

AYURVEDA-BASED PRAKRITI CLASSIFICATION AND ITS ASSOCIATION WITH GENETIC VARIATIONS: A MOLECULAR GENETICS INVESTIGATION

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ABSTRACT

Traditional Indian medical practice, known as Ayurveda, stresses individualized medicine using the notion of Prakriti, an individual psycho-physiological constitution. Prakriti is determined by the dominance of one of the three doshas, namely Vata, Pitta, and Kapha, and it supposedly affects metabolism, immunological functions, susceptibility to diseases, and responses to therapy. With the rapid development of molecular genetics and precision medicine, more interest has been paid to studying the biological background of these constitutional classifications. This paper provides a review of the literature on Ayurveda Prakriti classification, focusing on its genetic basis and the development of Ayur genomics, a discipline bridging classical Ayurveda and contemporary genomics. In recent years, associations between the types of Prakriti and particular genotypes, gene expression patterns, epigenetic alterations, and other molecular features have been found, proving the existence of the biological foundation of constitutions. The advances in genomics, transcriptomics, systems biology, artificial intelligence, and computational modelling have contributed significantly to the scientific study of Prakriti. Prakriti-dependent classification has also proved to be useful in predicting diseases, pharmacogenomics, nutrition, and precision medicine. Although some positive results have been obtained, the issues of standardization, methodology, and large-scale validation still need to be addressed. In general, the combination of Ayurvedic constitutional profiling with molecular genetics offers an innovative tool for studying the biological variability of humans and developing personalized healthcare. Further multidisciplinary research can enable the formulation of evidence-based precision medicine solutions based on ancient medical traditions and modern scientific knowledge.

KEYWORDS: Prakriti; Ayurveda; Ayur genomics; Genetic Variations; Precision Medicine

1. INTRODUCTION

1.1 Ayurveda and the Concept of Personalized Healthcare

The increasing popularity of precision medicine has underscored the importance of personalized strategies for the prevention, diagnosis, and treatment of disease. As current healthcare institutions continue to make use of genomics and molecular science to comprehend inter-individual differences, the practice of personalized medicine has existed in Ayurveda for several millennia. Ayurveda, one of the oldest healing traditions, is aware that every person has an individual constitution that affects his or her physiology, predisposition to diseases, and therapeutic effect. This approach to disease management allows for the continuous relevance of Ayurveda in tackling different types of health problems using tailored treatment regimens, including dietary and lifestyle modifications. The recent attention that modern medicine pays to ancient healing traditions motivates scientists to delve into the biological foundation of these practices and their possible fusion with biomedical sciences (Balachandran, 2022).

1.2 Prakriti: The Foundation of Individual Constitution

One of the key principles in Ayurveda includes that of Prakriti, which essentially defines the uniqueness of everyone's personality based on certain criteria. In fact, Prakriti is defined as the psycho-physiological constitution

of an individual which is determined at birth and remains the same for life. In Ayurvedic terms, there are basically three types of dosha, namely, Vata, Pitta, and Kapha, and Prakriti is classified based on the dominant dosha among the three. Traditionally, it was believed that differences in the Prakriti of different individuals could be used to understand the efficiency of the metabolic process, the ability of the immune system, behavior traits, physical characteristics, and susceptibility to various diseases. Scientific investigation of such traditional ideas has received increasing attention with the adoption of Ayurveda by many healthcare systems today (Bode, 2025).

1.3 Emergence of Ayurgenomics and Integrative Biological Research

The merging of Ayurveda and genomics has brought forth a new branch of science termed Ayurgenomics, which attempts to explore the possibility of whether the traditional classifications of Prakriti have any corresponding genetical factors. The concept behind this relatively new branch of science is that there could be correlations between differences observed in phenotypes described in the Ayurvedic scriptures and distinct genotypes, transcriptomes, proteomes, and metabolomes. It seems that the combination of ancient knowledge concerning phenotype with recent advances in molecular science has created a unique approach to study human biological diversity. The emergence of systems biology and precision medicine further strengthens the significance of Ayurgenomics as an important field of science (Mukerji, 2023).

1.4 Genetic Variability and the Scientific Basis of Prakriti

Genetic differences in human populations lead to variations in physiological characteristics, predisposition to certain diseases, reaction to medications, and adaptation to the environment. The rapid progress in molecular genetics allowed scientists to find genetic markers, gene expressions, and epigenetic changes associated with various phenotypes relevant to the field of medicine. In such a way, constitutional categorization using the method of Prakriti becomes particularly valuable as a unique tool of genotype-phenotype association evaluation from the perspective of the traditional approach. Scientific data indicates that different constitutional types have molecular profiles which, in turn, provides evidence for the relevance of Prakriti phenotypes as biologically significant categories. This observation has attracted the attention of many researchers who started creating integrated approaches based on traditional and contemporary methods of evaluation of constitution and genes (Kaushal & Rani, 2025).

1.5 Ayurveda in the Era of Modern Biomedical Science

In recent years, however, there has been much advancement in the field of science, particularly in the areas of biotechnology, computational biology, and systems medicine. It is now evident that scientists should not only focus on isolated studies but also find methods to create an integrative approach that can integrate traditional concepts and their molecular basis. This development has shown that Ayurvedic biology can make significant contributions to health sciences, especially in terms of how genes interact with the environment and lifestyle to cause various diseases. With the incorporation of traditional phenotyping techniques within modern research approaches, Ayurveda provides numerous possibilities for enhancing biomedical research and the practice of personalized medicine (Vijay et al., 2022).

1.6 Future Perspectives and Rationale for the Present Review

Advancements in the synthesis of traditional medical practice and contemporary scientific practices have provided new grounds for exploring the molecular science behind constitutional differences. Innovations in the realms of genomics, artificial intelligence, systems biology, and precision medicine have made possible the exploration of Ayurvedic ideas to develop an evidence base for customized treatment. Additionally, the inclusion of Ayurvedic methods within the national and international healthcare system is indicative of a larger trend towards more integrative approaches to healthcare systems (Nesari et al., 2025). At the same time, developments in natural product and traditional medicine studies continue to add to the scientific basis of Ayurvedic practices and knowledge (Al-Harrasi et al., 2022). Interdisciplinary approaches have also stressed on the need for bridging the gap between the ancient philosophy and contemporary biological science for the purpose of addressing the needs of modern healthcare issues and precision medicine initiatives (Sudhakaran et al., 2026).

Considering these changes, therefore, a critical analysis of the association between the classification of the constitution according to Ayurveda and genetic differences is both urgent and imperative. Not only would such an understanding lend scientific support to the classical concept of Prakriti, but it might also lead to new approaches towards disease prevention and treatment.

Objectives of the Review

1. To critically examine the Ayurvedic concept of Prakriti and evaluate the scientific evidence supporting its physiological and constitutional basis
2. To analyse current molecular genetics, genomic, and epigenetic studies investigating associations between Prakriti classifications and genetic variations
3. To explore the potential applications of Ayurgenomics in precision medicine, personalized healthcare, and future translational research.

2. Prakriti Classification: Traditional Concepts and Scientific Evidence

2.1 Tridosha Theory and Prakriti Formation

Prakriti constitutes the very basis of Ayurvedic personalized medicine and is derived from the Tridosha theory that explains the operating principles of the human body and mind. In Ayurvedic philosophy, the three doshas known as Vata, Pitta, and Kapha are generated by the five elements theory (Panchamahabhuta) and play a major role in maintaining physiological, metabolic, and psychological functions in the body. The distinct combination of these doshas determined during the birth process is responsible for determining one's Prakriti, which does not change much in one's lifetime. It is thought to influence body constitution, personality traits, metabolic capacity, disease tendencies, and response to therapy (Venkatesh et al., 2025).

2.2 Characteristics of Vata, Pitta, and Kapha Constitutions

Individuals with Vata-dominant Prakriti are generally characterized by a lean body structure, Variable hunger, mental acuteness, creativity, and susceptibility to stress-induced illnesses are some characteristics of Pitta-dominated people. People who are dominated by Pitta type generally show moderate physical constitution, good digestion system, strong intellect, and are prone to inflammation-based ailments. On the other hand, people who are dominated by Kapha type tend to have strong physical constitution, calm temperament, slow metabolism, and endurance. However, they might be susceptible to metabolic disorders and obesity. The different physical constitutions have helped make dietary prescriptions, life changes, and treatment plans. Scientific studies have been conducted to prove that there is indeed scientific proof of the biological differences between these constitutions (Perera & Jayasuriya, 2025).

2.3 Methods for Prakriti Assessment

Accurate estimation of Prakriti is indispensable for both practical use and research. Traditionally, Prakriti estimation has been conducted by Ayurveda practitioners based on thorough analysis of various parameters related to physiology, psychology, behavior, etc. Nevertheless, differences in experience levels of practitioners and methods used have cast doubts on their reproducibility and standardization. This problem was partially solved by developing standardized questionnaires and scores. Moreover, advances in computational sciences made possible the use of machine learning and artificial intelligence in Prakriti classification. Models based on deep learning proved highly effective in determining constitutional types, thus increasing objectivity and applicability of Prakriti assessment both in clinical practice and research (Khatua et al., 2023). Nonetheless, issues related to the scientific validity and standardization of assessment approaches still remain to be explored (Venkatesh et al., 2025).

2.4 Physiological and Molecular Correlates of Prakriti

Increasing evidence is emerging showing that Prakriti categories could have specific physiological and biological features. Various differences have been noted among the physiological and molecular features among various groups based on the Prakriti category they belong to. For example, there have been notable differences in the sensory perception and the expression of genes encoding for olfactory receptors, which implies that there could be specific physiological and biological mechanisms at play explaining the diversity in the Prakriti categories (Saini et al., 2025). The above findings suggest that Prakriti could be a valid physiological phenotype and not merely a theoretical concept. This idea has motivated scientists to explore the biological basis of Prakriti categories.

2.5 Clinical Relevance of Prakriti-Based Classification

The classification of people into different Prakritis has considerable clinical significance in Ayurveda because of its ability to determine the likelihood of diseases and design personalized treatment plans accordingly. It is widely believed in Ayurvedic texts that certain constitutions are prone to various conditions related to metabolism, inflammation, and immunity. Various studies have examined these relationships to gain a greater insight into Prakriti and determine whether it could be used to predict the development of disease and susceptibility to it (Stringer, 2024). Another interesting application of Ayurveda lies in its ability to link Agni and Ama with metabolism, immunity, and chronic diseases. Such an approach proves the potential of applying Prakriti as a means to understand individual differences between people in terms of physiology and clinical features (Shamrao, 2026; Kolatkar & Nakanekar, 2026). Table 1 summarizes the major characteristics and biological features associated with different Prakriti types of Table 1. The process of Prakriti assessment and its biological correlates is depicted in Figure 1.

Table 1. Characteristics of Major Prakriti Types and Their Biological Features

Prakriti Type	Physical Characteristics	Physiological Features	Psychological Traits	Potential Health Predispositions	Reference
Vata	Lean body frame, dry skin, low body weight	Variable appetite and digestion	Creative, active, anxious	Neurological and stress-related disorders	Venkatesh et al. (2025)
Pitta	Moderate build, warm body temperature	Strong digestion and metabolism	Intelligent, ambitious, irritable	Inflammatory and metabolic disorders	Perera & Jayasuriya (2025)

Kapha	Larger body frame, oily skin, higher endurance	Slower metabolism and digestion	Calm, stable, patient	Obesity and metabolic syndrome	Kolatkar & Nakanekar (2026)
Dual-Dosha	Mixed constitutional traits	Intermediate physiological responses	Variable behavioral patterns	Mixed disease susceptibility	Venkatesh et al. (2025)
Sama Prakriti	Balanced body constitution	Physiological equilibrium	Emotional stability	Better health resilience	Perera & Jayasuriya (2025)

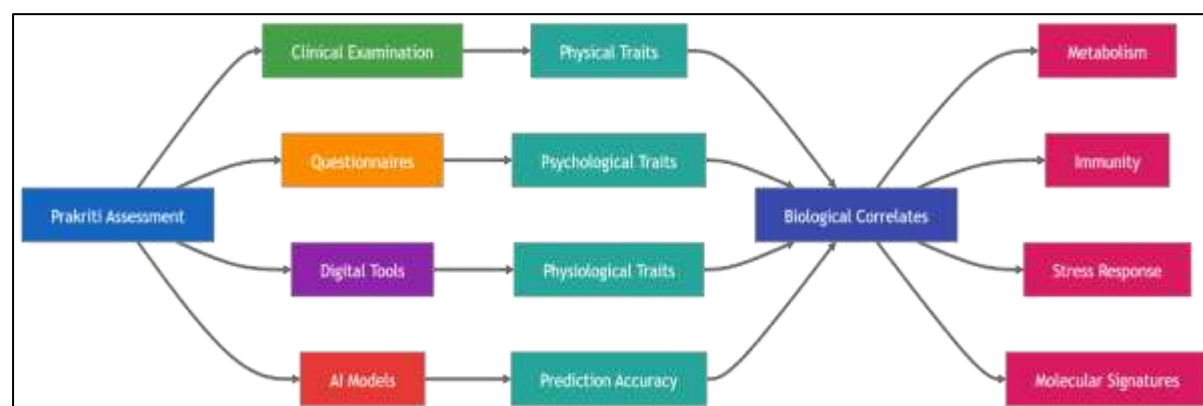


Figure 1. Prakriti Assessment and Biological Correlates

3. Molecular Genetics and Genomic Basis of Prakriti

3.1 Human Genetic Variation and Phenotypic Diversity

Humans show a high degree of genetic variation, which causes differences in the physiology of individuals, their vulnerability to diseases, immune responses, and reactions to treatment. Molecular genetics has advanced so much that now it is possible to pinpoint genetic polymorphism and regulation, which determine the phenotypes of individuals. Within this scenario, there is a unique way of phenotyping people using Ayurveda's system called Prakriti. It is believed that integrating Prakriti with genetic profiling can help identify genetic profiles based on the constitution of people (Saini & Tripathi, 2024).

3.2 Genetic Associations with Prakriti Classification

One of the goals that have guided the research in Ayurgenomics is to establish whether Ayurvedic Prakritis have their own unique genetic make-up. It has been observed in several studies that there exist correlations between certain Prakriti groups and particular genetic variations that have a role in metabolic processes, immune response, and physiological function (Bhat et al., 2022). Such results provide evidence in favour of the assumption that the differences that are found in individuals' constitutions as per the Ayurvedic system may actually exist as genetic variations in these individuals. The validity of this claim has further been proven by means of genome-wide analyses conducted with deep phenotyping and genetic studies. This approach has led to the discovery of some new gene variants due to which it can now be concluded that Prakriti groups can play an important role in the accurate genetic analysis of individuals (Juyal et al., 2022).

3.3 Genome-Wide and Systems Biology Approaches

The usage of systems biology as well as whole-genome studies has increased the range of Prakriti studies from the study of individual genes. Some integrative studies show that it is possible for constitutional categorization to be related to the existence of intricate networks comprising numerous genes, biological pathways, and mechanisms. Using such an approach, the role of genetics in determining constitution types and predisposition to diseases is better understood. Modern research also highlights the importance of combining the traditional Ayurvedic classification approach along with modern computer and molecular methods. The analysis of shared biological pathways in complex diseases shows the potential for phenotype classification in finding biological links between different diseases (Joshi et al., 2024).

3.4 Transcriptomics and Functional Genomics

Apart from genetic polymorphism, research on the role of gene expression in contributing to constitutional variation has been conducted in functional genomics. The transcriptomics approach allows understanding of the regulatory mechanisms involved in biological processes and offers insights into possible signatures of different Prakriti categories. Differences in the levels of gene expression concerning various biological activities such as immune response, metabolic functions, and cellular signalling support the idea that Prakriti refers to different biological conditions rather than simply visible physical features (Saini & Tripathi, 2024). Studies in functional genomics have spurred the creation of models for diseases in Ayurveda, taking advantage of the relationship between constitutional characteristics and molecular profiles of health conditions (Kumar et al., 2026).

3.5 Epigenetics and Gene–Environment Interactions

The relation of gene to phenotype is not only determined by genetic variation passed on from parents but can also include other elements such as epigenetics and the environment. The environment, lifestyle, diet, and stressors can cause changes in gene expression via epigenetic processes like DNA methylation, histone modifications, and RNA interference. Because of the focus of Ayurveda on the interaction between constitutional makeup, the environment, and lifestyle, the epigenetic approach provides an excellent means of establishing the biological mechanism behind the concept of Prakriti. Research into epigenetics, biomarkers, and physiological response has recently started exploring the possibility of using Ayurvedic practices to affect these processes (Chikkanna et al., 2025). Likewise, the study of breathing exercises and lifestyle approaches suggests that environmental effects can be used to alter biological response for personalized medicine purposes (Al-Naggar et al.).

3.6 Expanding Genomic Perspectives in Ayurveda

The recent advancements in the field of integrative biology have resulted in the creation of wider genomic schemes that move past the conventional framework of diseases only. Using molecular genetics, phenotyping and system biology, novel strategies of assessing complex illnesses using the Ayurveda perspective are being investigated. Such multi-dimensional techniques help illustrate the utility of the traditional constitutional system within contemporary biomedicine and the formation of a more customized approach towards healthcare (Jangir et al., 2026). The current scientific evidence gained through genetic, transcriptomic and epigenetic studies indicates the presence of a clear molecular basis for the constitutional system of Prakriti classification. Thus, these data create a robust starting point for the developing science of Ayur genomics. The molecular and genetic features linked to Prakriti classification are presented in Table 2. The molecular genetic framework underlying Prakriti classification is presented in Figure 2.

Table 2. Genetic and Molecular Features Associated with Prakriti Classification

Molecular Aspect	Observed Association with Prakriti	Biological Significance	Reference
Genetic polymorphisms	Distinct variants among constitutional groups	Influence on phenotype and disease risk	Bhat et al. (2022)
Genome-wide associations	Identification of constitution-specific loci	Understanding genotype–phenotype relationships	Juyal et al. (2022)
Gene expression profiles	Differential expression patterns among Prakriti types	Functional biological variation	Saini & Tripathi (2024)
Epigenetic regulation	Environmental modulation of gene activity	Gene–environment interactions	Chikkanna et al. (2025)
Systems biology networks	Complex molecular pathway interactions	Integrative understanding of Prakriti	Joshi et al. (2024)
Phenotype-genotype integration	Constitutional stratification in disease research	Precision medicine applications	Jangir et al. (2026)

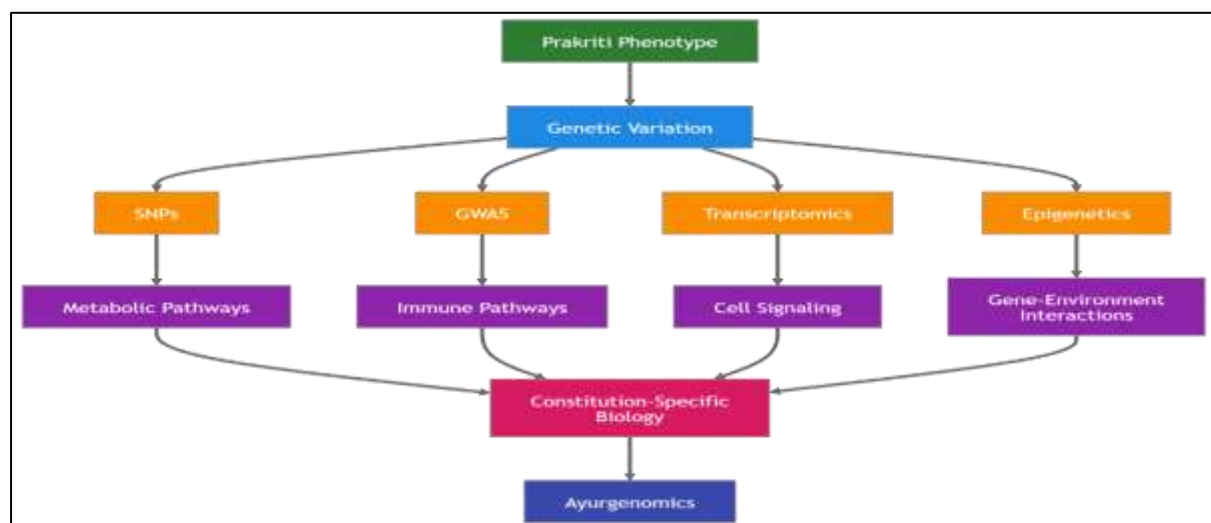


Figure 2. Molecular Genetics and Genomic Basis of Prakriti

4. Ayur genomics: Integrating Ayurveda with Modern Genetics

4.1 Concept and Evolution of Ayur genomics

The fusion between Ayurveda and genomics has brought about a new field referred to as Ayur genomics, which involves efforts geared towards exploring the biological foundations of the classification of constitutions in Ayurveda. As compared to conventional genomics, which involves exploration and identification of genetic

markers for diseases, Ayur genomics takes advantage of Prakriti phenotyping to understand the differences in terms of health, disease susceptibilities, and therapeutic response (Huang et al., 2022). In essence, Ayur genomics serves as a tool that connects traditional medicine to molecular biology, hence making it possible for the advancement of personalized and predictive medicine. The increase in interest in personalized medicine has played a major role in the evolution of Ayurgenomics in the last decade. Scientific researchers have come to realize the potential of using Ayurvedic constitutional phenotypes in genomic studies, especially when it comes to human biological diversity (Joshi & Solanke, 2024).

4.2 Molecular Basis of Ayur genomic Research

An important aim of Ayur genomics is to detect molecular markers for various Prakriti categories. The integration of information from genomics, transcriptomics, proteomics, and metabolomics would allow scientists to detect connections between phenotypic features of constitution and biological processes. Studies have shown that there are certain connections between individual differences in metabolism, immune responses, and adaptation. Additionally, Ayur genomics can be used to research infectious disorders and the efficacy of treatments. Several studies concerning the development of methods to fight viruses have shown that the approach based on the classification according to Prakriti can explain individual differences in susceptibility to infections and response to treatment (Quazi & Pathak, 2023).

4.3 Computational Biology and Ayur informatics

The abundance of biological data has spurred the adoption of computation in the study of Ayur genomics. Bioinformatics technologies make possible the study of intricate relationships at the molecular level and allow scientists to scrutinize traditional Ayurvedic concepts through the modern lens of science. As a result, a new interdisciplinary domain has emerged called Ayur informatics that makes use of computations in explaining the constitution, pathology, and treatment of diseases in a scientifically sound manner (Sharma & Vishwakarma, 2025).

Computation technologies have turned out especially helpful in studying the molecular pathways connected to the concept of Prakriti. Predictive models can be created based on the combination of classical phenotype testing with advanced data analysis techniques.

4.4 Artificial Intelligence and Digital Transformation in Ayurgenomics

The introduction of artificial intelligence in Ayurveda research is one of the ways in which modern innovations are being applied to benefit the practice of Ayurveda medicine. Machine learning systems can process large amounts of data on a patient's clinical, phenotypic, and molecular levels, thus helping to detect patterns that would otherwise remain unnoticed using traditional methods. This technology allows for improving the reliability and repeatability of Prakriti assessment and provides an opportunity to conduct mass-scale Ayurgenomic studies (Nesari, 2023).

Innovations in digital technologies have enabled yet another application of AI to provide for personalized care in Ayurveda medicine. Modern AI systems are actively being developed to help conduct Prakriti assessments in combination with genomics and clinical data analysis (Pathak et al., 2026).

4.5 Explainable Intelligence and Precision Healthcare

As AI-powered health care technologies have evolved, the need for transparency and explainability has also gained momentum. Explainable AI (XAI) models have been suggested as potential strategies to incorporate Ayurvedic concepts into precision medicine paradigms while retaining clinical and scientific integrity. XAI models are intended to provide explainability in order to help health practitioners comprehend the reasons for personalized suggestions made by these models on the basis of extensive data sets (Saxena & Mukerji, 2025). It is safe to say that incorporating explainable intelligence into Ayur genomics has paved the way for achieving predictive, preventive, personalized, and participatory models of health care.

4.6 Translational Applications and Future Directions

In addition to the constitution evaluation aspect, the translational potential of Ayur genomics involves drug discovery, development, and precision medicine. Molecular pathways identified for each Prakriti type can help develop treatments for these patients that will be more effective and less likely to have adverse outcomes. This is especially useful when developing personalized therapeutics and discovering new drug targets based on constitutions' differences (Huang et al., 2022). The combination of traditional knowledge about medicine and advances in modern pharmaceutical research has proven to be fruitful for the discovery of new bioactive substances and therapeutic strategies. The examples mentioned above indicate the importance of the contribution that Ayur genomics can make to advancing evidence-based medicine and combining different medical approaches (Shah et al., 2025).

In summary, Ayur genomics constitutes an emerging scientific area that utilizes constitutional phenotyping, molecular biology, computational methods, and AI technologies to develop personalized medicine solutions. Establishing connections between Prakriti types and biology proves to be an important aspect of this science. Key studies demonstrating the integration of Ayurveda and genomics are summarized in Table 3. The integration of Ayurveda and modern genomics through the Ayurgenomics framework is shown in Figure 3.

Table 3. Major Ayur genomics Studies Linking Prakriti and Genetic Variations

Study	Research Focus	Major Findings	Significance	Reference
Ayurgenomics approach	Prakriti-based drug discovery	Constitutional stratification may improve personalized care	Precision medicine	Huang et al. (2022)
Ayurgenomics in drug development	Integration of Ayurveda and genomics	Potential for targeted therapeutic development	Personalized therapeutics	Joshi & Solanke (2024)
Rheumatoid arthritis GWAS	Deep phenotyping using Ayurveda	Identification of novel genetic associations	Disease stratification	Juyal et al. (2022)
Ayurgenomics and antiviral therapy	Constitution-based therapeutic responses	Improved understanding of inter-individual variability	Translational medicine	Quazi & Pathak (2023)
AyurXAI framework	Explainable AI in precision medicine	Improved interpretability of healthcare models	Digital healthcare	Saxena & Mukerji (2025)
Ayurinformatics	Computational analysis of Ayurveda	Enhanced biological interpretation of traditional concepts	Bioinformatics integration	Sharma & Vishwakarma (2025)

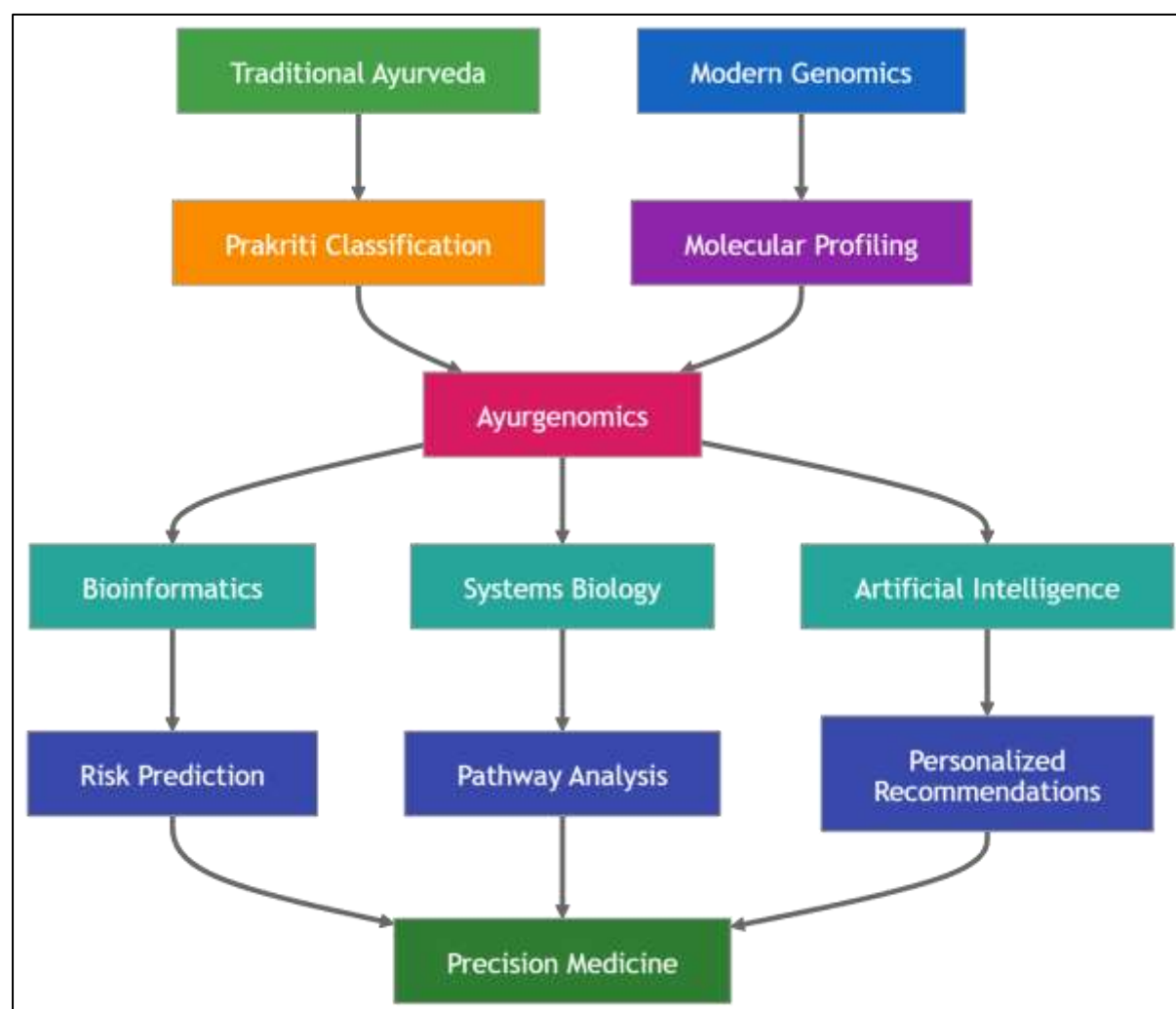


Figure 3. Ayurgenomics Model for Precision Medicine

5. Prakriti, Genetic Variations, and Disease Susceptibility

5.1 Prakriti and Metabolic Disorders

The Ayurvedic concept also considers the fact that different constitutions lead to differing efficiencies in metabolic functions, the use of nutrients, and risk of chronic diseases. It has been traditionally believed that there are variations in the physiological characteristics, digestion capability, and metabolism in persons having different types of Prakriti, which could be responsible for increased susceptibility to certain metabolic disorders. Those people who have kapha Prakriti tend to have a slow metabolic rate and excessive accumulation of tissues;

therefore, it is considered that those persons with kapha Prakriti tend to suffer from obesity along with other metabolic disorders. There has been increasing recognition among researchers regarding the role of personalization based on constitution and nutritional factors in explaining metabolic disorders (Kharode & Tavhare, 2025).

Diabetes is one of the most serious metabolic disorders, and the traditional Indian medicines have always advocated individualizing the approach towards treatment (Panda et al., 2023).

5.2 Prakriti and Cancer Susceptibility

The impact of constitutional features on the development of cancer risk has become one of the significant issues under investigation in the field of integrative medicine. According to Ayurveda, the disorders related to the doshas and malfunctioning of metabolic processes and immune functions lead to the emergence of various diseases, including malignant tumors. The emerging data indicates that the variation in constitutions may play a significant role in the processes of immune surveillance and inflammatory reactions and regulate carcinogenesis mechanisms. A number of recent publications highlight the role of Ayurvedic and nutritional treatments in improving the health status of patients with malignant tumors. This issue can be associated with the assumption about the individual features of constitution being responsible for the processes of development and treatment of the mentioned diseases. The use of constitutional and molecular differences between individuals to provide proper medical treatment is confirmed by the data concerning the impact of natural substances' effects on immune systems of organisms (Sharma et al., 2025; Valappil et al., 2025).

5.3 Wound Healing and Physiological Response Variability

Variations in constitution can also affect tissue regeneration and healing after injuries. According to Ayurvedic theory, the body's ability to heal is connected to its physiological homeostasis, metabolism, and immunity. Contemporary studies have examined the use of natural formulations as treatments to stimulate wound healing, especially when such wound healing occurs against the backdrop of metabolic problems. Research on polyherbal wound healing for diabetics shows the importance of an integrative treatment approach that considers the specific nature of the disorder and also the patient's physiology (Tank et al., 2024).

5.4 Neurocognitive and Behavioural Disorders

The distinctions on the basis of Prakriti have also been made in relation to certain psychological and behavioral factors. According to Ayurveda, individuals belonging to different constitution have different mental and emotional attributes. This aspect of differentiation from conventional physiology led scholars to examine the possibility of any relation between constitutions and neurological diseases. Some integrative reviews carried out in recent years indicate the significance of adopting an integrated approach involving both Ayurvedic and contemporary medical science for addressing behavioral disorders, especially in children. In this regard, the integration of knowledge about constitution seems to provide important insights concerning illness, symptoms, and patient management (Yadav et al., 2026).

5.5 Neurocognition, Immune Function, and Personalized Disease Risk

The association between constitution variability and disease susceptibility may occur through the intricate interplay of genetics, metabolism, neurology, and immunology. This connection can be seen in the holistic approach of Ayurvedic medicine, which focuses on understanding the interdependence of all bodily systems. Individual differences in neurocognitive processes, immune regulation, and physiologic adaptability could be the basis behind health disparities found among individuals with different constitutions. In recent times, approaches that integrate traditional knowledge in medicine with current neuroscience have pointed to the effectiveness of a personalized approach to health care in cognitive diseases (Ravishankar, 2026).

5.6 Implications for Personalized Disease Prediction

The increasing number of studies showing the connections between constitution-specific traits and the onset of metabolic, inflammatory, oncological, and neurobehavioral diseases makes Prakriti a good tool to analyse disease predisposition. The exact mechanisms connecting constitution types with such illnesses have not been found yet; however, research results suggest that it is possible to obtain useful information about individual risks using the classification.

Thus, combining the concepts of constitution types proposed by traditional practitioners and advanced technologies will make it easier to predict diseases, implement preventive measures, and find out how to cope with various disorders. The association between Prakriti types and disease susceptibility is outlined in Table 4.

Table 4. Disease Susceptibility and Clinical Associations Across Prakriti Types

Disease Category	Vata	Pitta	Kapha	Reference
Metabolic disorders	Moderate risk	Moderate to high risk	High risk	Kharode & Tavhare (2025)
Diabetes	Variable susceptibility	Moderate susceptibility	Increased susceptibility	Panda et al. (2023)

Cancer-related conditions	Variable response	Increased inflammatory tendency	Metabolic contribution to risk	Sharma et al. (2025)
Wound healing disorders	Delayed recovery potential	Moderate healing response	Better tissue stability but slower metabolism	Tank et al. (2024)
Neurobehavioral disorders	Higher susceptibility	Moderate susceptibility	Lower susceptibility	Yadav et al. (2026)
Neurocognitive dysfunction	Stress-related vulnerability	Moderate risk	Relatively stable profile	Ravishankar (2026)

6. Applications in Precision Medicine and Future Healthcare

6.1 Prakriti-Based Personalized Medicine

As a result of this increased importance attached to precision medicine, there is now a possibility of incorporating the assessment of constitutional types into modern medical practice. This is because Ayurveda has always believed in the use of individualized treatment modalities depending on Prakriti since individuals have different physiological, biochemical, and psychological traits. The development of the discipline of Ayurgenomics has further cemented this idea since differences in constitutions may be genetically based. This means that healthcare systems based on the assessment of Prakriti provide an excellent approach towards providing individualized health care.

The importance of a personal approach is especially applicable in areas such as nutrition and lifestyles since individual differences play a role in influencing physiological responses. In addition, recent developments in the area of Ayurvedic nutrition emphasize the need for incorporating the concepts into mainstream healthcare systems for individualized healthcare (Kumar et al., 2025).

6.2 Pharmacogenomics and Therapeutic Optimization

One of the major uses of Ayur genomics can be applied to pharmacogenomics. It is aimed at exploring the ways in which genetic diversity affects the efficiency of drug treatment and its side effects. In traditional medical practice, there is considerable variability between patients in the effectiveness of prescribed medication due to the genetic diversity of their organisms, as well as their biochemical peculiarities. Prakriti classification may add to the list of factors affecting drug response and contribute to more efficient therapeutic practice.

Another aspect of application of Ayur genomics in medicine relates to Ayurveda's wide use of medicinal plants and their extracts. This feature opens up new possibilities for using botanical knowledge in developing more efficient treatment regimens for individual constitutions (Singh & Singh, 2023).

6.3 Integrative Approaches for Disease Prevention and Management

The principles of personalized Ayurveda not only apply to therapies but also involve disease prevention, health maintenance, and supportive care. While addressing health concerns during global health crises, Ayurvedic therapies have been tested for their effectiveness in boosting immunity, facilitating recovery processes, and ensuring an optimal state of wellbeing. This research underscores the importance of personalized medicine and its application for prevention and therapy, considering constitutional diversity (Meenakshi et al., 2022).

In addition, there is substantial evidence on the physiological benefits brought about by interventions aimed at influencing respiration and lifestyle habits. This research corroborates the belief in personalized Ayurvedic medicine as an effective method of promoting health and preventing diseases (Rain et al., 2022).

6.4 Artificial Intelligence and Digital Health in Ayurveda

Improvements in AI and digital health technologies are making it possible for Ayurvedic medicine to be used more effectively within the clinical setting. Technologies using AI can help ensure the accuracy, reliability, and scalability of Prakriti classification, as they are able to make use of databases containing phenotypic and clinical data.

There have been promising developments recently in the field of AI-powered Ayurveda, which suggest that this is a potentially highly productive field of study. The integration of Ayurvedic medicine with the use of advanced digital health technologies can significantly enhance the application of precision medicine frameworks (Shaumya & Kumar, 2025).

6.5 Future Directions for Precision Healthcare

Combining the classification based on Prakriti with genomics, nutritional science, pharmaceuticals, and artificial intelligence marks an important milestone towards the actualization of personalized medicine. As genetic proofs of variability in constitution continue to emerge, Ayur genomics can help create predictive models that can predict disease risks, optimize drug response, and improve preventive healthcare practices.

Further investigation in this domain requires the development of large-genomic studies, the use of multi-omics technologies, and validation of the efficacy of Prakriti-based treatments. Such developments are crucial in building scientific legitimacy of Ayur genomics and integrating this emerging field with conventional medicine. Combining ancient knowledge of constitutional differences with advancements in modern technology allows for creating an effective framework for future personalized healthcare. Applications of Ayurgenomics in precision medicine and

personalized healthcare are summarized in Table 5. The clinical applications of Prakriti-based stratification in personalized healthcare are illustrated in Figure 4.

Table 5. Applications of Ayurgenomics in Precision Medicine and Personalized Healthcare

Application Area	Role of Prakriti-Based Stratification	Potential Outcome	Reference
Personalized nutrition	Constitution-specific dietary recommendations	Improved metabolic health	Kumar et al. (2025)
Pharmacogenomics	Prediction of therapeutic response	Enhanced treatment efficacy	Singh & Singh (2023)
Preventive healthcare	Early identification of disease susceptibility	Risk reduction and health promotion	Meenakshi et al. (2022)
Lifestyle interventions	Customized breathing and wellness practices	Improved physiological resilience	Rain et al. (2022)
Artificial intelligence	Automated Prakriti assessment and predictive modeling	Precision healthcare delivery	Shaumya & Kumar (2025)
Digital Ayurveda	Integration of clinical and molecular data	Personalized healthcare systems	Pathak et al. (2026)

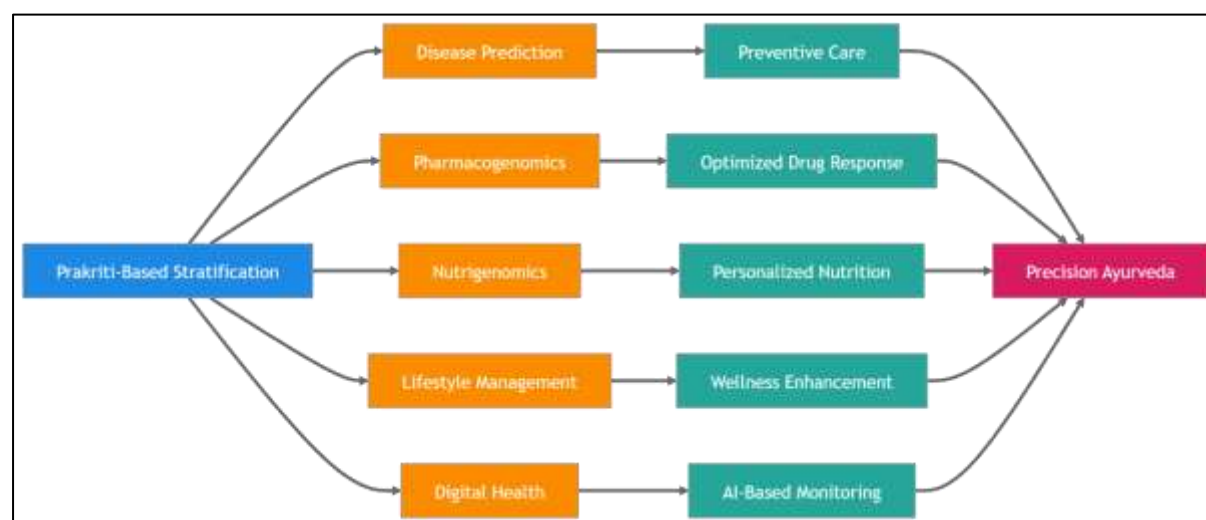


Figure 4. Applications of Prakriti-Based Personalized Healthcare

7. Challenges and Future Perspectives

7.1 Limitations of Current Evidence

Even though there have been major developments made in this branch of genomics, the scientific verification of Prakriti-related genes still needs work to be done. Most of the current literature has been carried out on relatively smaller sample sizes, making it difficult for researchers to generalize their conclusions. Additionally, differences in approaches such as methodology, population used, etc. have created inconsistencies among many studies. In addition to that, due to the multifaceted nature of this concept, there may not always be a cause-and-effect relationship between genes and Prakriti. One other critical limitation of the studies carried out to date is that most of them are cross-sectional; thus, the results only give a picture at one moment in time and fail to reflect the dynamic interaction among genetics, environmental factors, health status, and lifestyle habits.

7.2 Challenges in Standardization and Validation

A serious impediment to conducting research on Prakriti is the problem of a lack of universal standardized methods for constitution assessment. Though several questionnaires and computer-assisted applications for assessment purposes have been created, the variability of criteria for assessment and differences in their interpretation by various practitioners may interfere with the achievement of uniformity. Moreover, the subjectivity inherent in some constitutional characteristics poses an additional obstacle to the creation of universally recognized diagnostic tools. There is another aspect of Prakriti investigation that makes the research process difficult. It involves combining classical Ayurvedic notions and the language of modern biology and medicine.

7.3 Future Directions in Ayur genomics Research

The future direction of Ayur genomic research needs to be in the direction of developing more molecular evidence that is able to correlate between Prakriti categories and genotypic differences, transcriptome alterations, proteome changes, metabolomics data, and epigenetics. The use of multi-omics approaches can offer more insights into the underlying biology associated with constitutional types and susceptibilities to various diseases. Large scale

collaboration with different study populations will be important in confirming any results obtained thus far and in discovering both population-specific and general constitutional markers.

7.4 Precision Ayurveda and Digital Healthcare

Ayur genomics in the coming days holds promise in the area of precision medicine and digital health due to progress being made in areas like artificial intelligence, machine learning, bioinformatics, and systems biology. These advancements could aid in the development of better ways of conducting Prakriti analysis and health risk predictions. With the integration of constitutional assessments and genetic testing, there is an opportunity for predicting diseases, optimizing treatment plans, and enhancing preventive health strategies using such predictive models. In the long run, such a development could lead to the development of Precision Ayurveda, which is a science-driven healthcare approach.

8. CONCLUSION

The use of Ayurveda Prakriti classification is one of the oldest and most detailed methods for achieving personalized medicine. Using different Prakriti types for characterizing the constitution of people helps to understand individual characteristics regarding physiology, metabolism, psychology, susceptibility to diseases, and therapeutic effects. The development of molecular genetics and genomics gives an opportunity to test the hypothesis and study the biological bases of *Prakritis*. The scientific literature includes several findings based on genetic, transcriptomic, epigenetic, and systems biology analysis, indicating the existence of molecular differences between different Prakriti types. This information plays an important role in developing the field of Ayur genomics, which is a combination of Ayurveda phenotypic analysis with molecular genomics. Moreover, the usage of Prakriti-based methodologies in precision medicine, pharmacogenomics, nutrition, and telemedicine has proven the broader implications of Ayurveda's philosophy in current biomedical science. In addition, the use of artificial intelligence and computing technologies has broadened the horizons of Ayur genomics, thereby making it easier to objectively assess constitution and plan care accordingly. Thus, the relation between genetic makeup and Prakriti can be considered scientifically credible ground to unite the age-old philosophy of Ayurveda and modern molecular science. As the research findings continue to pour in, Ayur genomics will prove immensely important in creating predictive, preventive, and personalized medicine systems that combine both science and art in an unprecedented way.

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