi and Majja Dhatu. Calcium and vit-D (Asthi Dhatu Posaka Amsa) plays an important role in bone formation. Decreased lifetime calcium intake is a factor causing risk for developing osteoporosis.

3. Physical Activities

Exercises etc. illuminate Dhatavagni. Bone responds to mechanical stimuli. When placed under mechanical stress, bone tissue increases deposition of mineral salts.

4. 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.

4. Age

Because of diminishing Agni in older age, all the Dhatu decrease in quantity and quality. 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.

Majja Vriddhi lakshana (Symptoms of increased majja dhatu)

1. Anga gourava – feeling of heaviness of body.
2. Netra gaurava – feeling of heaviness in eyes.
3. Parwa stoulya – clubbing of fingers.

Majja Kshaya Lakshana (Symptoms of decreased majja dhatu)

1. Asthi sousheerya (osteoporosis)
2. Bhrama (vertigo)
3. Timira darshana (blurring of vision)

Majja Pradoshaj Vikar – Pain in Joint, vertigo, syncope etc. are the Majja Pradoshaj Vikara.

Characteristics of person with Majjasara: Eye-Brows and Eye lashes are black and smooth♣ People with ideal

skin have soft, thin, smooth and♣ lustrous skin. They are intelligent and learned.♣ They have soft, thin, scanty, oily, dark black and♣ deep rooted hairs are present. Mouth, Lips, Palate and tongue are oily.♣ They are intelligent and learned.♣ Mouth, Lips, Palate and tongue are unctuous and oily.♣ They enjoy their long, healthy and happy life 9♣.

Majjavaha Srotas (channels of Majja) – Concept of Majjavaha Srotas has been laid down by Charaka, where as Susrutha does not have the opinion of the existence of Majjavaha Srotas. He told Majja is present in Shula Asthi and Sarakta Meda is present in Anuvasthi and Udara. Majja is present all over the body but specifically it is getting circulated throughout the body in its Srotas. Mula (roots) of Majjavaha Srotas is told to be Asthi and Sandhi.

CONCLUSION

It is said that the entire functioning of our body is dependent on Srotas as they carry Sukshma and Sthula Bhava and fulfil the wear and tear of the body. Asthipuranam is done by Majja Dhatu. That's why Majja Kshaya takes place due to disturbed equilibrium of Tridosha then Asthi Dhatu is most affected. And Asthi Saushirya, Asthi Daurbalya, Asthi Laghuta, Asthi Nistoda, Pratam Vata Roga, Alapshukrata, Bhrama, Timir Darshnam etc. are developed. The symptoms of Majja Kshaya can be correlated in Modern Science with osteoporosis, vertigo, hollowness in bones and oligospermia etc. The management of Asthi-Majja related diseases is irreplaceable because of the Ashrayaashrayi 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 broad glimpse of knowledge about every aspect of Majja Dhatu and its vitiation effects described in Classical texts.

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