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## Ayurgenomics – The New Insight in Preventive Approach for Life Style Disorder

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### ABSTRACT

The Ayurgenomics is the perfect assimilation of *Ayurveda* principles with the genome of a particular individual. It is characterized by concept of personalized intervention for the preventive, predictive and therapeutic approach for an individual. It includes the study of diversities among humans due to their genetic variability through the help of their constitution type or *Prakriti* (mainly V, P or K *Pradhanyabroadly*) for assessing the susceptibility, prognosis and response for any disease agent.

Development and progression of various ailments depend on the vitiation of the *doshas*, and the aim of therapeutic practice is to ensure that, the *doshas* retain their homeostatic state. Ayurgenomics is supposed to help in smoothly integrating *tridosha* concept of *Ayurveda* for serving the humanity by designing a specific diet; life-style or medicine for each particular person. Here in this article a novel approach is discussed to find out the various methods to prevent the life style disorders through Ayurgenomics.

### KEYWORDS

*Ayurgenomics, Ayurveda, Prakriti, Tridosha, Genome*



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## INTRODUCTION

The life style disorders are that diseases which are actually generated due to faulty life style adopted by a person in various wrong ways of living as, wrong eating habits, the bad postural habits, and the disturbed regimen of day & night etc which causes many diseases as metabolic syndrome including obesity, high blood pressure, raised fasting sugar, high serum triglycerides, and low HDL and other chronic diseases as Asthma, cardiac disease, schizophrenia, Alzheimer's disease etc.

The occurrence of such diseases allows the combination of pathology of genetic and extra genetic factors, so to rule out them a comprehensive management is required. The *Ayurved* science is so advance and exclusive in the form that it can predict, what *ahar- vihar* should be followed by a particular person, contrary to which could lead into vitiation of *doshas* and resulting into Diseases<sup>1</sup>. A particular input works as a triggering factor of pathology for one while for another it does not cause any harm, which depends upon the *prakriti* and *Doshic* equilibrium of that person<sup>2</sup>.

### **PRAKRITI –**

The *prakriti* of a person is determined by genetic (*sukra* and *shonit*)<sup>3</sup> and extra-genetic factors as maternal diet, life-style

and environment etc<sup>4</sup>. The *prakriti* remains invariable throughout life. Besides these, the ethnicity, familial patterns, and climatic condition also influence the *prakriti*<sup>5-6</sup>. So seven possible constitution varieties are assumed as a whole viz. *vataj*, *pittaj*, *kaphaj*, *vata-pittaj*, *vata-kaphaj*, *pitta-kaphaj* and *vatta-pitta-kaphaj*. Broadly these are divided into three as *vata*, *pitta* and *kaphapradhan*, which are assessed by querying a vivid questionnaire of various attributes of physical, mental and physiological characteristic. In *Ayurveda*, there is large description on the factors which increase or decrease these *Dosha* depending on the use of various *ahar*, *vihar* and *aushadh*. So here it is discussed that if *doshas* are vitiated due to adopting the *apathy* regimen, improper diet, poor digestion, day-to-day stress levels and environmental pollution and chemicals<sup>7</sup>, than what plan should be customized to balance these *doshas* in maintaining the harmony of body.

### **GENOMICS –**

Genomics is a field of science which focuses on the structure, function, evolution, mapping, and editing of genomes<sup>8</sup>. Organism's complete set of DNA, including all of its genes is actually the Genome of that organism. Genomics also involves the sequencing and analysis of genomes through DNA



sequencing and bioinformatics to correlate and conclude the function and structure of entire body<sup>9</sup>. It includes the study of DNA, RNA etc at cellular and tissue level. The discovery of DNA molecule has changed the face of genetic study by informing the role and effect of various genes in the body. Its knowledge can be used as a source of health care. This science is gaining its popularity by focusing in management of genetic disease, modification of food habits according to favorability of genetic make-up etc, for e.g. there are several genes that can lead into specific disease. As disease Phenylketonuria (PKU) occurs due to mutation in single gene which causes excess formation of amino acid-phenylalanine. So the simple thing is to modify the diet which limits the intake of this amino acid<sup>10</sup>. In the same manner various other chronic and life style diseases as diabetes, heart disease, Alzheimer's disease, asthma, epilepsy, stroke, schizophrenia and bipolar disorder in the world are believed to interact with dietary intake, living style and genetics. These are mainly manifested due to changes in life styles, dietary habits and not to adapt with newer environments. These diseases are taking major concern in present time because they need lifelong medication, associated drug induced complication and costly interventions. Today's major

demand of era is to identify the prone individual by examining the *prakriti* or genome and to customize a format of medicines or regime of do and don'ts for maintenance and promotion of health as well as for alleviation of disease conditions. The concept of individual regimen is a developing concept of genomics suitable for one's genetic makeup with the help of *Ayurveda*. The *Ayurveda* not only talks about internal environment of an individual as age, constitution, metabolic activity and mental state, but also take much concern about external factors like time, season and habitat, place etc.

#### **AYURGENOMICS –**

It is an attempt to unite the principles of *Ayurveda* with genomics<sup>11</sup>. *Ayurveda* classifies healthy individuals according to three *doshas* viz. *vata*, *pitta* and *kapha*. This classification system also determines an individual's predisposition to disease and his or her response to drugs and the environment. In *ayurveda*, therapy is customized to an individual's physiology. In contrast, Orthodox medicine regards all individuals as identical during treating a disease<sup>12</sup>. *Ayurgenomics* focus on the concept of *Prakriti* which comprehend the three *doshas*, according to which each individual is unique in the way of their constitution including physical, physiological and psychological aspects and



designed for individualized diet, lifestyle and treatment<sup>13</sup>. Healthy individuals of contrasting *Prakriti* types i.e. *Vata*, *Pitta* and *Kapha* identified on the basis of *Ayurveda* exhibit striking differences at the biochemical and genome-wide gene expression level<sup>14</sup>. By studying the genetic make-up and assessment of *prakriti* from the beginning, the prone children can be searched out. And they are advised to follow a very specially designed specific diet, life style and *pathya-apathya*. It will help in, not to indulge in diseases in later of their life. It ultimately help in bringing healthy generation and healthy country, who can be a productive in various fields and escape themselves from lifetime medications, disease complications and side effects of medicine. But the difficulty or the challenge of *ayurgenomics* for adopting this vision is to establish the correlation between DNA and *Prakriti*. The *prakriti* based diet and lifestyle will help in changing the current picture of health at global level. Newer researches in the field of *ayurgenomics* are being carried out on HLA gene. The human leukocyte antigen (HLA) system or complex is a gene-complex encoding the major histocompatibility complex (MHC) proteins in humans. These cell-surface proteins are responsible for the regulation of the immune system in humans<sup>15</sup>. HLA

genes are highly polymorphic, which means that they have many different alleles, allowing them to adjust the adaptive immune system. Human leucocyte antigen (HLA) gene polymorphism in the human population, classified by the three major *Prakriti* type. Many chronic diseases such as type I diabetes, ankylosing spondylitis, and rheumatoid arthritis are known to have an immunogenetic-basis. The relative risk of occurring such diseases is estimated by comparing the frequency of these alleles in healthy and ill populations. Overlap among *prakriti* types is confirmed by the equal distribution of some alleles in two or more *prakriti* classes. BittiandaKuttapa Thelma, head of Delhi University's genetics department, researched on the disease-Rheumatoid arthritis, and the results were surprising. The study on multiple patients on diagnosed case of R.A reported notable differences between the five immunological factors, including BMI, pain, swelling, stiffness, ESR, anti-CCP antibodies, and rheumatoid arthritis factor, among the three sub-groups of *prakriti*<sup>16</sup>. And it is found that, the disease profiles were most pronounced in the *vata* subgroup, similarly with the *Ayurveda* principle that *vata* people were susceptible to arthritis. It is also found that genes linked to inflammatory pathways influenced arthritis in the *vata* group but in



*pitta* group - genes involved with oxidative stress showed up. This meant different gene interactions and mechanisms led to the arthritis condition, and in turn needed different treatment approaches. This favors the *Ayurvedic* system of classifying rheumatoid arthritis patients according to their body constitution *vata*, *pita* and *kapha*, for treatment.

## DISCUSSION

Our Indian system of medicine provides much consideration to control and prevents them. In *Ayurveda* there is much attention to follow the day, night and seasonal regimen of life. The concept of *Pathyaahar-vihar*, concept of not holding the unavoidable urge, the concept of contraindicated food and wrong combination of mixing the different food etc. are very exclusive contribution of *Ayurveda*, which not only help the person to live healthy but also help in get rid of diseases due to default life style. If anyone emphasis these things in one's mind to follow the daily regimen, than the tiny things can give the major fruits in form of good health. The treatment of the disease is very secondary thing, the major objective is how to protect the health and escape from indulging in the disease by following the correct way of living. In *Ayurveda*, the

following concepts are described to maintain the healthy life<sup>17</sup> -:

1. *Dincharya*- includes the correct way to follow daily regimen.
2. *Ratricharya* – includes the right way of night regimen.
3. *Ritucharya* – includes the beneficial regimen according to season.
4. Concept of Non Suppressible Urge – should not be withheld.
5. Concept of Code Of Conduct
6. Concept of Incompatible Diet, Dietary Regimen, Wholesome & Unwholesome Diet
7. Concept Of *Swasthvritta*

## CONCLUSION

So emerging interest toward the *Ayurvedic* concepts prove that this science is very enriched since time immemorial. The correlation of genetic study in respect of *Ayurveda Prakriti* will prove to be boon in the field of Medicine. By searching out the susceptible persons and providing them specific diet and life style will help in escaping from disease and its complications. It could be a basis for genetic differences that needs scientific testing and validation. The knowledge of prior risk in the three constitution types described in *Ayurveda* could help in predictive medicine.



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