



(REVIEW ARTICLE)



Meda sara and body fat percentage: A review of ayurvedic concepts and Modern Perspectives

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Abstract

Background and Objective: *Dhatu Sarata* assessment is an important component of *Dashavidha Pariksha* in Ayurveda. *Meda Sara* denotes the excellence of *Meda Dhatu*, which is associated with nourishment, stability, and energy storage. In modern medicine, adipose tissue is recognized as a metabolically active endocrine organ, while body fat percentage (BF%) is a widely used measure of adiposity. This review analyses the concept of *Meda Sara* and explores its possible correlation with body fat percentage and adipose tissue.

Methodology: Classical Ayurvedic texts and contemporary scientific literature related to adipose tissue and body fat percentage were reviewed and analyzed.

Results: The review revealed that the characteristic features of *Meda Sara*, such as unctuousness, softness, and stability indicate the qualitative excellence and proper functioning of *Meda Dhatu*. Modern literature demonstrates that adipose tissue plays a vital role in energy storage, endocrine regulation, and metabolic health. Body fat percentage provides an objective measure of adiposity and body composition. Conceptual similarities were identified between *Meda Sara* and healthy adipose tissue status; however, *Meda Sara* encompasses qualitative and functional attributes beyond the quantitative assessment provided by body fat percentage.

Conclusion: *Meda Sara* and body fat percentage represent distinct yet related approaches to evaluating adipose tissue status. While body fat percentage offers an objective measure of adiposity, *Meda Sara* provides a broader assessment of tissue quality and functional excellence. The review highlights similarities, differences, and potential areas for future research integrating Ayurvedic assessment methods with contemporary body composition analysis.

Keywords: Ayurveda; Body Composition; Body Fat Percentage; *Meda Dhatu*; *Meda Sara*; Adipose Tissue

1. Introduction

Ayurveda emphasizes individualized assessment of health through comprehensive evaluation of physical, physiological, and psychological characteristics. Among various methods of examination, *Dashavidha Pariksha* occupies an important place in determining the strength, constitution, and therapeutic requirements of an individual. One of its essential components is Sara Pariksha, which evaluates the excellence of body tissues (*Dhatu*).

The term *Sara* denotes the purest, most refined, and functionally superior state of a *Dhatu*. [1] *Sara* assessment is traditionally considered an indicator of an individual's *Bala* (strength and vitality), [2] reflecting the qualitative excellence of the *Dhatu*s and overall physical constitution and health status. Classical Ayurvedic literature describes eight types of *Sara*, namely *Twak Sara*, *Rakta Sara*, *Mamsa Sara*, *Meda Sara*, *Asthi Sara*, *Majja Sara*, *Shukra Sara*, and

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Satva Sara. [3] Among these, *Meda Sara* reflects the excellence of *Meda Dhatu*. *Meda Dhatu* is one of the seven fundamental body tissues and plays an important role in lubrication, energy storage, softness, and structural stability of the body. Individuals possessing *Meda Sara* exhibit characteristic features such as smoothness and unctuousness of skin, hair, nails, eyes, voice, and body tissues. [4] These features indicate optimal nourishment and functional integrity of *Meda Dhatu*.

From a modern scientific perspective, *Meda Dhatu* may be correlated with adipose tissue, which serves as the principal site for fat storage. Adipose tissue is no longer considered merely an energy reservoir but is recognized as an active endocrine organ that regulates metabolism through the secretion of various adipokines, including leptin and adiponectin. These substances influence appetite, insulin sensitivity, inflammation, and energy balance. [5]

Although BMI is widely used as a screening tool for overweight and obesity, it does not differentiate between fat mass and lean body mass. In contrast, body fat percentage directly reflects adiposity and provides a more accurate assessment of body composition, making it a valuable parameter for evaluating the status of adipose tissue. Various techniques such as bioelectrical impedance analysis, dual-energy X-ray absorptiometry, and skinfold measurements are employed for its estimation. [6]

The increasing prevalence of obesity, metabolic syndrome, and lifestyle disorders has renewed interest in understanding body composition from both traditional and modern perspectives. Although *Meda Sara* and body fat percentage represent different conceptual frameworks, both are associated with adipose tissue and metabolic health. Exploring the relationship between these parameters may contribute to the development of integrative assessment tools that combine Ayurvedic clinical examination with objective modern measurements.

Therefore, the present review aims to critically analyse the classical concept of *Meda Sara*, examine its physiological significance, evaluate contemporary understanding of adipose tissue and body fat percentage, and identify potential areas for scientific correlation and future research.

2. Materials and Methods

This review was based on information collected from classical Ayurvedic texts and contemporary scientific literature related to *Meda Dhatu*, *Meda Sara*, adipose tissue, body composition, and body fat percentage. Relevant books, review articles, and research papers were reviewed and analyzed to explore possible correlations between Ayurvedic and modern concepts.

2.1. Review of *Meda Dhatu*

Meda Dhatu is the fourth *Dhatu* in the sequential process of tissue formation described in Ayurveda. It is formed from *Mamsa Dhatu* through the action of *Medodhatvagni* and is predominantly composed of *Prithvi* and *Jala Mahabhuta*. [7] *Meda Dhatu* provides lubrication, softness, stability, and nourishment to the body. [8]

Classical Ayurvedic texts describe *Meda Dhatu* as the principal seat of *Sneha* (unctuousness) in the body. It contributes to the maintenance of unctuousness (*Snigdhatata*), stability, and proper nourishment of subsequent *Dhatu*s. *Meda Dhatu* plays an important role in sustaining physiological equilibrium and supports the nourishment of *Asthi Dhatu* through the sequential process of *Dhatu* formation. A well-nourished *Meda Dhatu* is considered essential for maintaining strength, vitality, and overall health.

When *Meda Dhatu* undergoes pathological increase, conditions such as *Atisthaulya*, *Prameha*, excessive sweating, and metabolic disturbances may develop. Conversely, depletion of *Meda Dhatu* may result in dryness, weakness, emaciation, and reduced structural support. [9]

The concept of *Meda* therefore extends beyond simple fat accumulation and includes qualitative aspects of tissue nourishment, metabolic efficiency, and physiological functionality.

2.2. Concept of *Meda Sara*

Meda Sara refers to the excellence and optimal state of *Meda Dhatu*. According to Ayurvedic classics, individuals possessing *Meda Sara* demonstrate characteristic signs including unctuousness of complexion, eyes, hair, nails, teeth, lips, urine, stool, and voice. They generally possess a pleasant personality, comfortable lifestyle, and favorable physical appearance.

These features indicate proper nourishment and superior quality of *Meda Dhatu* rather than excessive fat accumulation. The concept therefore represents functional excellence of adipose tissue rather than pathological obesity.

The assessment of *Meda Sara* provides important information regarding nutritional status, tissue quality, metabolic balance, and overall strength of an individual.

2.3. Modern Understanding of Adipose Tissue and Body Fat Percentage

Adipose tissue is a specialized connective tissue that serves as the primary site for triglyceride storage and plays a crucial role in the regulation of energy homeostasis. It is broadly classified into white adipose tissue (WAT) and brown adipose tissue (BAT). White adipose tissue functions predominantly as an energy reservoir and endocrine organ, whereas brown adipose tissue specializes in thermogenesis and energy expenditure through heat production.[10]

Adipose tissue functions as an active endocrine organ by secreting a variety of bioactive molecules collectively known as adipokines. These include leptin, adiponectin, resistin, tumor necrosis factor-alpha (TNF- α), and interleukins, which play important roles in the regulation of appetite, insulin sensitivity, inflammation, energy homeostasis, and metabolic processes.[11]

Body fat percentage is an important indicator of body composition and reflects the proportion of total body weight represented by fat tissue. It provides a more accurate estimate of adiposity than BMI and helps assess nutritional and metabolic health.[12]

2.4. Scientific Correlation Between *Meda Sara* and Body Fat Percentage

The characteristics of *Meda Sara* described in Ayurvedic literature may reflect healthy adipose tissue distribution and optimal metabolic functioning. Features such as softness, unctuousness, nourishment, and tissue stability are consistent with the physiological roles of adipose tissue.

However, *Meda Sara* should not be interpreted merely as increased body fat percentage. Excessive adiposity is associated with metabolic dysfunction, whereas *Meda Sara* represents balanced and functionally efficient *Meda Dhatu*. Therefore, an individual may possess moderate body fat percentage and still demonstrate superior *Meda Sara* characteristics.

Body fat percentage provides a quantitative assessment of adiposity, while *Meda Sara* evaluates the qualitative excellence of adipose tissue. Together, these parameters may offer a comprehensive understanding of body composition and metabolic health.

3. Results and Discussion

The reviewed literature suggests that *Meda Sara* represents the excellence, proper nourishment, and optimal functioning of *Meda Dhatu*. Individuals possessing *Meda Sara* exhibit characteristic features such as unctuousness, softness, smoothness, stability, and well-developed body tissues, reflecting the qualitative status of adipose tissue and overall metabolic health. In Ayurveda, *Meda Sara* is assessed through the evaluation of specific *Sara Lakshanas* (Features), including physical, functional, and psychological attributes that reflect the excellence and proper nourishment of *Meda Dhatu*, whereas modern science evaluates adiposity using objective measures such as Body Fat Percentage (BF%).

Body fat percentage is considered a reliable indicator of body fat status and provides quantitative information regarding adipose tissue distribution and composition.[13]

Contemporary research recognizes adipose tissue not only as an energy reservoir but also as an active endocrine organ involved in metabolic regulation, hormonal balance, and maintenance of physiological homeostasis.

Although *Meda Sara* and Body Fat Percentage originate from different conceptual frameworks, both are associated with the status of body fat and nutritional adequacy. *Meda Sara* emphasizes the qualitative, functional, and constitutional aspects of *Meda Dhatu*, while Body Fat Percentage provides a quantitative assessment of adiposity. The available evidence indicates a possible relationship between the classical Ayurvedic assessment of *Meda Sara* and modern measures of body fat. Therefore, integrating Ayurvedic *Sara Pariksha* with Body Fat Percentage assessment may provide a more comprehensive understanding of body composition and individual health status. Further analytical and clinical

studies are required to establish the extent of this association and its applicability in contemporary healthcare and Ayurvedic practice.

4. Conclusion

Meda Sara represents the qualitative excellence and optimal functional state of *Meda Dhatu* as described in Ayurveda, whereas body fat percentage provides a quantitative assessment of adipose tissue within the framework of modern body composition analysis. Although these concepts originate from distinct medical paradigms, both contribute valuable insights into tissue status, nutritional condition, and metabolic health. *Meda Sara* assessment emphasizes the quality, nourishment, and functional integrity of *Meda Dhatu*, while body fat percentage objectively measures the extent of adiposity. Therefore, these parameters may be viewed as complementary rather than equivalent. Exploring their relationship may enhance understanding of body composition from an integrative perspective and contribute to the development of more comprehensive assessment approaches. Further research may help clarify the nature and extent of the relationship between *Meda Sara* and body fat percentage.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that there are no financial or non-financial conflicts of interest related to this work.

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