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CRITICAL APPRAISAL OF PRAKRITI IN KRIYA SHARIR AND ITS CONTEMPORARY PHYSIOLOGICAL SIGNIFICANCE

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ABSTRACT

Background: Prakriti is the constitution-specific expression of the three Doshas described in Ayurveda and occupies a central position in Kriya Sharir because it explains stable inter-individual differences in normal structure, function, adaptability, disease susceptibility and response to diet, environment and therapy. Contemporary physiology increasingly recognizes comparable inter-individual heterogeneity through systems biology, metabolic phenotyping, autonomic variability, genomics, inflammatory profiles and precision medicine. A critical appraisal is therefore needed to distinguish meaningful physiological parallels from over-simplified one-to-one equivalence. **Aim and Objectives** To critically appraise the concept of Prakriti as described in Kriya Sharir. To explain determinants, classification and characteristic physiological features of Vata, Pitta and Kapha predominant constitutions. To relate classical constitutional observations to contemporary concepts of homeostasis, metabolism, autonomic function, thermoregulation, body composition, immunity and psychophysiology. To review selected genomic, biochemical and clinical correlates of Prakriti and identify limitations in present evidence. To highlight the relevance of Prakriti to personalized preventive physiology and precision health without making unsupported one-to-one biomedical equivalences.

Materials and Methods: A structured narrative review was undertaken using classical Ayurvedic sources and selected peer-reviewed literature on Prakriti, Tridosha, constitutional physiology, Ayurgenomics and Prakriti assessment. Conceptual statements were compared with contemporary physiological observations while avoiding direct equivalence where evidence remains preliminary **Results & Discussion:** The most defensible contemporary interpretation is that Prakriti represents a systems-level phenotype emerging from interacting biological traits rather than a single organ, gene or biomarker. Standardized and validated assessment remains the major methodological requirement for future physiological research. **Conclusion:** Prakriti remains highly relevant to Kriya Sharir as an individualized model of normal physiology and adaptive capacity. Its modern significance lies in hypothesis generation for phenotyping and precision health, while clinical application should remain grounded in classical assessment and supported by stronger prospective validation.

Keywords: Prakriti; Kriya Sharir; Tridosha; constitutional physiology; Ayurgenomics; personalized medicine

INTRODUCTION

Ayurveda describes health as a dynamic state in which Dosha, Agni, Dhatu, Mala and psychophysical functions remain appropriately coordinated. Within this framework, Prakriti denotes the relatively stable constitutional pattern that differentiates one healthy person from another. In Kriya Sharir, the importance of Prakriti is not merely taxonomic; it provides a physiological context for understanding appetite, digestion, thermoregulation, sleep, activity, tolerance, strength, emotional reactivity and susceptibility to imbalance. Classical descriptions therefore treat normality as individualized rather than represented by a single identical physiological profile for all persons.¹

The constitutional state is traditionally understood as being established during conception and fetal development under the influence of the relative predominance of Doshas along with factors related to parental contribution, season, uterine environment and maternal diet and conduct. Once established, Deha Prakriti is considered relatively stable, whereas Dosha states may fluctuate because of age, season, diet, behavior, disease and treatment. This distinction between a stable constitutional baseline and changing functional state is essential: Prakriti should not be confused with Vikriti, nor should a constitutional predominance of a Dosha be interpreted as disease.²

In modern biomedical science, differences between individuals are increasingly studied using phenomics, genomics, metabolomics, autonomic physiology, inflammatory biology and

pharmacogenomics. Early Ayurgenomics studies proposed that Prakriti may provide a traditional, clinically observable strategy for stratifying complex phenotypes. This has generated significant scientific interest, but the concept requires careful appraisal: associations with genetic or biochemical traits do not prove that the Doshas are reducible to those traits. A physiologically sound approach is to examine whether Prakriti can function as a reproducible systems-level phenotype and whether it improves prediction of normal responses, disease risk or therapeutic variability.³

AIM AND OBJECTIVES

To critically appraise the concept of Prakriti as described in Kriya Sharir.

To explain determinants, classification and characteristic physiological features of Vata, Pitta and Kapha predominant constitutions.

To relate classical constitutional observations to contemporary concepts of homeostasis, metabolism, autonomic function, thermoregulation, body composition, immunity and psychophysiology.

To review selected genomic, biochemical and clinical correlates of Prakriti and identify limitations in present evidence.

To highlight the relevance of Prakriti to personalized preventive physiology and precision health without making unsupported one-to-one biomedical equivalences.

MATERIALS AND METHODS

This structured narrative review synthesized information from classical Ayurvedic compendia and authoritative translations together with peer-reviewed studies indexed in biomedical literature. Literature selection emphasized publications addressing constitutional phenotyping, Prakriti assessment, genetic and transcriptomic correlates, drug metabolism, cardiovascular and metabolic variables, inflammation, environmental adaptation and personalized medicine. A recent critical review of Prakriti assessment tools was used to judge methodological maturity. Evidence was interpreted qualitatively because heterogeneity in assessment instruments, population selection, predominance thresholds and study design currently limits quantitative pooling. Claims were categorized as classical concepts, plausible physiological parallels, observed associations or areas requiring validation.⁴

CONCEPTUAL STUDY: AYURVEDIC REVIEW

1. Meaning and Physiological Scope of Prakriti

The word Prakriti denotes the natural or original constitution of an individual. In Ayurvedic physiology it reflects the characteristic expression of Doshas in a balanced person and becomes visible through a recurring constellation of bodily build, skin and hair qualities, digestive pattern,

thermal preference, sleep, movement, speech, endurance, memory, emotional tendencies and response to environmental conditions. The concept is therefore broader than “body type.” It is a body-mind functional phenotype and a reference frame against which physiological deviation is assessed. A person may possess a Dosha-predominant Prakriti while remaining healthy because constitutional predominance is qualitatively different from pathological aggravation.⁵

2. Determinants of Prakriti

Classical descriptions attribute Prakriti formation to several interacting determinants: the Dosha state of Shukra and Shonita at conception, conditions of time and season, uterine milieu, maternal diet and behavior, and the influence of Mahabhuta predominance. The conceptual message is that constitution emerges from inherited and developmental influences rather than from a single postnatal habit. This resembles the modern recognition that adult phenotype reflects genetic background, intrauterine environment, developmental programming and later exposures. Nevertheless, these parallels should be treated as analogical frameworks rather than translations of one ontology into another.⁶

3. Classification of Deha Prakriti

Seven constitutional patterns are generally described: Vataja, Pittaja, Kaphaja, Vata-Pittaja, Pitta-Kaphaja, Vata-Kaphaja and Sama or balanced Prakriti. Eka-Doshaja types show relatively stronger expression of one Dosha; Dvandvaja types express two; Sama Prakriti reflects comparatively balanced expression of all three. In actual clinical populations, mixed constitutions are common, and extreme single-Dosha phenotypes may be less frequent. This is important for research because studies that recruit only highly selected extreme types may increase biological contrast but may not represent the constitutional spectrum seen in routine Ayurvedic practice.⁷

4. Vata-Predominant Prakriti: Functional Interpretation

Vata is classically associated with movement, initiation, transport, sensory-motor activity and variability. Vata-predominant individuals are commonly described as relatively light-built, quick in movement and speech, variable in appetite and sleep, more sensitive to cold and dryness, and capable of rapid initiation with comparatively lower sustained endurance. From a contemporary physiological perspective, these traits invite hypotheses involving autonomic reactivity, motor activity, energy expenditure, circadian variability and stress responsivity. Such relationships remain research questions; Vata should not be equated directly with the nervous system, sympathetic tone or any single neurotransmitter pathway.⁸

5. Pitta-Predominant Prakriti: Functional Interpretation

Pitta represents transformation, digestion, heat production, color and discriminative processes in classical physiology. Pitta-predominant persons are traditionally characterized by stronger appetite and thirst, greater heat intolerance, relatively warm body features, tendency to perspire, sharper intellectual discrimination and a more intense response pattern. These observations offer testable links with basal and postprandial metabolism, thermoregulation, hepatic biotransformation, endocrine responsiveness and oxidative processes. Pharmacogenomic studies reporting differences in drug-metabolizing genotypes among selected Prakriti groups are particularly relevant, but they should be regarded as population associations rather than evidence that Pitta is identical to metabolic enzyme activity.⁹

6. Kapha-Predominant Prakriti: Functional Interpretation

Kapha is associated with stability, cohesion, lubrication, nourishment, structural maintenance and reserve. Kapha-predominant individuals are classically described as having relatively larger or more stable body build, slower but sustained activity, good endurance, deeper sleep, lower sensitivity to minor stressors and greater tendencies toward heaviness when diet and activity become unfavorable. Contemporary physiology may examine these features through body composition, anabolic balance, energy storage, cardiometabolic profiles, inflammatory tone and behavioral persistence. As with the other Doshas, these are multidimensional patterns and not substitutes for modern diagnostic categories.¹⁰

7. Psychophysiological Dimension of Prakriti

Prakriti assessment includes mental and behavioral tendencies in addition to physical traits. Speed of decision-making, memory retention, emotional reactivity, tolerance, persistence and sleep pattern are considered alongside somatic features. This anticipates a psychophysiological model in which behavior and body function are not treated as isolated domains. Contemporary research can explore these dimensions using validated personality instruments, cognitive testing, heart-rate variability, sleep metrics and stress-hormone responses. However, cultural interpretation and assessor expectation can introduce bias, so psychobehavioral traits require especially careful operational definitions.¹¹

8. Prakriti, Homeostasis and Personalized Prevention

The practical value of Prakriti in Ayurveda lies in anticipating how different persons maintain equilibrium under the same exposures. Advice regarding Ahara, Vihara, seasonal conduct, exercise intensity, sleep and therapeutic choice is adjusted according to constitution. This corresponds conceptually with modern personalized prevention, where baseline phenotype

modifies expected response to diet, exercise, drugs and environmental stress. Published reviews have linked Prakriti with metabolic characteristics, chronic disease associations and genotype patterns, suggesting a potentially useful stratification framework. The critical point is that personalized guidance should emerge from reproducible constitutional assessment rather than from simplistic online “Dosha quizzes.”¹²

9. Contemporary Physiological Correlates and Ayurgenomics

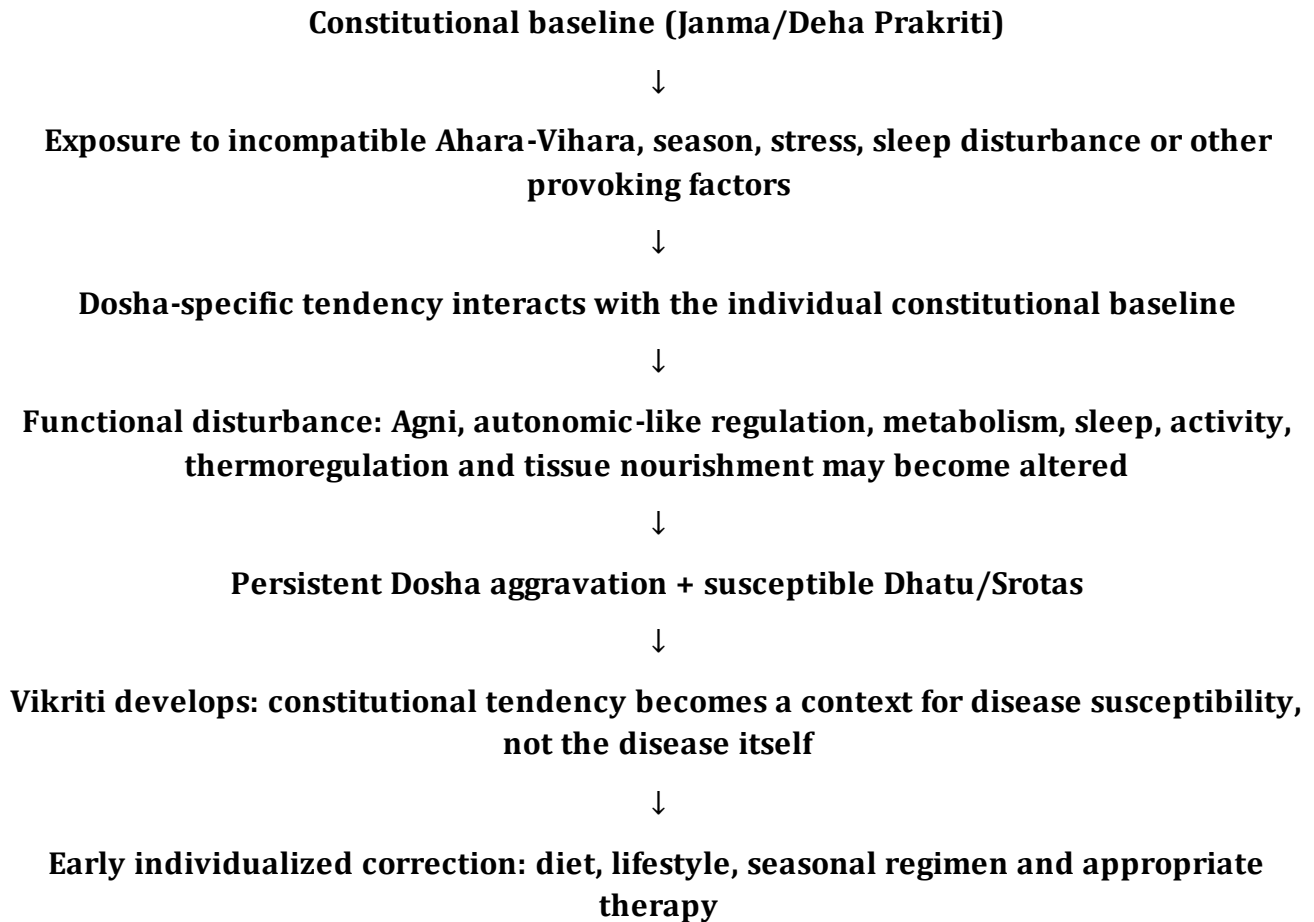
Whole-genome expression studies in well-defined extreme Prakriti groups have reported differences in biochemical and hematological parameters and enrichment of differentially expressed genes involved in processes such as transport, immune response, cell-cycle regulation and blood coagulation. Subsequent genomic work identified single-nucleotide polymorphisms capable of separating selected Vata, Pitta and Kapha groups in study cohorts, while other investigations explored HLA alleles, CYP2C19 metabolic phenotypes and oxygen-sensing pathways including EGLN1. These observations support the possibility that Prakriti captures integrated biological variation, but no single marker has sufficient sensitivity, specificity or universality to serve as a stand-alone Prakriti test.¹³

PHYSIOLOGICAL APPRAISAL OF PRAKRITI

Table 1: PHYSIOLOGICAL APPRAISAL OF PRAKRITI

Domain	Vata tendency	Pitta tendency	Kapha tendency
Functional emphasis	Movement, variability, rapid initiation	Transformation, heat, intensity	Stability, reserve, sustained function
Appetite/digestion	Variable	Strong/regular tendency	Slower, steady tendency
Thermal preference	Greater cold sensitivity	Greater heat sensitivity	Often tolerates cold better than Vata
Activity pattern	Quick but fluctuating	Focused and intense	Steady and enduring
Body composition tendency	Lighter build	Moderate build	More robust/heavier build
Researchable modern domains	Autonomic variability, activity, circadian rhythm	Metabolism, thermoregulation, biotransformation	Body composition, energy storage, cardiometabolic physiology

SAMPRAPTI / PATHWAY OF CONSTITUTIONAL IMBALANCE (FLOW CHART)



RESULTS AND FINDINGS

Prakriti is best understood as a stable constitutional reference pattern in healthy physiology, while Vikriti represents a change from that baseline.

The Ayurvedic model integrates morphology, digestion, thermal regulation, activity, sleep, cognition, affect and environmental response rather than classifying individuals by a single parameter.

Vata, Pitta and Kapha descriptions generate physiologically testable hypotheses concerning variability and signaling, metabolic transformation and heat regulation, and structural/energy reserve respectively.

Genomic and transcriptomic studies provide proof-of-concept that carefully phenotyped extreme Prakriti groups can show measurable molecular differences.

Associations have been reported with HLA polymorphisms, CYP2C19 metabolic status, selected genome-wide SNPs, biochemical parameters, inflammatory markers and oxygen-sensing pathways.

Cardiovascular response studies show that not every simple physiological test differentiates Prakriti groups consistently, emphasizing the multidimensional nature of the construct.

Research reproducibility is limited by heterogeneity in Prakriti assessment, assessor dependence, mixed constitutions, small samples and selective recruitment of extreme phenotypes.

Recent evaluation of Prakriti assessment tools shows progress but indicates that full psychometric and cross-population validation remains incomplete.

The greatest contemporary relevance of Prakriti is as a candidate framework for deep phenotyping, preventive stratification and personalized health research rather than as a replacement for established biomedical diagnosis.

DISCUSSION

The concept of Prakriti is physiologically significant because it makes inter-individual variation central to the definition of normal function. Contemporary medicine has moved in a similar direction by recognizing that cardiometabolic risk, inflammatory state, drug response and adaptation cannot always be predicted adequately from population averages. In patients with coronary artery disease, constitutional categories have been associated with differences in lipids, insulin resistance and inflammatory markers, although cross-sectional design and disease-related confounding limit causal interpretation. Such findings suggest that Prakriti may enrich phenotypic stratification, but they do not establish fixed disease destinies for any constitutional group.¹⁴

A critical appraisal must also consider negative or inconsistent evidence. Studies of postural, exercise and cold-pressor cardiovascular responses have not shown uniform separation among dual Prakriti groups, despite some specific differences. This is informative rather than contradictory: Prakriti is defined through multiple traits and may not be expected to map onto every isolated physiological variable. Future Kriya Sharir research should therefore use multidomain phenotyping - for example body composition, metabolic rate, thermoregulation, heart-rate variability, sleep, cognitive performance, endocrine responses and inflammatory markers - together with blinded, reproducible Prakriti classification and adequate sample sizes.¹⁵

The emerging field of Ayurgenomics provides a productive bridge between classical constitutional reasoning and precision medicine. Its strongest contribution is methodological: it treats traditional phenotyping as a hypothesis-generating framework that can be tested using genomics, transcriptomics, proteomics and metabolomics. At the same time, recent reviews of

Prakriti assessment tools show that classification itself remains a major source of variability, and therefore biomarker discovery cannot progress reliably without better standardization. For Kriya Sharir, the contemporary significance of Prakriti lies in developing a rigorous physiology of individual variation while preserving the integrity of the Ayurvedic construct. The next phase should prioritize prospective studies, preregistered protocols, cross-site assessor agreement, mixed-Prakriti populations and clinically meaningful predictive outcomes.¹⁶

CONCLUSION

Prakriti is a foundational concept of Kriya Sharir that describes individualized normal physiology through the integrated expression of Dosha-related structural, functional and psychobehavioral traits. Its contemporary value is strongest when interpreted as a multidimensional constitutional phenotype capable of generating testable hypotheses about metabolism, autonomic regulation, thermoregulation, body composition, immunity, environmental adaptation and therapeutic response. Genomic, biochemical and clinical studies provide encouraging associations, but current evidence does not justify reducing Vata, Pitta or Kapha to single genes, organs or biomarkers. Standardized assessment and prospective validation are essential before Prakriti can serve as a robust biomedical stratification tool. Used critically, it offers a meaningful conceptual bridge between Ayurvedic individualized physiology and modern precision health.

CONFLICT OF INTEREST

Nil.

SOURCE OF SUPPORT

None.

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