Journal of Ayurveda & Holistic Medicine

www.jahm.in

eISSN-2321-1563

REVIEW ARTICLE OPEN ACCESS

WHAT IS THE MOLECULAR BASIS OF *PRAKRTI ?* - AN AYURVEDA PHENOTYPE - A NARRATIVE REVIEW OF EVIDENCE

VASUDEVA VAIDYA*[1] RAMESH MAVATHUR[2] BASAVAPATNA RAMAIAH RMAKRISHNA[3]

Abstract

Background: Ayurveda is an ancient science of Indian medicine which is still in practice.Ayurveda classifies human beings as Prakrti. Prakrti is Dosha based phonotypical classification **.** In the Ayurveda system of medicine, predisposition to disease as well as the selection of a preventive and curative regime is primarily based on Prakriti. There is a hypothesis that, the prakrti will be correlated to specific genetic structure. In this regard many authors have published scientific evidences to correlate to Prakriti and its genetic pre dispose. Here is an attempt to make a narrative review of available evidence on correlation and hence strengthen the evidence for further work on this topic. **Objectives:** To find the evidence for the molecular basis for the Prakrti the Ayurvedic phenotype. **Methods.** Medline, Scopus, the Cochrane Library, and Google scholar were screened through July 2020.Studies which were published on indexed journals were included and assessed the correlation between Ayurveda Prakrti and Genes,(1)Assessment of Prakrti by questionnaire,(2)Assessment of genes by molecular techniques ,(3)Identifying the SNPS/Genes/CD markers which are correlating the Prakrti and mark the evidence. **Results.** 06 studies included in the Narrative review. **Conclusion.** This review found evidence for the correlation between Prakrtiand Genes in healthy people of age between 18 to 40.

Key words: Prakruti, Ayurgenomics Dosha Prakriti, Ayurvedic Phenotype

***[1]PhD Scholar, [2]Professor, [3]Vice Chancellor, Division of Yoga & Life sciences, SVYASA Yoga University, Prashantikuteeram, Jigani, Bangalore, India 560105**

Corresponding Email id: ayurvasu76@gmail.com **Access this article online:** www.jahm.co.in

1. INTRODUCTION

Ayurveda remains one of the most ancient and yet living traditions documented and practiced widely in India. It has a time-honored philosophical and experiential basis,documented and practiced widely in India. *Ayurveda* uses a 3-fold classification known as *tridosha(1)*

In the *Ayurveda* system of medicine, predisposition to disease as well as the selection of a preventive and curative regime is primarily based on a phenotypic assessment of a person which includes one's body constitution termed "*Prakriti*"(2).*Ayurveda*, an ancient system of Indian medicine documented and practiced since 1500 B.C., deals with inter-individual variability for personalized and predictive medicine[3].This system of were from the same ethno genesis background, namely Indo-medicine phenotypically classifies individuals into seven broad constitution types termed *Prakriti*, among which Vata (V), Pitta (P) and Kapha (K), the most contrasting constitutions, exhibit readily recognizable phenotypes, respond differently to the diet, drugs, and external environment as well as vary in predisposition to specific diseases(3).

According to *Ayurveda*, the individual constitution or *Prakriti* classification is based on differences in physical, physiological, and psychological characteristics and is independent of racial, ethnic, or geographical considerations. The doshas exhibit more easily recognizable phenotypes. Evidence-based research in Ayurveda is receiving larger acceptance in India and abroad4According to *Ayurveda*, the *Prakriti*of an individual is determined at the time of conception and remains unaltered during the lifetime. *Prakriti*-specific treatment including medicine, diet, and lifestyle is a distinctive feature of *Ayurveda*. It is hypothesized that *Prakriti* has a genetic connotation that can provide a tool for classifying the human population based on broad phenotype clusters(4).

With the above background, there is much publication that has happened in the last 15 years, Different publishers have adopted different *Prakrti* and Genetic analysis methods and come out with different results. The evidence that the publishers have got was scattered not listed under one umbrella. The review has been conducted to assimilate the scientific evidence-based information on the correlation between *Prakrti* and genetics. The review is a systematic search & review and synthesis of the available evidencence[5]. Systematic search reviews are to search for, collate, critique, and summarize the best available evidence regarding a question ,. The results of systematic search reviews provide the most valid evidence base to inform the development of trustworthy clinical guidelines (and their recommendations) and clinical decision making. They follow a structured research process that requires rigorous methods to ensure that the results are both reliable and meaningful to end-users(5).

2. METHODS

The review was planned and conducted as follows in

2.1 Question formation

The question has formed based on Condition, Context, Population (CoCoPop)

What is the context of correlation between *Prakrti*&genomics in healthy individuals?

2.2. Literature Search. The literature search comprised the

("*Prakriti*"[Mesh] OR *DoshaPrakriti*∗[Title/Abstract]) or *Ayurvedic* Phenotype AND ("Genetics" [Mesh] OR "Genotype"[Mesh] OR "genes" [Title/Abstract]). Additionally, reference lists of identified original and review papers and the table of contents of the Scientific reports by Nature, PLOS, Journal of Translational Medicine, PNAS & The Journal Of Alternative And Complementary Medicine, were searched manually.

Abstracts identified during the literature search were screened, and the full articles of potentially eligible studies were read in full by 2 authors to determine whether they met.

2.3 Inclusion Criteria

To be eligible, studies had to meet the following conditions.

Types of studies-Observational studies, .were eligible. Studies were eligible only if they were published as a full paper in the English language.

Types of participants-Studies of the adult population who were above 18 yrs. healthy were eligible.

Types of interventions-No Intervention

Types of outcome measures. Studies were eligible if they assessed *Prakrti* as Phenotypic and its association to genotype.

2.4. Data Extraction

The data has been extracted on characteristics of participants (e.g., sample size, inclusion criteria, age), and outcome measures, and results. (refer ANNEXURE 1)

2.5. Data synthesis

Data extracted and narrated in Tabular form under the heading of Authors, Publication, inclusion & exclusion, outcome, and conclusion. (ANNEXURE I)

2.6. Data Analysis.;(3)(6)(4)(1)(2)(7)

After the analysis of the data the findings are, We observed a reasonable correlation between HLA type and *Prakriti* type. The complete absence of the HLA DRB1*02 allele in the Vata type and of HLA DRB1*13 in the Kapha type is significant, HLA DRB1*10 had higher allele frequency in the *Kapha* type than in the *Pitta* and *Vata* types,

The components of the lipid profiles like triglycerides (TG), total cholesterol, VLDL, LDL, LDL/HDL ratio, the common risk factor for cardiovascular diseases was higher in *Kapha* when compared to *Pitta* and *Vata* males. Additionally, *Kapha* also had lower levels of HDL when compared to *Vata*. The levels of serum uric acid, recently considered to be an independent predictor of cardiovascular mortality, were also found to be elevated in *Kapha*. Also, GGPT, SGPT, and serum Zinc were found to be high in *Kapha*. Serum prolactin and prothrombin time were high in *Vata* in comparison to *Kapha* and/or *Pitta.* On the other hand, hematological parameters like hemoglobin, PCV, and RBC count differed significantly amongst all the three groups where *Pitta* males showed high values in comparison to *Vata* and/or *Kapha*.

The two contrasting constitutions within non-diseased people derived from the same genetic background differ both at the expression and genetic level concerning the EGLN1 gene, and these differences are linked to high-altitude adaptation and susceptibility to HAPE. CYP2C19 genotype was well distributed in all the three dominant *Prakriti* types. Extensive Metobolizer(EM) genotype was found to be predominant in *Pitta Prakriti(P)*(91%). The ∗1/∗3 genotype-specific for the EM group was present only in P. The Poor Metabolize(PM) genotype was highest (31%) in *Kapha Prakriti*(K) when compared with *Vata Prakriti*(V) (12%) and P (9%). CYP2C19 genotype frequency was significantly higher with P-value = .008 in K type as compared to V + P types yielding an Odds Ratio of 3.5. The genotype typical for the PM group was observed only in K Prakriti. V Prakriti did not show any significant association with any of the genotypes. Although the results did not reach statistical significance, a positive trend was evident in the *Prakriti*CYP2C19 genotype association.

Observed a significant difference ($P < 0.05$) in the expression of CD markers such as CD14 (monocytes), CD25 (activated B cells), and CD56 (Natural killer cells) between different *Prakriti* groups. CD25 and CD56 expression were significantly higher in *Kapha Prakriti* samples than other *Prakriti* groups. Similarly, slightly higher levels of CD14 were observed in *Pitta Prakriti* samples.

It is found that PGM1 correlates with the phenotype of *Pitta* as described in the ancient text of Caraka Samhita, suggesting that the phenotypic classification of India's traditional medicine has a genetic basis.

3. DISCUSSION

The question that formed for this review is What is the correlation between Prakrti the trait of the individuals according to Ayurveda and genomics. The review has been done on the strategy based on SALSA, Search, Appraisal, Synthesis, and Analysis. Search has been conducted Medline (via Pubmed), Scopus, the Cochrane library and Google scholar. The literature search was constructed around search terms for "*Prakriti*" and search terms for "Genetics" and adapted for each database as necessary. We can find 06 International publications. The publication has been apprised with inclusion & exclusion criteria as Observational studies, .were eligible. Studies were eligible only if they were published as a full paper in the English language and participants of - adult population who were above 18 yrs. Healthy with No Intervention studies if they assessed *Prakrti* as Phenotypic and its association to genotype. The subjects have been fixed as 18 to 40 to get healthy subjects so that to prevent compounding factors for genetic analysis. The Data has been synthesized on the headlines of Title, authors, Publication & Year of publication, Methods, results, outcome, and conclusion, which gives the complete information on studies and their contribution to science. The data has been analyzed with what are the outcome and limitations of the studies. Finally, it has been found that the objective of the review to know the correlation between genetics and *Prakrti*. All the studies have found a significant correlation between *Prakrti* and Genetics.

4. CONCLUSION

This review found evidence for the correlation between Prakrti and Genetics in healthy people age between 18 to 40. While more rigorous research with higher sample size is needed to underpin these results. The Ayurvedic phenotype the *Prakrti* correlates with genotype.

5. REFERENCES

1. Joshi K, Ghodke Y, Patwardhan B. Traditional medicine to modern pharmacogenomics: Ayurveda Prakriti type and CYP2C19 gene polymorphism associated with the metabolic variability. Evidence-based Complement Altern Med. 2011;2011.
2. Prasher B, Aggarwal S, Mandal AK, Sethi TP, Deshmukh SR, Purohit SG, et al. Whole genome expression and biochemical correlates of extreme constitutional types defined in Ayurveda. J Transl Med. 2008;6:1–12.
3. Aggarwal S, Negi S, Jha P, Singh PK, Stobdan T, Pasha MAQ, et al. EGLN1 involvement in high-altitude adaptation revealed through genetic analysis of extreme constitution types defined in Ayurveda. Proc Natl Acad

Sci. 2010;

4. Satyamoorthy K, Guruprasad K, Nayak J, Kabekkodu S, Kukreja H, Mallya S, et al. Immunophenotyping of normal individuals classified on the basis of human dosha prakriti. J Ayurveda Integr Med. 2014;5(1):43.

5. Munn Z, Stern C, Aromataris E, Lockwood C, Jordan Z. What kind of systematic review should i conduct? A proposed typology and guidance for systematic reviewers in the medical and health sciences. BMC Medical Research Methodology. 2018.

6. Govindaraj P, Nizamuddin S, Sharath A, Jyothi V, Rotti H, Raval R, et al. da Prakriti. Sci Rep [Internet]. 2015;5:1–12. Available from: http://dx.doi.org/10.1038/srep15786

7. Joshi K, Ghodke Y, Patwardhan B. Traditional medicine to modern pharmacogenomics: Ayurveda Prakriti type and CYP2C19 gene polymorphism associated with the metabolic variability. Evidence-based Complement Altern Med. 2011;

Cite this article as:

Vasudeva Vaidya, Ramesh Mavathur, Basavapatna Ramaiah Rmakrishna. What is the molecular basis of *Prakrti ?* - an Ayurveda phenotype - A narrative review of evidence, *J of Ayurveda and Hol Med (JAHM)*.2020; 8(5):21-26

Source of support: Nil