

ROLE OF AGNI AND MEDA DHATVAGNI IN DISEASE MANIFESTATION OF MEDA APACHAYA JANYA VYADHI W.S.R. TO NON-ALCOHOLIC FATTY LIVER DISEASE: AN AYURVEDA PERSPECTIVE

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ABSTRACT

The liver is a vital metabolic organ involved in several physiological activities, including bile formation, lipid and carbohydrate metabolism, protein synthesis, biotransformation, storage, and elimination of metabolic products. In Ayurveda, the maintenance of normal physiological functions is closely associated with the proper functioning of *Agni*, the principle responsible for digestion and transformation. When *Agni* becomes impaired, particularly in the form of *Mandagni*, the normal process of digestion and metabolic transformation may be disturbed. Ayurveda considers impairment of *Agni* an important factor in disease development and associates defective digestion with the formation of *Ama*, which broadly represents improperly processed or incompletely transformed material. The concept of *Dhatvagni* extends the principle of metabolism to the tissue level. Among the seven *Dhatvagnis*, *Medodhatvagni* is concerned with the metabolism and transformation of *Meda Dhatu*. Disturbance in this process may result in abnormal *Meda* accumulation and impaired tissue metabolism. These Ayurveda concepts provide a theoretical framework for understanding disorders characterised by excessive fat accumulation. In this topic, try to explore the possible conceptual relationship between *Agni*, *Dhatvagni*, *Meda Dhatu*, and *Ama*.

KEYWORDS: *Agni*, *Mandagni*, *Dhatvagni*, *Medodhatvagni*, *Meda Dhatu*, *Ama*, Liver.

1. INTRODUCTION

The liver plays a central role in maintaining metabolic homeostasis. It is involved in bile production, regulation of lipid and carbohydrate metabolism, synthesis of plasma proteins, storage of nutrients, biotransformation of endogenous and exogenous substances, and elimination of metabolic products. Because of its extensive involvement in metabolism,

disturbances in hepatic metabolic processes can have consequences beyond the liver and may contribute to systemic metabolic disease. The liver is also a major site of lipid uptake, synthesis, oxidation, lipoprotein formation, and lipid export.

Ayurveda approaches health through the coordinated functioning of *Dosha*, *Dhatu*, *Mala*, *Agni*, and other physiological factors. Among these, *Agni* occupies an important position because digestion and subsequent metabolic transformation are considered essential for the maintenance and nourishment of the body. Classical Ayurveda descriptions place *Agni* at the centre of digestion, transformation, and maintenance of health.

The Ayurveda understanding of *Agni* is broader than digestion in the restricted gastrointestinal sense. It includes the processes through which ingested material is transformed, utilised, and made suitable for further tissue nourishment. Therefore, disturbances of *Agni* have implications not only for digestion but also for tissue metabolism.^[1]

This review examines the possible role of *Agni* and *Meda Dhatu* in abnormal lipid accumulation, particularly hepatic steatosis. It also discusses these Ayurveda concepts alongside contemporary knowledge of lipid metabolism without assuming that Ayurveda terminology corresponds directly to individual biochemical molecules or pathways.

Fatty liver is a metabolic disorder characterized by excessive accumulation of lipids, predominantly triglycerides, within hepatocytes. It is increasingly recognized as a major cause of chronic liver disease and is strongly associated with metabolic abnormalities such as obesity, insulin resistance, diabetes mellitus, and dyslipidemia.^[2]

2. MATERIALS AND METHODS

The present article is a conceptual review based on classical Ayurveda literature. Classical Ayurveda concepts related to *Agni*, *Jatharagni*, *Dhatvagni*, *Medodhatvagni*, *Meda Dhatu*, *Ama*, *Meda Dushti*, and *Medovaha Srotas* were reviewed from major Ayurveda *Samhitas* and relevant secondary literature.

In Modern science, hepatic lipid metabolism, hepatic steatosis, metabolic dysfunction-associated steatotic liver disease (MASLD), and mechanisms of hepatic fat accumulation were reviewed from standard biomedical literature and current clinical guidance.

3. RESULTS / OBSERVATIONS

3.1 Ayurveda Concept of *Agni*

In Ayurveda physiology, *Agni* is responsible for the transformation of food and other substrates within the body. Normal *Agni* allows appropriate digestion and utilisation of nutrients, thereby supporting the nourishment of *Dhatus* and preservation of physiological equilibrium.^[3]

Ayurveda describes different states of *Agni*, among which *Samagni* represents balanced digestive function. Disturbances may manifest as *Mandagni*, *Tikshnagni*, or *Vishamagni*, depending upon the nature of the derangement.^[4]

Of particular relevance to metabolic disorders is *Mandagni*, in which the digestive and transformative processes are considered insufficient. When food is not properly processed, the subsequent stages of metabolism and tissue nourishment may also become disturbed.

The classical statement ‘रोगाः सर्वेऽपि मन्देऽग्नौ’^[5] emphasises the importance attributed to impaired *Agni* in *Ayurveda* disease theory. Although this statement should be understood within its classical context, it illustrates the importance given to metabolic integrity in *Ayurveda*.

3.2 Dhatvagni^[6]

Ayurveda does not restrict the concept of *Agni* to gastrointestinal digestion. It further describes *Dhatvagni*, representing the transformative activity associated with individual *Dhatu*s.

According to the classical framework, nutrients derived from digestion undergo successive transformation and contribute to the nourishment of the seven *Dhatu*s. Each *Dhatu* possesses its own metabolic component, known as *Dhatvagni*, which participates in the appropriate utilisation and transformation of the nutritive material reaching that tissue.

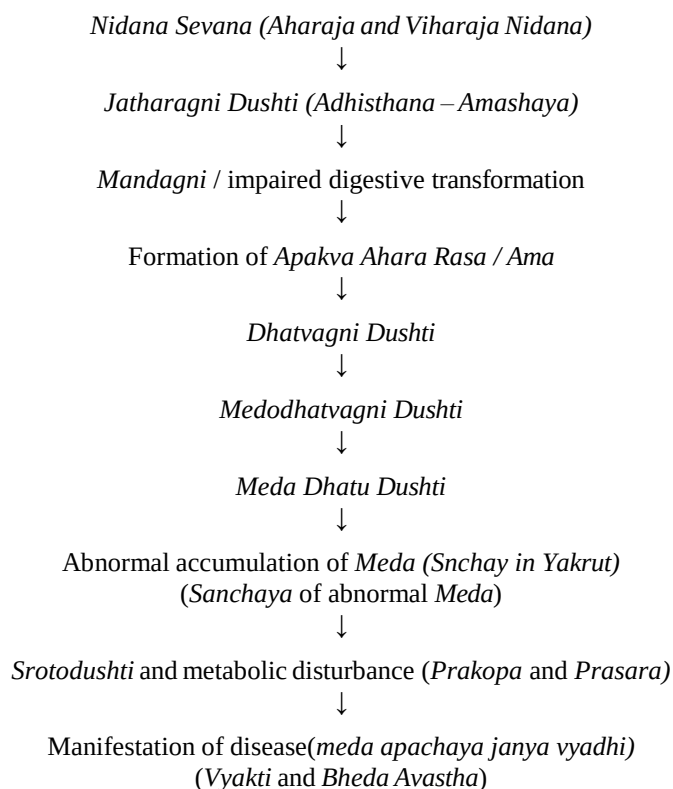
Medodhatvagni is therefore considered the metabolic principle associated with *Meda Dhatu*. Proper functioning of *Medodhatvagni* supports the appropriate formation, utilisation, and maintenance of *Meda*.

If the overall metabolic process becomes disturbed, *Medodhatvagni* may also be affected. From the *Ayurveda* viewpoint, such dysfunction may contribute to abnormal accumulation or distribution of *Meda* and may participate in the development of disorders associated with excessive adiposity.^[7]

3.3 Ayurveda Interpretation of the Pathogenesis

From an *Ayurveda* perspective, the development of metabolic disturbances can theoretically be understood as a progressive alteration in digestion, metabolism, and tissue homeostasis.

A conceptual model can be represented as:



This sequence provides a theoretical Ayurveda explanation for how abnormalities beginning with impaired digestion and metabolism may ultimately influence *Meda Dhatu*.

It is important to recognise that this model represents an Ayurveda pathophysiological interpretation rather than a demonstrated molecular mechanism.^[8]

3.4 Contemporary Clinical Correlation

Hepatic steatosis is increasingly recognised as an important component of metabolic disease. In MASLD, accumulation of fat in hepatocytes occurs in association with metabolic risk factors such as obesity, insulin resistance, dyslipidaemia, hypertension, and type 2 diabetes. Current clinical guidelines define MASLD in individuals with hepatic steatosis and at least one cardiometabolic risk factor, after consideration of other causes of steatosis.

Abnormal lipid metabolism may also contribute to cardiovascular and cerebrovascular disease. Thus, disturbances in lipid handling have implications at both hepatic and systemic levels.⁹

From an Ayurveda perspective, disorders involving excessive *Meda* may be discussed in relation to *Meda Dushti*, *Medovaha Srotas Dushti*, *Agni Dushti*, and associated *Dosha* disturbances, depending upon the particular disease presentation.

However, concepts such as *Ama*, *Apakva Meda*, and *Meda Dushti* should not be directly equated with triglycerides, LDL cholesterol, fatty acids, or other individual biochemical parameters. Such comparisons should be regarded as conceptual correlations requiring scientific investigation.

4. DISCUSSION

Agni represents one of the fundamental concepts of Ayurveda physiology and pathology. Its significance extends from the initial digestion of food to subsequent transformation and utilisation at the tissue level. Classical Ayurvedic literature describes *Jatharagni* as an important factor in digestion and also recognises the role of *Dhatvagni* in tissue-level transformation.

The concept of *Dhatvagni* provides a framework through which Ayurveda explains tissue-specific metabolic processes. In this context, *Medodhatvagni* can be considered an important theoretical construct for understanding the maintenance and disturbance of *Meda Dhatu*.

Modern physiology similarly demonstrates that lipid homeostasis depends upon the coordinated regulation of lipid absorption, synthesis, oxidation, storage, and transport. When these processes become unbalanced, excess lipid may accumulate in adipose tissue and non-adipose organs such as the liver. In hepatic steatosis, increased fatty-acid delivery or synthesis, together with reduced oxidation or export, can promote triglyceride accumulation within hepatocytes.

This creates an interesting area for comparative study. The Ayurveda concepts of *Agni Dushti*, *Medodhatvagni Dushti*, and *Meda Dushti* may offer a traditional framework for describing metabolic disturbances, while contemporary medicine provides measurable biochemical and physiological parameters through which these disturbances can be investigated.

The Ayurveda concept of *Meda* also has relevance in understanding disorders associated with excessive fat accumulation. Classical descriptions of *Meda Dhatu* and its disorders provide a framework for considering abnormalities of *Meda* at the level of *Dhatu* and *Srotas*.

However, conceptual similarity should not be confused with scientific equivalence. For example, *Ama* cannot presently be identified with a particular biochemical molecule, nor can *Medodhatvagni* be equated with a single enzymatic pathway. Similarly, hepatic triglyceride accumulation should not automatically be described as *Meda Dhatu* accumulation without appropriate Ayurveda clinical assessment.

5. CONCLUSION

Agni occupies a central position in the Ayurveda explanation of digestion, transformation, and metabolism. Disturbance of *Jatharagni* is traditionally considered capable of influencing subsequent metabolic processes, including the functioning of *Dhatvagni*.

Within this framework, impaired *Medodhatvagni* may be interpreted as a disturbance in the metabolism and utilisation of *Meda Dhatu*, potentially contributing to excessive *Meda* accumulation and metabolic dysfunction.

Contemporary science recognises hepatic lipid accumulation as a consequence of disturbed lipid homeostasis and identifies metabolic risk factors as important contributors to MASLD and related systemic disorders.

The Ayurveda concepts of *Agni*, *Ama*, *Dhatvagni*, *Medodhatvagni*, and *Meda Dhatu* therefore provide an interesting conceptual framework for investigating metabolic disorders. However, these concepts should not be presented as direct equivalents of modern biochemical entities unless supported by appropriate scientific evidence.

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