

## Evaluation of the Effect of *Jeevaniya Panchamoola Ghrita Netra Tarpana* on Schirmer's Test and Tear Film Break Up Time in *Shushkakshipaka* w.r.to Dry Eye Disease - A Case Study

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### Abstract:

**Background:** *Shushkakshipaka* is *Sarvakshigata* and *Sadhya Netra Roga* and can be correlated with Dry Eye Disease (DED) because of similarities in the clinical features. Dry Eye Disease is "A multi-factorial disease of the ocular surface characterized by a loss of homeostasis of the tear film, and accompanied by ocular symptoms, in which tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neuro-sensory abnormalities play an etiological role".

**Materials and Methods:** The subject with the clinical features of *Shushkakshipaka* (DED) was approached the out patient section of *Shalakya Tantra* and was treated with *Jeevaniya Panchamoola Ghrita Netra Tarpana*.

**Result:** Significant changes in schirmer's test and TBUT are noted.

**Conclusion:** *Netra Tarpana* with *Jeevaniya Panchamoola Ghrita* is effective in the management of *Shushkakshipaka*.

**Key-words:** Dry Eye Disease, *Jeevaniya Panchamoola Ghrita*, *Netra Tarpana*, *Shushkakshipaka*.

### INTRODUCTION

*Shushkakshipaka* is *Sarvakshigata* and *Sadhya Netra Roga*. Acharya Sushruta considered it as *Vataja*.<sup>1</sup> According to Acharya Vagbhata, it is *Vata* and *Pitta Pradhana Vyadhi*.<sup>2</sup> *Shushkakshipaka* is correlated with Dry Eye Disease because of similarities in the clinical features.

Dry Eye Disease is "A multi-factorial disease of the ocular surface characterized by a loss of homeostasis of the tear film, and accompanied by ocular symptoms, in which tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neuro-sensory abnormalities play an etiological role."<sup>3</sup> According to the International Dry Eye Work Shop, Global prevalence of dry eye is about 17%.<sup>4</sup> In India, prevalence rate is 18.45 % -54.3%.<sup>5</sup> In current scenario, incidence of Dry Eye Disease in young people is increasing due to prolong exposure to the digital displays.

In contemporary science, DED is managed with the supplementation with tear substitutes- e.g., 0.25-0.7% methyl cellulose and 0.3% hypromellose or polyvinyl alcohol (1.4%) but there is no promise in result.<sup>6</sup> In Ayurveda, *Jeevaniya Panchamoola Dravya* are mentioned as *Chakshushya* and *Vata, Pittahara* in classical texts.<sup>7</sup> In the present case, *Netra Tarpana* with *Jeevaniya Panchamoola Ghrita* is administered to the patient.

The present case study with *Jeevaniya Panchamoola Ghrita Netra Tarpana* as addressed in reducing clinical features of DED. The preparation comprises of antimicrobial, anti-inflammatory, antioxidative and immunomodulator properties. Hence, the sincere effort has been carried out in the study.

**Patient Information :** A 34 years old Male patient, Computer Operator by occupation is visited the out patient section of *Shalakya Tantra* with the complaints of dryness and foreign body sensation in both eyes associated with sensitivity to bright light since six months. He has used OTC product of ophthalmic drops without consulting any physician. The symptoms are relieved by installing eye drop but reoccur on discontinuation. The patient is not a known case of diabetes mellitus, hypertension and other systemic disorders and has no surgical history. All of his family members are said to be healthy.

### Personal History

*Aahara* (~food habit) - Vegetarian

*Vyasana* (~habit) - Nothing specific

*Vihara* (~life style) - Exposure to computer screen (7 to 8 hours/day)

*Bala* (~strength) - *Madhyama* (~moderate)

*Nidra* (~sleep) - Disturbed

*Jatharagni* (~digestive power) - *Samagni* (~normal)

**General Examination** - No pallor, icterus, clubbing of nails, oedema or lymphadenopathy.

**Systemic Examination** - All systemic examinations are within normal limit.

**Ocular examination** - Explained in Table No.1.

**Table 1 ( Ocular Examination)**

Ocular structures	Right Eye	Left Eye
Adnexa	NAD clinically	NAD clinically
Conjunctiva	Bulbar conjunctiva - Congested Palpebral conjunctiva and fornices - NAD clinically	Bulbar conjunctiva - Congested Palpebral conjunctiva and fornices - NAD clinically
Sclera	NAD clinically	NAD clinically
Cornea	Transparent, normal in size. Corneal sensation - present	Transparent, normal in size. Corneal sensation - present
Anterior chamber	Within normal limit	Within normal limit
Pupil	RRR	RRR
Lens	Phakic	Phakic
NAD -No abnormalities detected, RRR - round, regular, reactive to light		

### Timeline

The detailed timeline with therapeutic intervention is given in Table No.2

**Table 2 (Timeline and Therapeutic Intervention )**

Date	Intervention
26.09.2023	The patient came to the OPD with complaints of dryness & foreign body sensation in both eyes associated with sensitivity to the light and was diagnosed as a case of <i>Shushkakshipaka</i> with Schirmer's test (Right Eye-5mm, Left Eye-4mm) & TBUT (Right Eye-7seconds, Left Eye-10seconds).
27.09.2023	Netra Tarpana with Jeevaniya Panchamoola Ghrita
28.09.2023	Netra Tarpana with Jeevaniya Panchamoola Ghrita
29.10.2023	Netra Tarpana with Jeevaniya Panchamoola Ghrita. Complete reduction in the symptoms like foreign body sensation, pricking pain, non specific ocular discomfort & sore eyes. Constriction of eyelids on exposure to bright light and dryness of eyes present frequently.
30.09.2023	Netra Tarpana with Jeevaniya Panchamoola Ghrita
01.10.2023	Netra Tarpana with Jeevaniya Panchamoola Ghrita
02.10.2023	Netra Tarpana with Jeevaniya Panchamoola Ghrita
03.10.2023	Netra Tarpana with Jeevaniya Panchamoola Ghrita. Dryness of eyes occurs occasionally & constriction of eyelids on exposure to bright light still persist.
04.10.2023	After treatment evaluation was done. Schirmer's test shows Right Eye-9mm, Left Eye-9mm. TBUT shows Right Eye-10 seconds Left Eye-12 seconds.
11.10.2023	<b>First followup visit.</b> Patient had complete relief from foreign body sensation, pricking pain, non specific ocular discomfort & sore eyes, constriction of eyelids on exposure to bright light and dryness of eyes.
18.10.2023	<b>Second followup visit.</b> No recurrence of the symptoms were reported by the patient.
25.10.2023	<b>Third followup visit.</b> No recurrence in the symptoms.

### Diagnostic Assessment

#### Subjective parameters:

Subjective parameters are assessed before treatment, during intervention period & during follow up period as shown in Table No.3.

**Table 3 (Assessment of Subjective Parameters)**

Symptoms	Before Treatment	During Intervention Period		Follow up Schedule		
	0 <sup>th</sup> day	3 <sup>rd</sup> day	8 <sup>th</sup> day	14 <sup>th</sup> Day	21 <sup>st</sup> Day	28 <sup>th</sup> Day
<b>Gharsha</b> (Foreign body sensation)	Mild	Absent	Absent	Absent	Absent	Absent
<b>Toda</b> (Pricking pain)	Absent	Absent	Absent	Absent	Absent	Absent

<b>Medopadehavat</b> (mucoid discharge)	No discharge	No discharge	No discharge	No discharge	No discharge	No discharge
<b>Kruchra unmeelana nimeelanam</b> (Difficulty in opening and closing the eyelids)	Absent	Absent	Absent	Absent	Absent	Absent
<b>Vikunana</b> (Constriction of the eye)	Present (On exposure to bright light)	Present	Present	Absent	Absent	Absent
<b>Vishushkatva</b> (Dryness)	Continuously present	Frequently present	Occasionally present	Absent	Absent	Absent
<b>Shoola</b> (Non specific ocular discomfort)	Mild	Absent	Absent	Absent	Absent	Absent
<b>Paaka</b> (Chronically sore eyes)	Mild	Absent	Absent	Absent	Absent	Absent
<b>Ruksha daruna vartmakshi</b>	Absent	Absent	Absent	Absent	Absent	Absent

### Objective parameters

Objective parameters are assessed before treatment and after treatment as shown in Table No.4.

- Schirmer's test-1 (Figure 1)
- Tear Film Break Up time (Figure 2)

**Table 4 (Assessment of Objective Parameters)**

	<b>BEFORE TREATMENT (0<sup>th</sup> day)</b>		<b>AFTER TREATMENT (8<sup>th</sup> day)</b>	
	<b>Right Eye</b>	<b>Left Eye</b>	<b>Right Eye</b>	<b>Left Eye</b>
<b>Schirmer's Test</b>	5mm	4mm	9mm	9mm
<b>Tear Film Break up Time (TBUT)</b>	7sec	10 sec	10 sec	12 sec

Visual acuity is done on 0<sup>th</sup> day & 8<sup>th</sup> day (Table No.5).

**Table 5 (Visual Acuity)**

<b>Visual Acuity</b>	<b>DV</b>		<b>NV</b>	
	<b>BT (0<sup>th</sup> day)</b>	<b>AT (8<sup>th</sup> day)</b>	<b>BT (0<sup>th</sup> day)</b>	<b>AT (8<sup>th</sup> day)</b>
BE	6/6(p)	6/6	N6	N6
RE	6/12	6/9	N6	N6
LE	6/6	6/6	N6	N6
DV - distant vision, NV - near vision, BE- bilateral eyes, RE-right eye, LE- left eye, BT - before treatment, AT- after treatment				

### Therapeutic

#### Intervention

*Netra Tarpana* with *Jeevaniya Panchamoola Ghrita* for 7days for 1000 *Matra* *Kala* (~16 minutes).<sup>8</sup> Figure No. 3.

### Result

Reduction in the signs and symptoms such as *Gharsha* (foreign body sensation), *Toda* (~Pricking Pain), *Shula* (~Ocular discomfort), *Paka* (~Sore eyes) on 7<sup>th</sup> day and *Vikunana* (~Constriction of eyelids on exposure to light) *Vishushkatva* (dryness in eyes) on 14<sup>th</sup> day and complete reduction on 28<sup>th</sup> day with respect to subjective and objective parameters are noted. There is no recurrence of symptoms on follow up period.

### Discussion:

Tear film covers the cornea hence, it is also called as precorneal film. It has 3 layers i.e., mucin layer, aqueous layer and lipid layer. Mucin layer is the innermost layer of tear film which is secreted by conjunctival goblet cells and gland of Manz. It converts the corneal surface from hydrophobic into hydrophilic. Aqueous layer is the intermediate and the thickest layer which consists of tears secreted by the main and accessory lacrimal glands. This layer contains

antibacterial substances like lysozyme, beta-lysin, lactoferrin, IgA, IgG and IgM. Lipid layer is the outermost and the thinnest layer secreted by meibomian, Zeis and Moll glands. It prevents the overflow of tears, retards their evaporation and lubricates the eyelids.<sup>9</sup>

In *Shushkakshipaka*, *Vyana Vata* gets vitiated along with *Alochaka Pitta*. There is *Karmataha vriddhi* of *Ruksha*, *Khara Guna* of *Vata* and *Ushna*, *Tikshna Guna* of *Pitta*. This leads to reduction in *Snigdha Guna* of *Netragata Rasa* and *Medodhatu* which further leads to *Shushkata* of *Netra*. This causes the symptoms like *Gharsha* (~Foreign body sensation), *Toda* (~Pricking pain), *Vishushkatva* (~Dryness). *Tikshna* and *Ushna Guna* of vitiated *Pitta* will reduce *Dravatva* of *Ashru* (~Tear) and causes symptoms such as *Daha* (~Burning sensation), *Paaka* (~Inflammation) and *Vikunana* (~Constriction of eyelids on exposure to light). Due to long time exposure to computer screen, there may be decrease tear production or may alter the contents of tear film leading to loss of homeostasis at the ocular surface which causes Dry Eye Disease.

*Netra Tarpana* helps for hydrating the ocular surface due to retention of fluid for stipulated time period and is effective in reducing evaporation rate of tear. In *Netra Tarpana*, *Sneha Dravya* which are used act as both lipophilic and hydrophilic. Due to *Sukshma Guna* of *Ghrta*, it enters into the minute channels of the body. The lipophilic action of the *Ghrta* facilitates the drugs to enter into the eyeball through corneal epithelium and endothelium and hydrophilic action facilitates to enter through stromal layer of cornea.<sup>10</sup>

*Jeevana Panchamoola dravya* are *Chakshushya* and *Vata Pittahara* in nature. Because of unavailability of certain drugs, substitutes have been used for the preparation of this formulation (Table No.-6). Drugs used in *Jeevaniya Panchamoola Ghrta* contain Flavaonoids, Glycosides, Alkaloids, Sitosterol which act as anti-inflammatory agents. Ascorbic acid acts as antioxidant and helps in normal functioning of tear film. Quercetin increases goblet cell density and increases tear film production.<sup>11</sup> Berberine protects ocular surface by avoiding the severe apoptosis and decreasing the level of MMP-3 and MMP-9.<sup>12</sup> Kaempferol has anti-inflammatory and antioxidant properties.

**Table 6 (Ingredients of Jeevaniya Panchamoola Ghrta)**

Jeevana Panchamoola Dravyas	Botanical Name	Substitutes used	Botanical Name
<i>Jeevanti</i>	<i>Leptadenia reticulata</i>	-	-
<i>Shatavari</i>	<i>Asparagus racemosus</i>	-	-
<i>Ksheerakakoli</i>	<i>Lilium polyphyllum</i>	<i>Shatavari</i> <sup>13</sup>	<i>Asparagus racemosus</i>
<i>Jeevaka</i>	<i>Malaxis acuminata</i>	<i>Guduchi</i> <sup>13</sup>	<i>Tinospora cordifolia</i>
<i>Rishabhaka</i>	<i>Malaxis muscifera</i>	<i>Vidarikanda</i> <sup>14</sup>	<i>Pueraria tuberosa</i>

## CONCLUSION

The case study has shown an encouraging result in the treatment of *Shushkakshipaka* (Dry Eye Disease). It has shown effective relief from the dryness of the ocular surface and also reported with positive remarks in the Schirmer's test and Tear Film Break Up Time. Hence, there is a need to evaluate the results of *Jeevaniya Panchamoola Ghrta Netra Tarpana* in a larger sample size.

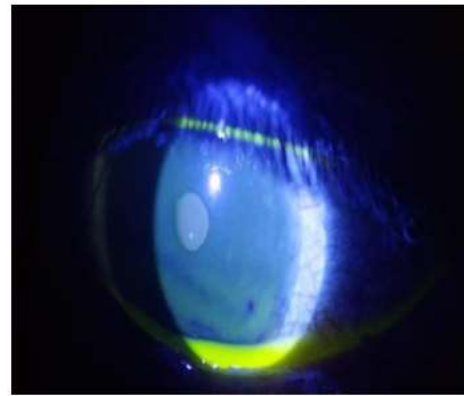
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**Schirmer's Test**



**Tear Film Break Up Time**



**Netra Tarpana**