



A SURVEY ON *PRAKRITI* AND IT'S RELATION WITH *ASHRU*

Review article

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ABSTRACT

Context: Tear film is that surface of the eye, remains directly in contact with the environment. In *Ayurveda* there is no direct explanation of *Ashru*. Relation of *Ashru* and *Prakriti* is not mentioned in *samhita*. Hence, here it is found the need to understand the tear film (*Ashru*) on the ground of *Ayurveda* in context of *Prakriti*. **Materials:** In this study 100 healthy volunteers are selected. **Results and Discussion** calculated F-value for analysis of variance of *Ekadoshaja Prakruti* and Schirmer's test of eye is greater than F- Crit this indicated the difference in value is due to *Prakruti* and not by chance. **Conclusions:** *Vata Prakriti* average value is smaller than normal value of Schirmer's it concludes that the *Vata Prakriti* individuals are having less tear formation. In *Pitta Prakriti* average value is nearer to the normal value of Schirmer's test so it concludes that the *pitta Prakriti* are having moderate tear formation. In *Kapha Prakriti* average value is equal or slightly more than the normal value of Schirmer's this indicate that the *Kapha Prakriti* individuals was having normal amount of tear formation. The calculated F-value of *Ekadoshaja prakruti* and Schirmer's test of left eye is 4.2697 which is greater than F- Crit which is 3.08824 this indicates the difference in value is due to *Prakruti* and not by chance. The null hypothesis is rejected at 5% level of significance. The research is concluded that there is significant relation between *Prakriti* and *Ashru*.

Key Words: Schirmer's test, *Ashru*, *Prakriti*

INTRODUCTION: *Prakriti* (Human Nature) is one of the most important concepts and it is decided at the time of conception. *Prakriti* affects each factor by which a person is going to interact and decides the status of health. It is clearly indicated in texts that lifestyle and various activities should be planned opposite to *Prakriti* for the maintenance of health.

According to our *Ayurvedic* classics our *Acharyas* have given many tools to assess

the *Prakriti*, but nowhere *Ashru* has been mentioned in that list of tools. Now a day in this catastrophic era due to extensive exposure of eye to different types of Video display terminals (VDT), which influences the *Ashru*. *Ashru Marga* or *Ashru* the lacrimal apparatus lies in close relation to the *Netra*. A thorough compilation of *Ashru and Prakriti* is not available as such. The dissertation is also intended to study the clinical significance of the *Ashru*. A

humble effort is made for better understanding of *Ashru* and *Prakriti* in parlance with advance anatomical description.

AIM OF STUDY:

To study the role of *Ashru* in *Prakriti Parikshana*.

ETYMOLOGY

Ashru:

1.ⁱ(*sabdakalpadrum*)

The word *Ashru* is derived from (ash) + (ruk)

(synonyms).*netrambu, rodan, ashra, ashrum, vashpa.*

2.ⁱⁱ(*Amarkosha*)

As per *Amarkosha* synonym of *Netra*

Constitution of *Ashru* (Tear film):

Rasa Dhatu contributes the major part in tears so that the term “*Netrajala*”(water of eye) is used to denote *Ashru*ⁱⁱⁱ i.e. aqueous part and perform the functions like *Tarpana* (cooling)& *Preenana*.(nourishment)^{iv}The intimate relation between *Rasa Dhatu* and *Ashru* is evident from clinical features like *Shosha*(dryness) and *Alpa Cheshta*(less movement) in *Rasakshaya* (reduction of *rasadhatu*).

The production of *Ashru* from *Rasa Dhatu* is again substantiated by the manifestation of dryness of eyes in *Vaatika Jwara* (fever due to *vata*), *Vaataja Pandu* (anaemic due to *vata*), where the mainly involved *Dhatu* is *Rasa*. *Acharya Charaka* opined that if a person is subjected to excessive *Langhana* therapy, then the features like *Mukha Shosha* (dryness of mouth) and *Netra Daurbalya* (ocular fatigue) will develop.^v This statement also draws attention to the role of *Rasa* in keeping the eye healthy.

Mamsa Dhatu serves the function in ocular surface by its role in the *Deha Lepa* (cream application on body) & *Medapushti*. The *Mala* (excrement) of *Netra* is the

contribution of *Mamsa* and the feature of *Aksha glani* (tiredness in eye) in *Mamsakshaya* (lack of muscle tone) also substantiates its function in maintaining the ocular surface integrity.

Meda Dhatu contributes to the *Netra Snigdhatu* and the *Kshaya* of this *Dhatu* also causes the *Glani* (fatigue) of *Netra*.

Majja Dhatu also plays a part in the *Netra Snigdhatu* by the contribution of *Akshi Sneha* as its *Mala*. This is also apparent from the manifestation of *Netra Gourava* in *Majja Vriddhi* (increase of bone marrow) and *Timira Darshana* (blurring of vision) in *Majja Kshaya* (decrease of bone marrow).

While describing the properties of the *Malas* (excretions), *Acharyas* clearly mentioned that their presence in proper amount is essential for the maintenance of integrity of their respective sites and whole body. The deficiency results in dryness, pain and numbness in the respective sites.

So, it is evident from the above facts that non-aqueous part is contributed by the *Mamsa, Meda* and *Majja Dhatu*.

Role of *Rakta Dhatu*:

Kshaya and *Vriddhi* of *Dhatu* are maintained by the *Rakta*^{vi} (*Tesham Kshaya Vriddhi Shonita Nimitthai*), so to stabilize the *Rasa, Mamsa, Meda* and *Majja Dhatu* for the proper formation of tear film, appropriate functioning *Rakta Dhatu* is essential. It is also evident that *Rakta* possess the properties of *Pitta* and *Kapha* by describing its basic nature as, *Madhuram Lavanam Kinchith Asheetoshnam Asamhatam*. Thus it helps to maintain the equilibrium of *Dhatu*^{vii} (*Dehasya Rudhiram Mulam Rudhirenaiva Dharyatae*) by its *Soumya* and *Agneya* properties. It is also apparent that *Rasa* and

Rakta Dhatu complement each other and it is difficult to separate these two entities.^{viii}

Tear:^{ix,x,xi}

Lacrimal fluid enters the conjunctival sac at its superolateral angle and is carried across the eye by capillarity and blinking to the lacus lacrimalis, primarily between the lower palpebral margin and the eyeball. It enters the lacrimal canaliculi from the lacus. Capillary attraction draws the secretion into the lacrimal sac as the orbicularis oculi contracts, pressing the puncta lacrimalia more firmly into the lacus.

The lacrimal fluid is a watery solution containing salts, some mucus, and lysozyme, a protective bactericidal enzyme. The fluid protects, cleans, lubricates, and moistens the eyeball. After being secreted from the lacrimal gland, lacrimal fluid is spread medially over the surface of the eyeball by the blinking of the eyelids. Each gland produces about 1 ml. of lacrimal fluid per day. Sixty to seventy per cent of tears enter the lower canaliculus by capillarity and some evaporate. Only under reflex irritation, due to psychical or peripheral stimuli, is an excess secreted which may overflow. Normally the tarsal secretions prevent the tears from overflowing the lid margins and also cover the capillary film of fluid on the cornea and sclera with a film of oil, which delays evaporation.

Tear film

Tear film form smooth surface over corneal surface, it lubricates eyelid provide antibacterial system for ocular surface.

Tear Film is made up of three layers: from posterior to anterior 1. mucin layer 2. middle aqueous layer and 3. superficial lipid or oily layer. Tear or Lacrimal fluid enters the conjunctival sac at its superolateral angle and is carried across

the eye to the sacus lacrimalis, primarily between the lower palpebral margin and the eyeball, by capillarity.

Superficial Lipid Layer

Superficial layer is oily that's why it forming barrier along lid margin that retains the lid margin tear strip and prevent overflow on skin this layer is thin has no colour. This layer reduces rate of evaporations of underlying aqueous tear layer.it increases surface tension it lubricates eyelid.

Middle Aqueous Layer

This intermediate layer of tear film is consisting almost thickness of tear film. This layer is containing two phases concentrated and highly dilute. This contains water protein enzymes, glucose urea etc. Mainly it supplies atmospheric oxygen to the corneal epithelium it washes away debris.

Posterior Mucin Layer

It is inner most layer of tear film. Mucus threads present in tear film provide lubrication to eyelid margin and palpebral conjunctiva.

Lacrimal reflex

Lacrimal reflex is stimulated by irritation of conjunctiva and cornea. This reflex is involved nerves like ophthalmic nerve. Impulses enter the brain and spread by interneurons to activate parasympathetic neurons in superior salivatory centre and sympathetic neurones in upper thoracic spinal cord. lacrimation is happened in response to emotional triggers.

During the blinking process, a complex series of events occurs. The superficial layer is compressed as the upper lid moves downward. It starts to show interference colours as it thickens. Between the lid edges, the entire lipid layer, along with the associated biopolymers, is compressed.

When the eye opens, the lipids spread out in a monolayer against the upper eye lid at first. The motion of the eyelid is the limiting factor in this spreading process. The excess lipid spreads, and a multimolecular lipid layer is formed in about 1 second. As the lipid spreads, it drags some aqueous tears behind it, thickening the tear film. The size and shape of the tear meniscus adjacent to the lid edges determine the magnitude of this effect. When there aren't enough tears to form a saturated meniscus, a local thinning occurs adjacent to the meniscus, effectively stopping fluid flow from the meniscus to the tear film.

Prakriti:

Prakriti is the key word that explain a person's physical and mental traits in Ayurveda.

ETYMOLOGY

The term *Prakriti* derives from the root 'kru'- 'to do' prefixed with 'pra' (denotes beginning, commencement or origin) and suffixed with 'ktin' (denotes creation) and it signifies the meaning of personality with factual exposition. That is, the term *Prakriti* is derived from Sanskrit word that means "nature," "creativity," or "the first creation".

DEFINITION

Prakriti is defined as the cluster of innate characteristics of an individual, customary from birth till death, which is formed during conception as a net result of previous deeds. The prevalence of *Doshas* responsible for the determination of *Prakriti* is not harmful to the individual^{xii}.

FORMATION: -

The basic components of the body *Vata*, *Pitta* and *Kapha* is formed by combining *Panchmahabhuta* in various proportions. The predominance of these *Doshas* in

Sukra & Shonita at the time of fertilization produces certain indistinctive features in an individual which forms his basic constitution, viz, *Prakriti*^{xiii}.

Every individual is a mixture of *Vata*, *Pitta* and *Kapha Doshas*. The percentage of these and the dominant and recessive part of them changes from person to person. The preponderance of *Doshas* at the time of the union of *Sukra & Artava* is not to be taken as abnormal condition. During their normalcy the *Doshas* are even called as *Dhatus*, it is the same *Doshas* which become abnormal and are designated by the term *Doshas* in the real sense. The *Dosha* which is predominant at the instance of union of *Sukra & Artava* be show its characteristic features and affects the body throughout his life^{xiv}.

MATERIAL AND METHOD

- Schirmer's test paper strips (standard company)
- Watch or clock.
- Paper and Pen for record.
- **Method:**

The study was conducted on 102 apparently healthy volunteers in age group of 18 to 45 years. All the material regarding *Prakriti* and Schirmer's test were revived from ayurvedic and modern text book.

After accessing *Prakriti* of healthy individual on the same individual Schirmer's test was performed in his/her right and left eye using Whatman-41 filter paper. This test was intended to measure the total tear secretion. The paper was folded 5mm from one end and kept in the lower fornix at the junction of lateral one third and medial two third. After applying strips in eye; the volunteers were asked to close their eye for 2 minutes. After two minutes the strips were removed and

readings were noted. Individuals who had discomfort were dropped from the study. The normal value of Schirmer's test is 15.

Statistical analysis:

The data obtained in clinical study subjected to statistical test such as ANOVA, CHI SQUARE test.

• **OBSERVATION AND RESULT:**

The demographic phenomena for each of the *Prakriti* is discussed here with.

PRAKRITI OF THE RESPONDENTS

The defined categories are presenting the frequencies for each *Prakriti* as follows.

Table 1 Prakriti of the Respondents

PRAKRITI		
	Frequency	Percent
VATA	36	35.29
PITTA	36	35.29
KAPHA	30	29.24
Total	102	100.0

MEAN OR AVERAGE OF RIGHT AND LEFT EYE SCH IN INDIVIDUAL PRAKRITI

Table 2 Prakriti and average of right and left eye

Prakriti	Average Right eye	Average Left eye
Vata	10.5	9.388889
Pitta	12.75	13.86111
Kapha	16.1	15.23333

The results of Sum of squares, mean sum of square, F- calculated and significance values for between the groups and within

the groups are presented in table 5.12, 5.13 as follows.

Table 3 Analysis of Variance of Single *Prakriti's* and Schirmer's test of right eye

Table 3 ANOVA					
Source of Variation	Sum of Squares	Df	Mean Square	F	F crit
Between Groups	515.1971	2	257.5985	3.107891	3.0883
Within Groups	8478.45	99	85.64091		
Total	8993.647				

Table 4 Analysis of Variance of Single Prakriti's and Schirmer's test of left eye

ANOVA					
Source of Variation	Sum of Squares	Df	Mean Square	F	F crit.
Between Groups	635.773	2	317.6665	4.2697	3.08824
Within Groups	7370.227	99	85.64091		
Total	8993.647				

In above table average value of *Vata Prakriti* person in right eye value is 10.5 in left eye value is 9.388. In *Pitta Prakriti* person in right eye value is 12.75 in left eye value is 13.86. In *Kapha Prakriti*

person in right eye value is 10.5 in left eye value is 9.388.

In ANOVA test of single *Vata, Pitta, Kapha pradhanya prakriti* and right eye calculated F-value is 3.1078 Schirmer's

right eyes score. The computed values are higher than the significant values 3.08824. In ANOVA test of single *Vata*, *Pitta*, *Kapha Pradhanya Prakriti* calculated F-value is 4.2697 Schirmer's left eyes score. The computed values are higher than the significant values 3.08824.

DISCUSSION:

In *Ayurveda* there is no direct quotation for detail composition of *Ashru* is mention, but in description of functions of different *dhatu*s Acharya mention few stanzas regarding *Ashru*.

As seen in literary review, *Rasa*, *Meda*, and *Majja Dhatu* are responsible for the formation of *Ashru*. The tear film that coats the eye also has three distinct layers, which can be correlated with Ayurvedic concept 1. Lipid layer- lipid Secretions of *Meda Dhatu* 2. Aqueous layer- *Rasa Dhatu*'s water secretions 3. Mucous layer-secretions in the form of *Majja Dhatu Mala*.

The word *Prakriti* (constitution) has different meanings in different contexts, such as *Samya* (equilibrium), *Arogya* (health), *Svabhav* (nature), *Karana* (end stage of life), bodily constitution, and so on. The current context of *Prakriti* (constitution) description is in relation to bodily constitution, i.e. *Deha Prakriti* (physical constitution). Despite humanity's fundamental similarities, we find differences between individuals. The factors that cause these differences are numerous, and they all have an impact on an individual's constitutional, temperamental, psychological, and spiritual makeup.

When a person of *Vata Prakriti* is afflicted with diseases caused by *Vata* vitiation, *Vata* naturally aggravates; similarly, when the same person is afflicted with *Paittika Vikara*, *Pitta* naturally aggravates. It is

important to note that while *Pitta* symptoms are present, they are only temporary. It has no effect on the *Dosha* responsible for the manifestation of *Prakriti*. Similarly, *Prakruta Dosha* will not be aggravated or diminished. As a result, an individual's physical and mental constitution inherited from the state of *Dosha* at the time of conception is permanent and unchanged.

In average value of *vata Prakriti* person in right eye value is 10.5 in left eye value is 9.388. This value is away from the normal value of Schirmer's test which is 15. This indicate that the *vata Prakriti* individuals will be having less tear formation.

In *Pitta Prakriti* person in right eye value is 12.75 in left eye value is 13.86. This value is slightly less but nearer to normal value of Schirmer's test which is 15. This indicate that the *pitta Prakriti* individuals will be having moderate tear formation.

In *Kapha Prakriti* person in right eye value is 16.1 in left eye value is 15.23. This value is equal or slightly more than the normal value of Schirmer's test which is 15. This indicate that the *Kapha Prakriti* individuals will be normal amount of tear formation.

The calculated F-value for analysis of variance of *Eka doshaja Prakruti* and Schirmer's test of right eye is 3.1078 which is greater than F- Crit (critical value of F Distribution) which is 3.08824 this indicated the difference in value is due to *Prakruti* and not by chance. Similarly, the calculated F-value for analysis of variance of *Ekadoshaja Prakruti* and Schirmer's test of left eye is 4.2697 which is greater than F- Crit (critical value of F Distribution) which is 3.08824 this indicated the difference in value is due to *Prakruti* and not by chance. Thus, the null

hypothesis is rejected at 5% level of significance.

CONCLUSION: In Ayurvedic classical literature description about *Ashru* and *Ashrumarga* is given in *Amarkosh*, *Sabdakalpadrum*, *Vachaspatyam*, *Sushrut Samhita*, and *Ashtang Hridayam*. *Ashrumarga Vyadhi* like *Sushka Akshipaka*, *Jalasarava*, *Netra Abhishaynada* is described in *Sushrut Uttartantra* and *Ashtang Hridayam* and *Deha Prakriti* is an individual's physical and mental constitution inherited from the state of *Dosha* at the time of conception is permanent and unchanged.

The normal value of Schirmer's test is 15mm. *Vata Prakriti* average value of right eye is 10.5 in left eye is 9.388 which is smaller than normal value of Schirmer's it concludes that the *Vata Prakriti* individuals will be having less tear formation. In *Pitta Prakriti* average value of right eye is 12.75 in left eye is 13.86 which is nearer to the normal value of Schirmer's test so it concludes that the *pitta Prakriti* individuals will be having moderate tear formation. In *Kapha Prakriti* average value of right eye is 16.1 in left eye is 15.23 which is equal or slightly more than the normal value of Schirmer's this indicate that the *Kapha Prakriti* individuals will be having normal amount of tear formation.

The calculated F-value for analysis of variance of *Ekadoshaja Prakriti* and Schirmer's test of right eye is 3.1078 which is greater than F- Crit (critical value of F Distribution) which is 3.08824 this indicated the difference in value is due to *Prakriti* and not by chance. Similarly, the calculated F-value for analysis of variance of *Ekadoshaja Prakriti* and Schirmer's test of left eye is 4.2697 which is greater than

F- Crit (critical value of F Distribution) which is 3.08824 this indicated the difference in value is due to *Prakriti* and not by chance. Thus, the null hypothesis is rejected at 5% level of significance.

The current research is concluded that there is significant relation between *Prakriti* and *Ashru*.

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