

## IMPORTANCE OF AYURNUTRIGENOMICS IN HUMAN HEALTH: A REVIEW

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### ABSTRACT

The term nutrigenomics is associated with nutrient and this term can be explained as the science which describe role of nutrient in human health. Nutrition directly related to the nourishment of body and also involve in diet related diseases. Metabolic function affected by diet and selection of food play vital role in this context. Type of foods which we choose is most important, however global variability and versatility in culture makes food selection process crucial. In this regard nutrigenomics works significantly to find out correct dietary supplement according to the individual need. It is the blend of high throughput technology which utilizes dietary intervention, nutrition research and genetic profile analysis for providing write choice for dietary fulfilment. Taking importance of this concept present article highlights significance of ayurnutrigenomics in human health. The combination of Ayurveda and nutrigenomics referred to Ayurnutrigenomics. This combination works for proper balancing the body, healthy mind and spirit through healthy lifestyle, planned diet and medicines, etc.

**KEYWORDS:** *Ayurveda, Ayurnutrigenomic, Nutrient, Food, Diet.*

### INTRODUCTION

Nutrigenomic is concept which identifies nutrition and genetic differences that influence health. Personalize lifestyle and dietary recommendation for individuals genetic body makeup help to achieve healthy physical and mental state. Medicine and food are integrated element which play vital role for eradication of diseases. Concept of Ayurnutrogonomic works appreciably in this regard.

Ayurnutrogonomic elaborate *Prakriti* in terms of genetics differences of individuals, it considered every person and individual body tendency as combination of *Vaat*, *Pitta* and *Kapha Dosh*'s. Ayurnutrogonomics offers personalized approach towards the prediction, prevention and treatment of disease through molecular variability. This genetic difference among individuals affects their susceptibility to diseases.<sup>[1,4]</sup>

Ayurnutrigenomics, a growing area which personalizes dietary and lifestyle choices according to the individual's *Prakriti* need. This approach of personalized nutrition aims to develop functional foods and nutraceuticals suited to one's genetic makeup. This approach enhances effectiveness of nutrigenomic research. This concept believes that every food component can influence molecular mechanism of organism.

Ayurveda emphasizes preventive and personalized medicine through balancing three biological entities known as *Vata*, *Pitta* and *Kapha*. Ayurveda adopts *Pathya* or *Ahara* and *Ausadha* as therapeutic tools to harmonize these *Dosh*as based on individual *Prakriti*. Ayurnutrigenomics suggested write food, activities and medicines according to the individual constitution or genetic differences.<sup>[4,6]</sup> The basic element of Ayurnutrigenomics is depicted in **Figure 1**.

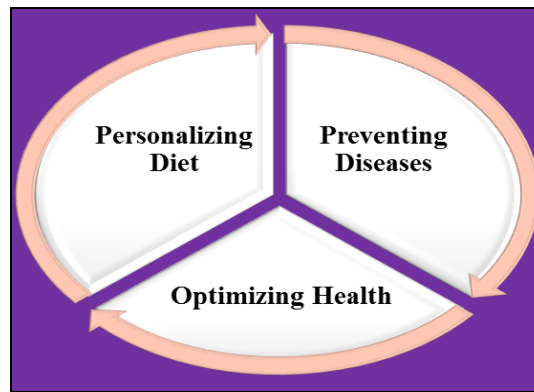


Figure 1: Basic elements of Ayurnutrigenomics.

➤ **Personalizes diet**

Planned diet for individual which suited with its genetic profile and Ayurvedic constitution for mitigation of these *Dosha*'s to improve metabolism and digestion.

➤ **Preventing Disease**

Recognize genetic tendencies to certain diseases for resolving the risk recommending specific food and some herbal medicines.

➤ **Optimizing Health**

Ayurvedic guideline and recommended dietary habits enhances overall wellness and works as per the individual's *Prakriti*.

**Rationale behind the concept of Ayurnutrigenomics**

In Ayurveda digestive system is primary aspect to mitigate any disease, proper functioning of digestive system depends on food taken by individual. Food affects molecular mechanism and metabolic activities which merely govern health of person. Thus appropriate molecular mechanism and metabolic activities can be achieved through the balanced diet as per the individual need. Planned diet taken by individual is most important, according to this concept diet and medicine should be planned according to the *Prakriti* of individual.<sup>[6,8]</sup>

**Ayurnutrigenomics and *Prakriti***

Diet can affects proper functioning of *Doshas* thus can become part of therapy along with medicine. *Vata* is responsible for transportation within the body, *Pitta* governs digestion and cellular metabolism and *Kapha* is responsible for cohesion and lubrication inside the body. Each person is born with a unique combination of these *Doshas*, termed *Prakriti*. There are seven primary *Prakriti* types: *Vata*, *Pitta*, *Kapha*, *Vata/Pitta*, *Pitta/Kapha*, *Vata/Kapha*, and *Vata/Pitta/Kapha*. The individual belongs from specific *Prakriti* and needs diet or medicines accordingly; in this regard the concept of ayurnutrigenomics provides compressive suggestion as per the genetic or constitutional needs of individual. Here proper nutrient through the planned diet acts as preventive or therapeutic tool along with medicine against many diseases.<sup>[7,9]</sup>

**Nutrient and Ayurnutrigenomic**

Ayurnutrigenomic works on mainly four types of nutrition; preventive nutrition, promotive nutrition, participatory nutrient and personalized nutrition.

**Preventive nutrition** prevents and reduces impact of diseases. The disease like obesity, hypertension and diabetes, etc. seeks such types of nutrient or diet that can prevent complications of these conditions. With the help of nutritious food which give best result against these diseases the pathological progression of such conditions can be arrested. The processed and packaged contain higher amount of sugar and fat which responsible for poor health and chronic disease. Aim of preventive nutrition is to remove these food products from dietary chart of individual.

**Promotive nutrition** promotes general health and protect from malnutrition and other conditions associated with over eating or insufficient intake of nutrition. Healthy diet such as fruits, whole grain and vegetables, etc. can work in this regard. However consideration of individual *Prakriti* is again very important; for example citrus fruit can't be given to the person of *Kapha Prakriti* in winter season.

**Participatory nutrient** include approach of nutrition planning and intervention that involves the active engagement and collaboration of community members in the process. This method emphasizes importance of perspectives, knowledge and experiences of the people who are directly involve in nutrition-related issues. This approach tend to create more effective and sustainable nutrition programs by ensuring culturally appropriate and specific needs of the community.

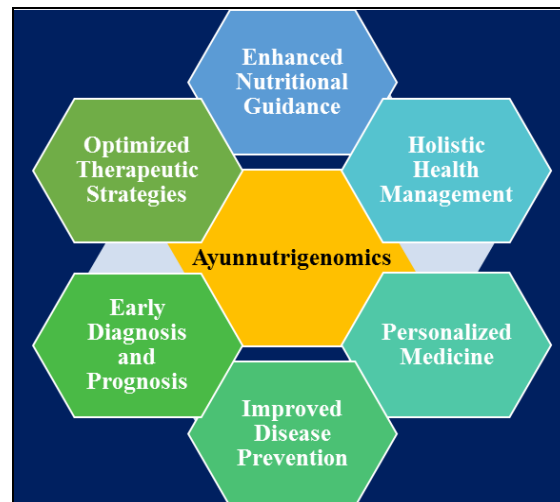
**Personalized nutrition** acknowledges the uniqueness of individuals in terms of their metabolism, genetics and biochemical compositions, etc. Personalized nutritional plan consider these factors alongside personal body measurements, weight, lifestyle and eating habits, etc.<sup>[4,7]</sup>

**Importance of Ayurnutrigenomic in human health**

Ayurnutrigenomic suggests personalized and preventive diet and drugs according to *Prakriti*. This approach establishes synchronization amongst soul, body and

mind, additionally selected *Ahara* and drugs helps in mitigation of *Dosha*. Ayurgenomic is a personalized approach which recognizes body need for preventive, predictive and curative purposes. It helps to plan dietary and suitable drugs according to the variability of molecular diversity. It examines genetic differences among individuals to understand their susceptibility. Appropriate dietary and lifestyle recommendations along with medicines are prescribed, considering their *Prakriti*

through the clinical assessment. Which nutrient is required in our body and which one is need to remove from body, this recognition is major part of Ayurnutrigenomics. Genetic behaviour of individual affects selection of diet and drugs that can prevent and cure diseases in better way. Therefore Ayurnutrigenomics play vital role in the promotion of human health. The importance of Ayurnutrigenomics in human health is depicted in **Figure 2**.



**Figure 1: Importance of Ayurnutrigenomics in human health.**

Ayurnutrigenomics offers effective treatment on the basis of individual genetic body make up and allows for the customization of healthcare plan based on *Prakriti*. Personalized dietary recommendations can be made to support optimal health, based on genetic predispositions and individual constitution. By understanding genetic susceptibilities, preventive measures can be prescribed to reduce the risk of developing certain diseases. Treatment plans can be better aligned with an individual's genetic profile and *Prakriti*. This approach potentially increases efficacy of therapies and reduces adverse effects. Ayurnutrigenomics integrates traditional Ayurvedic principles with modern genetic insights, promoting a more comprehensive approach to health and wellness. Genetic screening and *Prakriti* assessment can aid in early detection of potential health issues, allowing for timely intervention and improved outcomes.<sup>[4,8,10]</sup>

## CONCLUSION

Nutrigenomics offers significant potential for preventing and managing diet-related conditions such as obesity and diabetes, etc. Ayurveda-inspired concept of personalized nutrition represents a novel approach in nutrigenomic research for developing functional foods and nutraceuticals prescribed to an individual's genetic makeup. This concept intersects food and medicine, taking into account their effects based on a person's *Prakriti*. Ayurnutrigenomics utilizes various omics technologies (epigenomics, genomics, proteomics and transcriptomics) for integrating ancient and modern approaches. Ayurnutrigenomics provides personalized approach in predictive, preventive and curative aspects

of selecting medicine, *Ahara* and *Vihara* considering molecular variability and the mind-body connection of individual.

## REFERENCES

1. Breen F.M., Plomin R., Wardle J. Heritability of food preferences in young children. *Physiol Behav.*, 2006; 88: 443–447.
2. Teucher B., Skinner J., Skidmore P. Dietary patterns and heritability of food choice in a UK female twin cohort. *Twin Res Hum Genet.*, 2007; 10: 734–748.
3. Frazer K.A., Murray S.S., Schork N.J., Topol E.J. Human genetic variation and its contribution to complex traits. *Nat Rev Genet.*, 2009; 10: 241–251.
4. Sethi T.P., Prasher B., Mukerji M. Ayurgenomics: a new way of threading molecular variability for stratified medicine. *ACS Chem Biol.*, 2011; 6: 875.
5. Debnath PK, Mitra A, Hazra J, Pandit S, Biswas TK, Jana U, et al. Evidence based medicine – A clinical experience on Ayurveda Medicine in Recent Advances in Herbal Drug Research and Therapy. In: Roy A, Gulati K, editors. New Delhi: I K International Publishing House Pvt. Ltd., 2010; 49–73.
6. Ghodke, Y.; Joshi, K.; Patwardhan, B. Traditional medicine to modern pharmacogenomics: Ayurveda *Prakriti* type and CYP2C19 gene polymorphism associated with the metabolic variability. *Evid. Based Complementary Alternat. Med.*, 2011; 249528.
7. Rotti, H.; Guruprasad, K.P.; Nayak, J.; Kabekkodu, S.P.; Kukreja, H.; Mallya, S.; Nayak, J.; Bhradwaj,

- R.C.; Gangadharan, G.G.; Prasanna, B.V.; et al. Immunophenotyping of normal individuals classified on the basis of human dosha prakriti. *J. Ayurveda Integr. Med.*, 2014; 5: 43–49.
8. Govindaraj, P.; Nizamuddin, S.; Sharath, A.; Jyothi, V.; Rotti, H.; Raval, R.; Nayak, J.; Bhat, B.K.; Prasanna, B.V.; Shintre, P.; et al. Genome-wide analysis correlates Ayurveda Prakriti. *Sci. Rep.*, 2015; 5: 15786.
  9. Rotti, H.; Mallya, S.; Kabekkodu, S.P.; Chakrabarty, S.; Bhale, S.; Bharadwaj, R.; Bhat, B.K.; Dedge, A.P.; Dhumal, V.R.; Gangadharan, G.G.; et al. DNA methylation analysis of phenotype specific stratified Indian population. *J. Transl. Med.*, 2015; 13: 151.
  10. Aggarwal, S.; Gheware, A.; Agrawal, A.; Ghosh, S.; Prasher, B.; Mukerji, M.; Indian Genome Variation Consortium. Combined genetic effects of EGLN1 and VWF modulate thrombotic outcome in hypoxia revealed by Ayurgenomics approach. *J. Transl. Med.*, 2015; 13: 184.