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The comparative study of *Shatavari Ghrita Netra Tarpana* and conventional treatment in Dry Eye Syndrome

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ABSTRACT

In the current scenario of ageing population and increased environmental factors, the more prevalent eye disease is 'Dry Eye Syndrome'. It is a tear film disorder caused by tear deficiency or excessive tears evaporation which results in ocular surface damage and there by irritation, discomfort and dimness of vision. The available modern treatment for dry eye has same lacunas like frequent instillation develops drug toxicity and costly regime. To overcome these lacunas and increased prevalence of the disease, it is necessary to look for alternative therapy. According to Ayurveda, the symptoms of dry eye can be correlated with *Vataja Netraroga*, *Pittaja Netraroga* and *Shushka-Akshipaka*, and at the same time various treatment modalities are described like *Tarpana*, *Aschotana*, as line of treatment. Therefore the present study is carried out to evaluate the role of *Shatavari Ghrita Netratarpana* in the management of dry eye syndrome.

Key words: Dry Eye Syndrome, *Tarpana*, *Shatavarighrita*, *Shushkakshipaka*.

INTRODUCTION

Life has completely changed with the use of advanced technologies like computers, internet surfing, television, use of air conditioners, people are facing to more polluted, dusty, dry and hot environment, over use of vehicles and industrialization. Due to all these unhealthy surrounding and lifestyle changes, the organ of which is first and foremost at the risk is eye, causing disorders like 'Dry Eye'. Ayurveda is the science of great potential for the treatment of such

lifestyle related disorders. In Ayurveda this disease is not clearly mentioned, but diseases like *Vataja Netraroga*, *Pittaja Netraroga* and *Shushka-Akshipaka* to same extent correlate with the symptoms of dry eye and at the same time various treatment modalities are described like *Tarpana*, *Aschotana*.^[1] While working in OPD of *Shalakya Tantra* NKJ AMC & PG Center, Bidar, it was observed that good no. of patients of dry eye, not satisfied by any other treatment modality are present, this provoked to study on this topic. The prevalence of dry eye ranges from 5% to 35% worldwide. While in India, it is 29.25% based on ocular surface disease index data.^[2]

OBJECTIVE OF THE STUDY

To study the role of *Shatavari Ghrita Netra Tarpana* in Dry Eye Syndrome in comparison to conventional treatment.

Disease Review

Dry eye syndrome is a leading cause of ocular discomfort affecting millions of people, with varied aetiology ranging from mild eye strain to very severe

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dry eyes with sight threatening complications. Younger patients who work on computer can suffer from dry eye more than elderly.^[3]

Symptoms of dry eye

- Foreign body sensation in eyes
- Ocular irritation, itching
- Discomfort while blinking
- Soreness and burning of eye
- Stinging and photophobia.

Signs of dry eye

- Bulbar conjunctival vascular dilatation
- Decreased tear meniscus
- Irregular corneal surface
- Decreased tear break up time
- Corneal filaments
- Superficial punctate keratitis with positive fluorescein staining.

Examinations and investigation

1. Through examination of eye.
2. Patients visual acuity (V/A) near and distant.
3. Slit lamp bio-microscope examination.
4. Schimer's test 1 to reveal level of tear production.
5. All routine examination and investigation CBC, BSL, LFT, RFT to rule of any systemic disease.

Ayurvedic aspect

Acharya Sushruta described different types of *Netra Rogas* on the basis of vitiated *Doshas*, site of disease according to *Sadhya Sadhyatwa* and treatment option.^[4]

In our literature the *Netra Rogas* like *Vataja Netra Roga*, *Pittaja Netra Roga* described by *Charaka* and *Sushkakshi Paka* a *Sarvagata Netra Roga* and *Netra Shushkta* described by Sushruta can be correlated with the symptoms of dry eye.

Shushka Akshipaka

The eye gets contracted, slightly closed feeling of dryness in eyes. Eye lashes becomes dry and rough due to which blinking is painful, diminished of vision, burning sensation of eyes and stickiness of eyes.^[5]

Dosha Dushti

- *Sushruta - Vata*
- *Vagbhata - Vatapitta.*
- *Dushya - Rakta.*
- *Sadhyasadhyatwa - Sadhya.*

Treatment

According to modern science to prevent dry eye, lubricating eye drop can be used which requires frequent instillation as it has short duration of action and develop sensitivity due to toxicity of preservative present in medicine like BAK. Our *Acharyas* described *Tarpana* of *Jeevniya Gana's* to treat *Sushakshipaka*.^[6] So *Shatavari (Asparagus racemosus) Siddha Ghrita* has been taken for the study, as *Shatavari* has the properties like *Madhura, Tikta Rasa, Madhura Vipaka, Sheeta Virya* and *Guru, Singdha, Mrudu Gunas*. It is also *Vatapittashamaka* and *Kaphakara*. *Aacharyas* mentioned its special properties like *Chakshushya* and *Rasayana*.^[7] *Ghrita* is also having the same properties.^[8]

MATERIALS AND METHODS

Shatavari Siddha Ghrita preparation

Siddhaghrita prepared by *Samanyasneha Siddhi Kalpana*.^[9]

Kalka Dravya

1. *Shatavari Kalka* - 10gms *Sneha Dravya*
2. *Goghrita* - 40gms Liquid
3. *Shatavari Kwatha* - 160ml.

Methodology

The study was performed in Shalaky Tantra Unit (OPD/IPD) of NKJ AMC & PG Center, Bidar. 60 patients of Dry eye syndrome were selected randomly and

divided in two group's viz., 1st experimental group and 2nd control group of 30 patients each.

1) Experimental Group - In experimental group 30 patients of dry eye syndrome were treated by *Shatavari Ghrita Netra Tarpana* for 7 days. After that instillation of *Shatavari Ghrita* was advised. Before starting the *Tarpana*, *Purvakarma* like *Urdhanga Snehana* and *Swedana* was performed and then *Shatavari Ghrita* was kept in the eye by specific arrangement i.e. *Mashakalkapali*. After specific time of *Tarpana* as per *Matra*, medicine was removed; eyes were cleaned and advised to avoid seeing bright light. Necessary instructions were given to the patients.

2) Control Group - In control group 30 patients of dry eye syndrome were treated by modern drugs like lubricating eye drop e.g. Hydroxypropyl methyl cellulose.

Follow Up

Tarpana was performed in regime as prescribed in literature of Ayurveda for 7 days. After that weekly follow up of the patient was taken for one month and detailed findings was recorded in the case paper. The same mode was followed in control group.

Parameters

1. Irritation of Eyes

- No irritation 0
- Mild irritation (irritation on exposure) +
- Moderate irritation (irritation during work) ++
- Severe irritation (irritation at rest) +++

2. Foreign Body Sensation

- No 0
- Mild +
- Moderate ++
- Severe +++

3. Schirmer's Tear Test

Schirmer's tear test is the main criteria of assessment which was performed before and after the treatment.

Method of Schirmer's Tear Test - Patient was asked to sit in dimly light room and Whatman's No. 41 filter paper strips (5- 35mm), rounded from tip, folded and then placed gently over the lower palpebral conjunctiva at its lateral one third. Patient was asked either to keep the eyes open and look up word or to close eyes gently. After 5 min., the strip is removed and amount of wetting was measured.

- Normal - over 15 mm
- Moderate - 5-10 mm
- Severe - less than 5 mm

Inclusion Criteria

1. Selection of patient was done on the basis of clinical findings and confirmation of the diagnosis was done by Schirmer's tear test.
2. Patient between age 20 to 70 years.
3. Patients of both sexes.
4. Patients having excessive outdoor work.
5. Patients of software profession, those who gets exposed to visual devices.
6. Patient willing to take part in the treatment.

Exclusion Criteria

1. Patient not ready for drug trial and follow up.
2. Patients having complicated eye diseases.
3. Patients having severe ocular infections.
4. Patients having neurological disorders like Bell's palsy, Lagophthalmos etc.
5. Patients having cicatrice scarring of eyelids, due to injury, burns, iatrogenic wounds, exophthalmos etc.
6. Patients having auto-immune disorders.
7. Patients having systemic diseases like Hypertension, Diabetes Mellitus, Bronchial asthma and Renal disorders, connective tissue disorder etc.

Case record form

Records of patients included in trial were documented.

STATISTICAL ANALYSIS

All the patients were assessed on 7th, 14th, 21st, 30th day. Findings were recorded before, during and after completion of therapy. The most leading clinical features like Irritation of eye (denote as A) and Foreign body sensation (denote as B), taken as subjective parameters and value of Schirmer's tear test (denote as C) taken as objective parameters.

It was noted in the form of qualitative data which was converted into quantitative data for the convenience of statistical analysis. As the sample size is small, students paired 't' test applied to determine the significance of improvement of symptom.

The level of significance was set at 5% $P < 0.05$ t calculated $> t$ table ($t > p$) indicates significance of findings. Unpaired 't' test applied to compare the effectiveness of both groups and to determine superiority of the treatment.

OBSERVATIONS AND RESULTS

Table 1: Effect of treatment on signs of experimental group

Signs	N	Means of difference	S.D	S.E	t	p
A	30	2.23	0.62	0.11	20.27	<0.05
B	30	2.10	0.80	0.14	15.00	<0.05
C	30	1.56	0.81	0.14	11.14	<0.05

Table 2: Effect of treatment on signs of control group

Signs	N	Means of difference	S.D	S.E	t	p
A	30	2.00	0.87	0.15	13.33	<0.05
B	30	1.83	1.01	0.18	10.16	<0.05
C	30	1.10	0.71	1.20	09.16	<0.05

Table 3: Applying unpaired 't' test to compare the results achieved by both treatments group.

Group	Experimental Mean	S.D	Control Mean	S.D	S.E	t	p
A	2.23	0.62	2.00	0.87	0.11	1.21	>0.05
B	2.10	0.80	1.83	1.01	0.23	1.17	>0.05
C	1.56	0.81	1.10	0.71	0.19	2.42	>0.05

This indicates that there was no significant difference of effect on irritation of eyes (A) and foreign body sensation (B) of both experimental and control group. Means both drugs acted equally. But effect of experimental drug was more than control group on value of Schirmer's test (C).

Table 4: The result showing total effect of therapy

Groups	Cured Cases	%	Relieved Cases	%	Not cured Cases	%	Total
Experimental	10	33.33	14	46.66	06	20.00	30
Control	07	23.34	13	43.33	10	33.33	30
Total	17	28.33	27	45.00	16	26.64	60

Calculated χ^2 was lower than the χ^2 table hence not significant at 5% level. That means both drugs were equally acting on Dry Eye. $\chi^2 = 2.56$, $P = > 0.05$

DISCUSSION

In Dry Eye Syndrome, patients having complaints of ocular irritation, foreign body sensation, burning sensation, a stringy mucous discharge, transient blurring of vision, itching, tired and heavy feeling,

redness, pain and dryness. By all these symptoms, we can say that, there is predominance of *Vata* and *Pitta Dosha*. Eye is the site of *Alochaka Pitta* and the disease is concerned with *Shukla* and *Krishnagata Mandala*, which are made up of *Rasa*, *Rakta* and *Mamsa*.^[11] So the principle of the treatment is *Vatapittaghna*, *Pittaagnivardhak*, *Chakshushkya*, *Balya*, *Jeevaniya* and *Rasa*, *Rakta*, *Mamsadushtihara*. *Shatavari* (*Asparagus racemosus*) is *Madhura*, *Tikta Rasatmak*, *Madhur Vipaki Shita Viryatmak*, *Guru*, and *Snigdha Gunatmaka*. So, *Shatavari* is *Vatapittaghna*. It is also having an action like *Snehana*, *Balya*, *Agnivardhana*, *Chakshushya*, which gives strength to eye and stops degenerative process.^[12] Recent studies on *Shatavari* also proves that it contains glycosides (*Shatavari* 1-4) having properties like antioxidant, immunomodulation. New treatment regime for dry eye syndrome, also look forward for the use of antioxidant and immuno-modulating agents.^[13] Thus *Shatavari* can be good and effective option for treatment of dry eye syndrome.

Goghrita is having same properties like *Madhura Rasa*, *Madhura Vipaka*, *Sheeta Virya* and *Guru*, *Snigdha*, *Yogvahi*, *Mriduguna*. So it is *Vaatapitta Shamaka* and *Kaphakara*. Eye is developed from *Majja Dhatu* and *Ghrita* is *Meda*. *Majja*, *Shukra Dhatu Vardhaka* and it act as an eye tonic.^[14]

Goghrita also contains Vitamin A, D, E, K in rich quantity. Vitamin A and E are well known for their antioxidant property and are helpful in preventing tissue damage.^[15] The prepared *Shatavari Siddha Ghrita* is having all above properties. *Tarpana* means nourishment of eye.^[16] It also relieves tiredness of eyes, improves the eye sight by giving exercise to eye like constant closing and opening in regular and relaxed manner.

The mode of action of *Tarpana* can be better understood by basics of modern Pharmacology. The *Shatavarighrita* used for *Tarpana* enters the eyeball by passing through the conjunctiva and cornea. Mucous membrane of conjunctiva is a good absorbing surface. The penetration depends upon the permeability of various layers of cornea. The

epithelium and endothelium are highly permeable for lipid content and a fat soluble drug readily penetrates these layers. However only water soluble drugs can penetrate the stromal layer. Therefore drugs should be amphipathic i.e. have both lipophilic and hydrophilic properties.^[17]

Shatavari Ghrita is saturated with decoction of *Shatavari Kwatha*. Hence it has amphipathic property and readily absorb by conjunctiva and cornea. The drug absorption is directly proportional to the vascularity of absorbing surface. Massage or sudation done in *Tarpana* as a preoperative procedure, which increase the blood flow of that part and absorption of the drug also increased. Also instillation of *Shatavari Ghrita*, which is rich in lipid forms a uniform layer on ocular surface, which reduces excessive evaporation of tear and prevents Dry Eye.

CONCLUSION

By statistical analysis, it was concluded that *Shatavari Ghrita Tarpana* is effective in dry eye syndrome. It is safe economical and easy to perform. It gives same results as compared to prove conventional established treatment which is very costly, so for the treatment of dry eye syndrome this can be alternative treatment of choice.

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