International Research Journal of Ayurveda & Yoga Vol. 9(2), pp. 44-48, February, 2026
Available online at http://irjay.in
ISSN: 2581-785X
DOI: 10.47223/IRJAY.2026.90208

REVIEW ARTICLE

Integrative Evaluation of *Sara Parikshan*: Correlating *Ayurvedic* Tissue Excellence with Modern Biomarkers

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ARTICLE INFO

Article history:
Received on: 09-01-2026
Accepted on: 16-02-2026
Published on: 28-02-2026

Key words:
Ayurveda,
Bala,
Biomarkers,
Dhatu-Sarata,
Integrative medicine,
Sara Pariksha

ABSTRACT

Sara Parikshan is an important diagnostic and evaluative tool in *Ayurveda* used to assess the qualitative excellence (*Sarata*) of body tissues (*Dhatus*) and mental potentialities (*Sattva*). Classical *Ayurvedic* texts describe eight types of *Sara – Twak, Rakta, Mamsa, Meda, Asthi, Majja, Sukra, and Sattva* – each reflecting physical, physiological, and psychological strength. Classical *Ayurvedic* texts emphasize that physical appearance alone is insufficient to determine true strength; rather, functional integrity and qualitative superiority of tissues are decisive. With the growing need for evidence-based validation, correlating these traditional observations with modern biomedical parameters can enhance the objectivity and clinical applicability of *Ayurveda*. This article presents a structured conceptual framework linking classical descriptions of *Sara Parikshan* with credible modern biomarkers, highlighting its potential utility in clinical assessment, preventive medicine, and translational research.

1. INTRODUCTION

Ayurveda adopts a comprehensive approach to clinical examination, wherein the assessment of strength and vitality transcends superficial physical appearance. *Sara Parikshan*, described in classical texts, such as the Charaka Samhita, is a systematic method for evaluating the excellence of bodily tissues (Dhatus). *Acharya Charaka* emphasizes that individuals of lean or delicate physique may possess superior strength, whereas those with well-developed or heavy bodies may exhibit comparatively lesser *Bala*, underscoring the importance of qualitative tissue assessment.[1]

Sara Parikshan thus provides a deeper understanding of constitutional potential, disease susceptibility, and recovery capacity, making it a valuable clinical tool in both preventive and curative practice.[2]

In modern medical science, similar evaluation is achieved through nutritional assessment, metabolic profiling, hematological indices, bone density analysis, and psychological evaluation.

In modern biomedicine, health assessment relies heavily on objective, quantifiable parameters. Establishing conceptual and functional parallels between *Ayurvedic Sara* descriptors and contemporary biomarkers can facilitate scientific validation, interdisciplinary dialogue, and broader clinical applicability of traditional knowledge systems.

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1.1. Aims and Objectives

1.1.1. Aim

To explore and present an integrative framework correlating *Ayurvedic Sara Parikshan* with modern biomedical markers for enhancing objectivity and clinical applicability.

1.1.2. Objectives

1. To compile classical descriptions of *Sara Parikshan* from classical *Ayurvedic* texts.
2. To analyze the clinical significance of each type of *Dhatu Sara* in assessing *Bala*, prognosis, and disease susceptibility.
3. To identify probable modern biomedical correlates and biomarkers corresponding to different *Dhatu Sarata*.
4. To discuss the scope of *Sara Parikshan* as a bridge between traditional *Ayurvedic* assessment and contemporary evidence-based medicine.
5. To highlight future research directions for validation and standardization of *Sara* assessment tools.

1.2. Materials and Methods

1.2.1. Study design

This study is a narrative, conceptual, and integrative review.

1.2.2. Materials

Classical *Ayurvedic* texts, including *Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya*, and *Ashtanga Samgraha,* were reviewed for references related to *Sara Parikshan* and *Dhatu Sarata*. Contemporary *Ayurvedic* research articles, review papers, and observational studies published in peer-reviewed journals were included. Relevant modern biomedical literature was explored to identify physiological, biochemical, and functional markers corresponding to Dhatu excellence.

1.2.3. Methods

Classical textual references describing *Sara Lakshanas* were systematically extracted and categorized under respective *Dhatus*. These features were then conceptually analyzed and compared with contemporary biomedical parameters reflecting tissue quality, functional reserve, and systemic strength. Published clinical and survey-based studies on *Dhatu Sarata* were reviewed to support integrative correlations. The approach remained qualitative and interpretative, aiming to develop a coherent conceptual framework rather than statistical validation.

2. CONCEPTUAL FRAMEWORK OF *SARA PARIKSHAN*

The term *Sara* denotes the pure, stable, and functionally superior state of a Dhatu. *Ayurveda* recognizes seven principal *Dhatus – Rasa, Rakta, Mamsa, Meda, Asthi, Majja,* and *Shukra*.[3] The predominance of characteristic features (*Sara Lakshanas*) indicates the qualitative excellence of the corresponding *Dhatu*.[4]

Sara Parikshan reflects:[5]

- Efficiency of digestion and metabolism (*Agni*).
- Adequacy of tissue nourishment (*Dhatu-Poshana*).
- Functional reserve and adaptability.
- Resistance to disease and stress.

Thus, *Sara* is a composite indicator of both genetic endowment and acquired physiological efficiency influenced by diet, lifestyle, and environmental factors.

3. MODERN PERSPECTIVE AND BIOMEDICAL CORRELATES

From a modern biomedical perspective, *Dhatu-sarata* represents the qualitative wellness and functional competence of body tissues rather than mere anthropometric attributes. Modern physiology also shows that real strength and stamina depend on how well the body's tissues work, how efficiently the metabolism adapts, how smoothly muscles and nerves coordinate, and how much reserve the body has to handle stress. These qualities are not decided by body size or appearance alone. Measures, such as muscle quality, heart–lung fitness, bone strength, immune health, and metabolic balance support the *Ayurvedic* view that true strength comes from good body function and resilience, not just a big or bulky body [Table 1].

3.1. *Twak/Rasa Sara* and Plasma Health

Twak/Rasa Sara denotes the excellence of *Rasa Dhatu*, manifested as soft, clear, well-hydrated, and lustrous skin, reflecting optimal nourishment and circulation at the tissue level. As *Rasa Dhatu* is the foundational tissue governing nutrition, hydration, immunity, and vitality, its *sarata* reflects balanced Agni, efficient *Dhatu-Poshana* (tissue nourishment), and *Bala*.

Clinically, *Twak/Rasa Sara* assessment helps evaluate *Dhatu-Pushti*, *Vyadhikshamatva*, disease prognosis, and early diagnosis, especially in malnutrition, dehydration, anemia, chronic inflammation, and lifestyle disorders.[6] Early changes in skin texture, color, or hydration often signal deeper dhatu imbalance.

Twak/Rasa Sara may be correlated with adequate plasma volume, optimal oncotic pressure, balanced electrolytes, efficient nutrient transport, and healthy microcirculation. Proper plasma protein levels (especially albumin), effective immune factors, and antioxidant capacity maintain skin hydration, elasticity, and barrier integrity.[7]

Thus, *Twak/Rasa Sara* serves as a holistic indicator of plasma health, fluid homeostasis, microvascular function, immune competence, and skin vitality, integrating *Ayurvedic* tissue theory with modern circulatory and plasma physiology, bridging classical *Ayurvedic* principles with a practical, non-invasive evaluation of tissue vitality and systemic health.[8]

3.2. *Rakta Sara* and Hematological Integrity

Rakta Sara reflects the qualitative excellence of *Rakta Dhatu* and serves as an important clinical indicator of hematological integrity. Individuals with *Rakta Sara* exhibit a clear, radiant complexion, well-perfused tissues, and stable physiological functioning, suggesting optimal erythropoiesis, hemoglobin status, and microcirculatory efficiency.[9]

Clinically, assessment of *Rakta Sara* aids in early identification of subclinical anemia, bleeding tendencies, inflammatory states, and susceptibility to *Rakta-Pradoshaja Vikaras*, even before overt laboratory abnormalities manifest.

From a prognostic standpoint, individuals with superior *Rakta Sara* demonstrate better disease tolerance, faster recovery, and favorable therapeutic outcomes, particularly in disorders involving blood, skin, and systemic inflammation.

Thus, *Rakta Sara Parikṣhan* complements hematological investigations by providing a holistic, functional appraisal of blood health, bridging classical *Ayurvedic* wisdom with modern hematology.

3.3. *Mamsa Sara* and Musculoskeletal Strength

Mamsa Sara denotes the excellence of *Mamsa Dhatu* (muscle tissue) and reflects optimal development, tone, firmness, and functional efficiency of the musculoskeletal system. Individuals with well-developed[10] *Mamsa Sara* exhibit stable joints, good posture, physical endurance, and efficient movement, indicating strong structural support and neuromuscular coordination.

Assessment of *Mamsa Sara* helps clinicians evaluate true physical strength (*Bala*), functional capacity, and recovery potential rather than relying solely on body size or weight. It is useful in predicting tolerance to physical exertion, trauma, surgery, and *Panchkarma* procedures.[11] In musculoskeletal disorders – such as sarcopenia, myopathies, joint instability, and post-injury rehabilitation – *Mamsa Sara* assessment guides individualized planning of *Ahara* (protein-adequate diet), *Vayayama* (graded exercise), and *Rasayana* therapies aimed at improving muscle mass, strength, and endurance.

From a modern perspective, *Mamsa Sara* correlates with muscle mass and quality, grip strength, functional performance, and metabolic resilience, making it a practical *Ayurvedic* parameter for integrative musculoskeletal assessment and personalized care.

3.4. *Meda Sara* and Metabolic Efficiency

Meda Sara denotes the excellence of *Meda Dhatu*, reflected by appropriate unctuousness, endurance, stability, and resistance to fatigue. Clinically, it signifies efficient lipid metabolism, optimal energy storage, insulation, and lubrication of tissues without pathological accumulation.

From a modern perspective, *Meda Sara* correlates with healthy adipose tissue function, balanced lipid profile, insulin sensitivity, favorable adipokine activity (e.g., adiponectin), and metabolic flexibility. Individuals with good *Meda Sara* exhibit sustained energy, thermal tolerance, and resilience to metabolic stress rather than mere excess body fat.

Assessment of *Meda Sara* helps clinicians differentiate physiological adiposity from pathological *Medo-Dushti*, predict susceptibility to metabolic disorders, such as Obesity, Dyslipidemia, and Type 2 Diabetes, and guide individualized *Ahara–Vihara*, exercise planning, *Lekhana*, or *Brihanam* therapies, and *Rasayana* selection. It also aids in estimating response to weight management and metabolic correction therapies.

3.5. *Asthi Sara* and Structural Robustness

Asthi Sara denotes the excellence of *Asthi Dhatu* and is clinically expressed through strong, well-formed bones, teeth, nails, and a stable body framework. Individuals with *Asthi Sara* exhibit firmness, endurance, and resistance to physical stress, reflecting optimal *Dhatu-Poshana* and balanced *Vata Dosha*, which is primarily associated with bone tissue.

From a clinical standpoint, assessment of *Asthi Sara* helps evaluate skeletal strength, postural stability, and susceptibility to fractures, degenerative bone disorders, and early osteoporosis. *Asthi-sara* individuals generally show better recovery following trauma, orthopedic procedures, and chronic musculoskeletal conditions.

In modern biomedical terms, *Asthi Sara* correlates with higher bone mineral density, optimal calcium–phosphorus metabolism, adequate vitamin D status, and sound connective tissue integrity.

Thus, *Asthi Sara* assessment guides preventive strategies, personalized nutrition, lifestyle advice, and *Rasayana* selection aimed at preserving skeletal health, delaying degeneration, and improving long-term structural resilience.

3.6. *Majja Sara* and Neuro-Marrow Vitality

Majja Sara denotes the excellence of *Majja Dhatu*, reflected clinically by a soft, well-nourished body, unctuous complexion, strong and resonant voice, stable joints, mental clarity, and high endurance. In Ayurveda, *Majja Dhatu* supports *Asthi Dhatu*, nourishes the nervous system, and contributes significantly to *Bala* (strength), *Ojas*, and psychological stability.

From a modern biomedical perspective, *Majja Sara* can be correlated with optimal bone marrow function, efficient hematopoiesis, healthy myelination, and a strong neuro-endocrine integration. Individuals with good *Majja Sara* demonstrate better neurological resilience, cognitive stability, stress tolerance, and recovery capacity.

Assessment of *Majja Sara* helps clinicians predict neurological strength, immunity, and regenerative potential, especially in chronic fatigue, neurodegenerative conditions, Anxiety Disorders, Anemia, And Musculoskeletal Weakness. It guides the selection of *Rasayana* (e.g., *Medhya* and *Majja-Poshaka* drugs), planning of *Panchkarma* (particularly *Basti*), and individualized lifestyle interventions aimed at improving neuro-marrow vitality and long-term resilience.

3.7. *Shukra Sara* and Reproductive Vitality

Shukra Sara denotes the qualitative excellence of *Shukra Dhatu*, reflected clinically by reproductive capacity, vitality, enthusiasm, immunity, psychological stability, and overall life force. Individuals with *Shukra Sarata* exhibit good fertility, strong libido, sustained energy, clear complexion, pleasing personality, and resilience to stress and disease.[12]

Clinically, it helps in the assessment of fertility potential in both males and females beyond gross anatomical normalcy, guides evaluation of sexual health, endocrine balance, and reproductive longevity, and assists in predicting response to *Vajikarana therapy*, *Rasayana*, and fertility-enhancing interventions. It is useful in counseling couples with infertility, recurrent pregnancy loss, or sexual dysfunction, even when routine investigations are inconclusive. It also indicates overall *ojas* status, helping clinicians assess immunity, recovery capacity, and long-term vitality.

From a modern perspective, *Shukra Sara* correlates with optimal gonadal function, sex hormone balance, semen/ovarian quality, mitochondrial energy efficiency, and psycho-neuro-endocrine harmony, making it a valuable integrative marker for reproductive and systemic health.

3.8. *Sattva Sara* and Psychological Resilience

Sattva Sara denotes the excellence of mental faculties, reflected as emotional stability, clarity of intellect, courage, self-control, and adaptability to stress. Individuals with well-developed Sattva Sara demonstrate strong psychological resilience, enabling them to cope effectively with illness, pain, uncertainty, and life stressors.[13]

Clinically, assessment of *Sattva Sara* helps predict a patient's stress tolerance, compliance with treatment, decision-making capacity, and recovery potential. Such individuals respond better to counseling, lifestyle modification, *Rasayana therapy*, and mind–body interventions, such as Yoga and meditation.

From a modern perspective, *Sattva Sara* correlates with strong coping mechanisms, balanced neuro-endocrine responses, emotional regulation, and favorable indicators, such as stress resilience, mental well-being scores, and heart rate variability.

Thus, the *Sattva Sara* assessment is valuable for individualized therapeutic planning, especially in psychosomatic disorders, chronic diseases, and preventive healthcare, where mental strength significantly influences clinical outcomes

4. DISCUSSION

Sara Parikshan represents a refined *Ayurvedic* approach to evaluating human strength, vitality, and disease resistance through qualitative tissue assessment. While *Ayurvedic* evaluation remains qualitative and experience-based, biomedical parameters offer quantifiable validation. The correlations proposed in this article demonstrate that many classical *Lakshanas* reflect underlying physiological and biochemical integrity, such as hematological adequacy, musculoskeletal strength, metabolic efficiency, neuro-endocrine balance, and psychological strength.

Integrating *Sara Parikshan* with modern biomarkers does not aim to replace classical assessment but to complement it with measurable indicators that enhance reproducibility and acceptance in contemporary healthcare. Such integration can improve individualized risk assessment, prognosis estimation, preventive counseling, and therapeutic planning, particularly in chronic diseases, lifestyle disorders, and geriatric care.[14]

However, limitations remain due to the subjective nature of *Sara* assessment and inter-observer variability. Future multicentric clinical studies, development of validated scoring scales, and correlation with standardized laboratory and functional parameters are essential to establish reliability and clinical utility. Despite these challenges, *Sara Parikshan* holds significant promise as a personalized, predictive, and preventive assessment tool aligned with modern concepts of holistic and integrative medicine.

5. CONCLUSION

Sara Parikshan provides a comprehensive *Ayurvedic* framework for assessing tissue excellence, functional strength, and holistic vitality. Conceptual integration with contemporary biomedical markers offers promising avenues for interdisciplinary research and evidence-based application of *Ayurvedic* principles. Such integrative models can contribute meaningfully to the evolution of personalized and preventive healthcare.

6. ACKNOWLEDGMENTS

Nil.

7. AUTHORS' CONTRIBUTIONS

All authors give equal contribution in making of this manuscript.

8. FUNDING

Nil.

9. ETHICAL STATEMENT

Ethical approval was not required for this study as it was a review article with data obtained through a literature search.

10. CONFLICT OF INTERESTS

The authors declare no conflicts of interest regarding the publication of this paper.

11. DATA AVAILABILITY STATEMENT

The data analyzed in this review were obtained from publicly available sources, including peer-reviewed articles, observational studies, and surveys accessible through databases.

12. PUBLISHERS NOTE

This journal remains neutral with regard to jurisdictional claims in published institutional affiliations.

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How to cite this article:
Deewasha, Kumar A, Mishra S. Integrative Evaluation of *Sara Parikshan*: Correlating *Ayurvedic* Tissue Excellence with Modern Biomarkers. IRJAY. [online] 2026;9(2);44-48.
Available from: http://irjay.in
DOI link- https://doi.org/10.47223/IRJAY.2026.90208

Table 1: *Dhatu Sara Lakshanas* with classical features and modern biomarkers

Dhatu Sara	**Classical *Lakshanas***	**Representative Modern Biomarkers/Correlates**	**Clinical interpretation**
Twak/Rasa Sara	*Snigdha, Slakshan, Mridu, Prasanna Twak*, *Prabha* (*lustre*), *Sukumara Roma*, *Alpa kshudha–Trisna Sahishnuta*, *Shighra klanti*	Plasma volume, serum albumin, electrolytes, skin hydration indices, microcirculatory perfusion	Optimal nutrition, fluid balance, and immunity guides *Rasayana's* need and endurance assessment.
Rakta Sara	*Raktaruna varna of mukha, netra, oshta, pani, pada*, *prasanna indriya*, *utsaha*, *medha*	Hemoglobin, RBC indices, iron studies, SpO_2, endothelial function	Good oxygenation, hematological strength, and disease resistance
Mamsa Sara	*Upachita, sthira mamsa*, *pina ganda–skandha–uru*, *dridha sandhi*, *sthirata*	Lean body mass (DEXA/BIA), grip strength, serum creatinine, IGF-1	Musculoskeletal strength, surgical fitness, trauma recovery
Meda Sara	*Snigdhata, mriduta, guru gatrata*, *sthira bala*, *sukha swapna*, *alpa krodha*	BMI, body-fat %, lipid profile, adiponectin/leptin ratio, insulin sensitivity	Energy reserve, metabolic stability, endurance-type strength
Asthi Sara	*Dridha asthi*, *mahan danta–nakha–kesha*, *utsaha* , *alpa bhaya*, *dirgha ayu*	Bone mineral density (DEXA), serum Ca–P, vitamin D, ALP	Structural robustness, longevity, orthopedic resilience
Majja Sara	*Snigdha, guru Sharira*, *pina sandhi*, *madhura swara*, *balavatta* , *snigdha netra*	Bone-marrow reserve, nerve conduction velocity, myelin integrity, and CSF correlates	Neuro-marrow vitality, strength, and reduced *Vataja disorders.*
Shukra Sara	*Saumya darshana*, *snigdha–Sukla varṇa*, *maha-bala*, *dhairya* , *saukhya* , *saundarya*	Semen parameters, reproductive hormones (FSH, LH, testosterone/estrogen), and fertility indices	Reproductive health, vitality, immunity, *Ojas* predominance
Sattva Sara	*Smriti-mati-medha*, *dhriti*, *shaurya*, *alpa bhaya-Shoka*, *duhkha sahishunta*	Cognitive tests, HRV, cortisol rhythm, stress-resilience scales	Psychological strength, prognosis, compliance, and coping ability

BMI: Body mass index, FSH: Follicle-stimulating hormone, LH: Luteinizing hormone, RBC: Red blood cells, CSF: Cerebrospinal fluid, HRV: Heart rate variability, IGF-1: Insulin-like growth factor 1, ALP: Alkaline phosphatase