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A Clinical Study to Evaluate Effect of *Haritkyadi Lepa* and *Bilwadi Seka* on *Shushkakshipaka* (Meibomian Gland Dysfunction)

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ABSTRACT

Shushkakshipaka is an *Aushadha sadhya netra roga* due to affliction of *Vata* or *vata-pitta* or *vata-rakta doshas* having a preponderance of *Paka* (inflammation) in advanced phase. A modern perspective on its *nidana, samprapti* and *chikitsa* can be characterized by Meibomian gland dysfunction (MGD). Despite many treatment alternatives patients of MGD experience short-term relief and complaints of reoccurrence of symptoms. So, it is obligatory to discover *ayurvedic* modalities for its better management. In the present study from *Kriyakalpa, Vidalaka* and *Seka karma* has been chosen. **Aims & objectives:** To evaluate effects of *Haritakyadi vidalaka* and *Bilwadi seka* on *Shushkakshipaka* w.s.r MGD. **Material & methods:** Clinical study of randomly selected 20 patients of *Shushkakshipaka* and Meibomian gland dysfunction intervened for *Haritakyadi vidalaka* followed by *Bilwadi seka* for 30 days. **Results & Conclusion:** Marked improvement was seen in 15%, moderate improvement was seen in 80% and mild improvement was seen in 5% of total patients.

Key Words *Shushkakshipaka, Meibomian gland dysfunction, Haritakyadi vidalaka, Bilwadi seka*

INTRODUCTION

Vidalaka karma is one among *Kriyakalpa* procedures indicated in eye conditions such as *Toda, Bheda, Gharsha* etc[1], in which medicine is absorbed through skin of the eyelids and mechanical effect of pressure (develops due to semi-solid consistency of *vidalaka lepa)* supports meibomian gland expression and reduces lid oedema. *Seka karma* is considered in the first line of treatment of *Shushkakshipaka* by *Acharya Sushruta*[2] *& Vagbhatta*[3] both. The *Vidalaka Yoga* i.e. *Haritkaydi Lepa*[4] and *Seka Yoga* i.e. *Bilwadi Kwatha*[5] for this study are mentioned in *Sharangdhara Samhita* and *Yogratnakara,* respectively. *Shushkakshipaka* is characterized by *Koonitam* (narrowing of palpebral aperture), *Darunaruksha vartma* (hardness or roughness of eyelids), *Avildarshanam* (transient blurring of vision), *Sudarunam yata pratibodhanam* (difficulty in opening and closing of eyes), *gharsha* (foreign body sensation), *toda-bheda* (Pricking and cutting pain), *updehavata*

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(stickiness), *vishushkta* (dryness), *sheetechha* (liking for cold), *paka*[6] (inflammation) and *sandahaytein*[7] (burning sensation). Whereas, Meibomian Gland dysfunction is a functional disorder of meibomian glands characterized by terminal duct obstruction and/or qualitative or quantitative changes in the glandular secretion. It may further results in alteration in the tear film, clinically apparent inflammation, symptoms of eye irritation and ocular surface disease[8]. Signs and symptoms of MGD are very much similar to *roopa* of *Shushkakshipaka.*

NEED OF THE STUDY

Shushkakshipaka is compared to Dry Eye Syndrome but if the clinical features are analysed deeply, another terminology of modern texts has much resemblance to the disease i.e. Meibomian Gland Dysfunction. Common treatment modalities for MGD include application of a warm compress, practice of lid hygiene, dietary supplementation with omega-3 fatty acids, forced meibum expression, intraductal probing, automated thermal pulsation, topical steroids, topical with oral antibiotics, preservative-free artificial tears, lipid- containing eye drops and topical diquafosol[9]. Despite the variety of treatment alternatives available, however patients of MGD are refractory to treatment and thus do not experience long- term relief of symptoms. So, there is a need to opt for *ayurvedic* modalities for the management of MGD regarding *Chikitsa* of *Shushkakshipaka.*

AIMS AND OBJECTIVES

To evaluate the efficacy of '*Haritkyadi Lepa (Vidalaka)*' and *'Bilwadi Kwatha (Seka)'* in the management of *Shushkakshipaka* w.s.r. Meibomian gland dysfunction.

PLAN OF STUDY

An open random comparative study was planned in which 20 patients with clinical features of *Shushkakshipaka* and Meibomian Gland Dysfunction were registered from the O.P.D and I.P.D of PG department of *Shalakya Tantra, Rishikul* campus, *Haridwar.*

MATERIALS AND METHODS

Clinical study was carried out in three phases:

- Diagnostic Phase
- Interventional Phase
- Assessment Phase

DIAGNOSTIC PHASE

1. Inclusion Criteria

- Patient presenting with signs and symptoms of *Shushkakshipaka* and Meibomian Gland Dysfunction.
- Age 20-60 yrs
- Visual acuity- 6/6 both eyes and N6 (best corrected).

2. Exclusion Criteria

- Patient having visual Acuity<6/6 & <N6 (best corrected).
- Patient having infective anterior segment disorders, lid disorders etc.
- Patients suffering from specific eye lid disorders like tumor, skin allergies (acne rosacae),

ectropion, entropion, lagophthalmous, aqueous deficiency dry eye etc.

- Systemic diseases like DM, HTN, RA.

3. Criteria for Withdrawal

- Aggrevation of symptoms
- Associated/ intercurrent illness
- Personal matter
- LAMA

4. Criteria for Diagnosis

All the patients of *Shushkakshipaka* (Meibomian gland dysfunction) were diagnosed on the basis of clinical features, laboratory investigations and various ocular examinations.

Subjective Parameters

- Dryness *(rukshta)*
- Burning sensation *(sandahaytein)*
- Foreign body sensation *(Gharsha)*
- Transient blurring of vision *(Avildarshanam)*
- Itching sensation

Objective Parameters

- Blocked Meibomian Gland Opening
- Meibomian Gland Expression Test
- TBUT test
- Schirmer 1st test
- Inflammation at Lid margin
- Fluorescein Staining

Functional examination of eye

External torch light examination, Visual acuity, Slit lamp examination, Meibomian glands expression test, TBUT Test, Schirmer's Test, Fluorescein staining and Fundoscopy.

Investigations

- Blood sugar (fasting and PP)
- Erythrocyte sedimentation rate(ESR)
- Complete blood count
- Lipid profile
- R A factor

INTERVENTIONAL PHASE

1. Type of Study

Simple open randomized clinical trial.

2. Plan of Study

Minimum 40 patients of *Shushkakshipaka* and MGD were selected from the O.P.D. and I.P.D. of PG department of *Shalakya Tantra* Rishikul campus, Haridwar (UAU). The study was conducted on the patients randomly divided into 2 groups of 20 patients each on the basis of inclusion and exclusion criteria depending on the detailed clinical history, physical examination and other necessary investigations irrespective of their caste, creed and gender.

3. Consent of participate in the study

A written consent was taken on prescribed Proforma before starting the trial. Patients were given all details about the duration and route of administration of the formulation before taking consent.

4. Procedures:

a) *Vidalaka Karma:*

1. Poorva Karma: *Deepana- Pachana* was done by *Chitrakadi vati* (300mg) i.e. 2 tablets twice a day with lukewarm water for 3-5 days.

2. Pradhana Karma:

A. Preparation of *Vidalaka Lepa:* The prescribed medicated powder was mixed with

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lukewarm water. The paste was made uniformly having semi-solid consistency.

B. ***Vidalaka karma:*** The patient was allowed to lie in supine position on *kriyakalpa droni*. Then patients' face was made gently cleaned with sterile cotton and advised to close his/her eyes to avoid dust and debris around eyes. Mild *Abhyanga* and *swedana* was done on the face. Then the prescribed *Vidalaka yoga* was applied on closed and relaxed eyes excluding eye lashes in a ¼ *angula* of thickness and left for approx. 10-15 minutes till it get dried.

3. ***Pashchata Karma:*** After the procedure, the *Vidalaka yoga* was removed gently before getting dried. Then Patients' eyes were cleaned properly and patient was advised to take some rest for 5-10 minutes. Further the patient was advised to avoid day sleep, excessive talk, exposure to fire and sunlight, sorrow and anger as mentioned in literature.

b) *Seka Karma:*

1. ***Poorva Karma:*** *Acharya Dalhana* and *Acharya Videha* both have recommended *laghu ahara* or *upavasa* for four days after *rogotpatti*, after which *seka karma* should be done. But practically it should be started with *aptarpana* and *deepana pachana aushadha {Chitrakadi vati* (2 tabs BD with lukewarm water) for 3-5 days (300mg/tab)*}*.

2. ***Pradhana Karma:***

A. **Preparation of *Kwatha:*** The *Kwatha* was prepared by the classical *kwatha* preparation method. The *Kwatha yoga* was added with 4 parts of water and heated slowly. When it was reduced to 1/4th of its original quantity, it was filtered through clean and fine cotton cloth. Thus, the *Kwatha* was prepared.

B. ***Seka karma:*** The patient was allowed to lie in supine position on *kriyakalpa droni*. Then gently clean the face and closed eyes with the help of sterile cotton to avoid dust and debris around eyes. Mild *Abhyanga* and *swedana* was done on the face. The prepared *kwatha* was taken in a *jalneti patra* and *Seka* was done continuously for a period of 10-15 minutes at a height of four *angula*. The *dhara* of *kwatha* was *anjana shalaka anurupa.*

3. ***Pashchata Karma:*** After the procedure, eyes are cleaned properly and patient is advised to take some rest for 5-10 minutes. The patient is also advised to avoid *kapha vridhikara ahara* and bright things.

Duration of Procedures

Haritakyadi Vidalaka:

Dose- ¼ *Angula (Sh.U.kh.11/2)* 0.4875cm ≈ 0.5cm OD (retention time- 20 minutes)

Route of administration- locally covering closed eyelids in a circle uniformly except eye lashes

Duration- 1 month of 3 sittings (7 days each with 3 days gap)

Temperature- *Sukhoshna*

Bilwadi Seka:

Dose- 600 *matra* (≈10 minutes) OD

Route of administration- pouring in both closed eyelids

Duration- 1 month of 3 sittings (7 days each with 3 days gap)

Complications

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No complications of the procedures were observed.

ASSESSMENT PHASE

Criteria for assessment

Grading and scoring system was adopted for assessing signs and symptoms of *Shushkakshipaka* and MGD before and after completion of trial. **(Table no.1)**

Table 1 Assessment Parameters

S.No	SUBJECTIVE PARAMETERS	
1.	Dryness *(Rukshata)*	0- Never. 1- Occassionally dryness occurs on exposure to environmental factors. 2- Frequent dryness on exposure to environmental factors but not limiting daily activities. 3- Annoying and constant dryness.
2.	Burning sensation *(Sandahaytein)*	0- No Burning sensation. 1- Burning sensation only during work. 2- Persistent but does not disturb daily routine work. 3- Continuous and disturbs routine work.
3.	Foreign Body sensation *(Gharsha)* .	0- Never. 1- Occassionally occurs. 2- Occurs frequently. 3- Constant rubbing of eyelids.
4.	Transient blurring of vision *(Aviladarshanam)*	0- Never. 1- Occassional. 2- Frequent.
5.	Itching sensation	0- No itching. 1- Occasional itching. 2- Frequent but does not disturb routine work. 3- Continuous.
OBJECTIVE PARAMETERS		
1.	Inflammation at lid margin	0-No Inflammation. 1-Slight narrowed palpebral fissure i.e. ¼ of normal width. 2-Narrowed palpebral fissure with inflammation i.e. ½ of normal width. 3-Narrowed fissure with severe inflammation i.e. >1/2 of normal width.
2.	Blocked Meibomian gland opening	0- Normal Opening. 1- ≤4 glands opening blocked. 2- >4 and ≤8 glands opening blocked. 3- All Glands Opening Blocked.
3.	Meibomian Gland Expression Test	0- Normal, Clear. 1- Opaque with normal Viscosity. 2- Cloudy with granular debris. 3- Toothpaste like.
4.	TBUT Test	0- Normal >10 sec 1- Mild >8sec and <10 sec 2- Moderate >5sec and <8sec 3- Severe <5sec
5.	Schirmer 1st test	0- Normal >15mm 1- Mild >9mm and <14mm 2- Moderate >4mm and <8mm 3- Severe <4mm
6.	Fluorescein Staining	0- No staining of corneal epithelial surface. 1- Mild staining occupying <1/3 of corneal epithelial surface. 2- Moderate staining occupying <1/2 of corneal epithelial surface. 3- Severe staining occupying >1/3 of corneal epithelial surface.

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STATISTICAL ANALYSIS

Since observations are on ordinal scale, we have used **Wilcoxon Signed Rank test** to test the efficacy of therapy (qualitative data) while **Paired t-test** to test the efficacy of therapy (quantitative data). We have used Median (for qualitative data) and Mean (for quantitative data) to assess before and after treatment condition of patients and finally result was incorporated in terms of probability (p).

OBSERVATIONS AND RESULTS

Out of 20 patients, 10% were from age group 20-30 years, 15% from age group 31-40 years, 55% from age group 41-50 years & 20% of patients were from age group 51-60 years. Majority of patients i.e. 65% were females and 35% were males. 55% were housewives, 20% were servicemen, 15% were businessmen, 5% were labour and 5% were students. In education, 40% were from higher secondary education group, 30% had primary education, 25% were graduates and 10% were illiterates. Marital status wise, 90% were married, 5% were unmarried & 5% were widow. Socio-economic status wise, 45% were from lower-middle class and 55% were from middle class family. In habitat, 25% were from rural areas while 75% were from urban areas. Dietatic preference wise, 75% were vegetarians & 25% were on mixed diet. In *prakriti*, 45% were of *vata-pittaja*, 35% were of *pitta-kaphaja*, 20% were of *vata-kaphaja*. **(Tabe no.2)**

Table 2 Demographic Data

VARIABLES		NO. OF PATIENTS	%
AGE	**20-30 years**	2	10%
	31-40 years	3	15%
	41-50 years	11	55%
	51-60 years	4	20%
GENDER	**Male**	**7**	35%
	Female	13	65%
OCCUPATION	**Servicemen**	4	20%
	Labour	1	5%
	Businessmen	3	15%
	Housewife	11	55%
	Student	1	5%
EDUCATION	**Uneducated**	2	10%
	Primary	6	30%
	Higher Secondary	8	40%
	Graduate	5	25%
MARITAL STATUS	**Unmarried**	18	90%
	Married	1	5%
	Widow	1	5%
	Lower-middle	9	45%

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SOCIO-ECONOMIC STATUS	**Middle**	11	55%
HABITAT	**Rural**	5	25%
	Urban	15	75%
DIETETIC PREFERENCE	**Vegetarian**	15	75%
	Mixed diet	5	25%
PRAKRITI	**VP**	9	45%
	PK	7	35%
	VK	4	20%

EFFECT OF THERAPY

1. Subjective Parameters (Table no.3)

Dryness

Before treatment median score of Dryness in Right eye was 2.00 which was reduced after treatment to 1.00 with a relief of 43.6% (p-value<0.001) which is statistically highly significant. Before treatment median score of Dryness in Left eye was 2.00 which was reduced after treatment to 1.00 with a relief of 58.9% (p- value<0.001) which is statistically highly significant.

Burning Sensation (Sandahaytein)

Before treatment median score of Burning sensation in Right eye was 2.00 which reduced after treatment to 1.00 with a relief of 54.7% (p- value<0.001) which is statistically highly significant. Before treatment median score of Burning sensation in Left eye was 2.00 which reduced after treatment to 0.00 with a relief of 65% (p-value<0.001) which is statistically highly significant.

Foreign Body Sensation (Gharsha)

Before treatment median score of Foreign body sensation in Right eye was 1.00 which was reduced after treatment to 0.00 with a relief of 63.6% (p- value<0.001) which is statistically highly significant. Before treatment median score of Foreign body sensation in Left eye was 1.00 which reduced after treatment to 0.00 with a relief of 67.6% (p- value<0.001) which is statistically highly significant.

Transient Blurring of Vision (Avildarshanam)

Before treatment median score of Transient Blurring of Vision in Right eye was 2.00 which reduced after treatment to 1.00 with a relief of 47.05% (p- value<0.001) which is statistically highly significant. Before treatment median score of Transient Blurring of Vision in Left eye was 2.00 which reduced after treatment to 0.00 with a relief of 76.4% (p- value<0.001) which is statistically highly significant.

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Itching Sensation

Before treatment median score of Itching Sensation in Right eye was 3.00 which reduced after treatment to 2.00 with a relief of 34.6% (p- value<0.001) which is statistically highly significant. Before treatment median score of Itching Sensation in Left eye was 2.5 which reduced after treatment to 1.00 with a relief of 53.1% (p-value<0.001) which is statistically highly significant.

Table 3 Effect of Therapy in Subjective Parameters

PARAMETERS	MEDIAN		WILCOXON SIGNED RANK |W|	P-VALUE	% EFFECT	RESULT
	BT	**AT**				
Dryness (RE)	2	1	105	<0.001	43.6	HS
Dryness (LE)	2	1	171	<0.001	58.9	HS
Burning Sensation (Sandahaytein) RE	2	1	190	<0.001	54.7	HS
Burning Sensation (Sandahaytein) LE	2	0	171	<0.001	65	HS
Foreign Body Sensation (Gharsha) RE	1	0	190	<0.001	63.6	HS
Foreign Body Sensation (Gharsha) LE	1	0	153	<0.001	67.6	HS
Transient Blurring of Vision(Avildarshanam) RE	2	1	78	<0.001	47.05	HS
Transient Blurring of Vision(Avildarshanam) LE	2	0	171	<0.001	76.4	HS
Itching Sensation RE	3	2	91	<0.001	34.6	HS
Itching Sensation LE	2.5	1	120	<0.001	53.1	HS

Objective Parameters (Qualitative Data) (Table no.4)

Inflammation at Lid margins

Before treatment median score of Inflammation at Lid margins in Right eye was 1.00 which not reduced after treatment as 1.00 with a relief of 48.3% (p- value<0.001) which is statistically highly significant. Before treatment median score of Inflammation at Lid margins in Left eye was 1.00 which reduced after treatment to 0.00 with a relief of 55.5% (p- value<0.001) which is statistically highly significant.

Blocked Meibomian Gland Opening

Before treatment median score of Blocked Meibomian Gland Opening in Right eye was 2.00 which reduced after treatment to 1.00 with a relief of 34.8% (p- value<0.001) which is statistically highly significant. Before treatment median score of Blocked Meibomian Gland Opening in Left eye was 2.00 which was reduced to 1.5 after treatment with a relief of

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29.2% (p- value=0.004) which is statistically significant.

Meibomian Gland Expression Test

Before treatment median score of Meibomian Gland Expression Test in Right eye was 2.00 which reduced after treatment to 1.5 with a relief of 27.2% (p- value<0.001) which is statistically highly significant. Before treatment median score of Meibomian Gland Expression Test in left eye was 2.00 which reduced after treatment to 1.5 with a relief of 39.02% (p- value<0.001) which is statistically highly significant.

Flourescein Staining

Before treatment median score of Flourescein Staining in Right eye was 1.00 which remained after treatment as 1.00 with a relief of 32% (p-value=0.008) which is statistically significant. Before treatment median score of Flourescein Staining in left eye was 1.00 which remained after treatment as 1.00 with a relief of 40% (p-value<0.001) which is statistically highly significant.

Table 4 Effect of Therapy in Objective Parameters (Qualitative Data)

PARAMETERS	MEDIAN		WILCOXON SIGNED RANK |W|	P-VALUE	% EFFECT	RESULT
	BT	**AT**				
Inflammation at Lid margins (RE)	1	1	78	<0.001	48.3	HS
Inflammation at Lid margins (RE)	1	0	105	<0.001	55.5	HS
Blocked Meibomian Gland Opening (RE)	2	1	78	<0.001	34.8	HS
Blocked Meibomian Gland Opening (LE)	2	1.5	45	0.004	29.2	Sig
Meibomian Gland Expression Test (RE)	2	1.5	78	<0.001	27.2	HS
Meibomian Gland Expression Test (LE)	2	1	78	<0.001	39.02	HS
Flourescein Staining (RE)	1	1	36	0.008	32	Sig
Flourescein Staining (LE)	1	1	66	<0.001	40	HS

Objective Parameters (Quantitative Data) (Table no.5)

Schirmers 1st test

Before treatment mean score of Schirmers 1st test in Right eye was 9.4 which became 10.6 after treatment with Standard deviation (SD) 0.696, Standard error 0.156, t-value -7.712 & relief of 12.76% (p- value<0.001) which is statistically highly significant. Before treatment mean score of Schirmers 1st test in Right eye was 9.0 which became 9.7 after treatment with Standard deviation (SD) 0.716, Standard error 0.160, t-value -4.682 & a relief of 8.33% (p- value<0.001) which is statistically highly significant.

Tear Breakup Time Test (TBUT)

Before treatment mean score of TBUT in Right eye was 7.2 which became 7.5 after treatment

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with Standard deviation (SD) 0.786, Standard error 0.176, t-value -1.422 & relief of 3.44% (p- value=0.171) which is statistically not significant. Before treatment mean score of TBUT in Left eye was 7.0 which became 7.5 after treatment with Standard deviation (SD) 0.513, Standard error 0.115, t-value -4.359 & a relief of 7.14% (p- value<0.001) which is statistically highly significant.

Table 5 Effect of Therapy in Objective Parameters (Qualitative Data) By Paired **T-Test**

PARAMETERS		MEAN		SD	SE	T-VALUE	P-VALUE	%EFFECT	RESULT
		BT	**AT**						
Schirmers test (RE)	1st	9.4	10.6	0.696	0.156	-7.712	<0.001	12.76	HS
Schirmers test (LE)	1st	9.0	9.7	0.716	0.160	-4.682	<0.001	8.33	HS
TBUT (RE)		7.2	7.5	0.786	0.176	-1.422	0.171	3.44	NS
TBUT (LE)		7.0	7.5	0.513	0.115	-4.359	<0.001	7.14	HS

OVERALL EFFECT OF THERAPY

In the present study, 03 patients (15%) showed marked improvement, 16 patients (80%) showed moderate improvement, 01 patient (5%) showed mild improvement and no patient (0.0%) showed no response or cured by the therapy. In none case, any sign and symptom of the recurrence & incontinence was found out during trial period or follow up. No adverse effect of any drugs/procedure was observed during the course of study and post treatment follow up. **(Table no.6).**

Table 6 Overall Effect of Therapy

OVERALL EFFECT	FREQUENCY	%
Cured	0	0.0
Marked Improvement	3	15
Moderate Improvement	16	80
Mild Improvement	1	5
No Improvement	0	0.0

FOLLOW-UP

After completion of 30 days trial, two follow ups were done after 30 days each for an interval period of 2 months. No adverse effects were observed during both the follow-ups.

DISCUSSION

Probable Mode of Action of *Haritakyadi Lepa (Vidalaka)*

When *Haritakyadi Lepa* is applied over closed eyelids, firstly active principles of the *Vidalaka yoga* were released into the underlying skin through *romakupa* and absorbed deeply through *swedawahi srotas* and numerous *siramukha*[10]. *Bhrajaka Pitta* is responsible for *Pachana* and *Shoshana* of the ingredients of the *Vidalaka*[11] and thus absorption takes place

and its action can be understood considering these following properties:

1. *'Mansaraktaprasadjama'*[12] property of *lepa* leads to *Shudhi* of *rakta* & *mansa dhatu* and breaks the *samprapti* of *rakta dushti* and *Mansa kshaya.*

2. *'Dahaprashamanam todakanduvinashanam'*[13] property of *Vidalaka* gives soothing effect by reduction of burning sensation and pricking pain.

3. *Lepa* also reduces inflammation (*शोफस्य हरणे तथा)* [14]

4. Contents of *kawatha* are *Pitta-shamaka* which deteriorates *vata-pradhana pitta dosha.*

5. *Haritaki* has *Shothahara, vednasthapana* and *rasayana* properties, *saindhava lavana* has *lekhana, netrarogaghnam* and *vranaprashamanam* properties, *Gairika* has *kanduhara* and *dahashamaka* properties & *Rasanjana* has *shothahara* and *vednasthapana* properties, which act on *toda, bheda, shoola* and *daha.*

Mode of action of *Haritakyadi Vidalaka* (Modern perspective)

Due to semi-solid consistency of *Vidalaka,* mechanical pressure is generated, which ultimately squeeze the Meibomian glands and stagnated meibum is expressed at lid margins. The active molecules of *Vidalaka* penetrates through the stratum corneum and into viable epidermis and dermis and produces its characteristic pharmacological response through receptors. Also, these active molecules penetrate hair follicles and sweat ducts. Hair follicles represent an important pathway for percutaneous absorption of active molecules. Moreover, *Haritaki* have anti-bacterial, immunodilatory action and vitamin C while *Gairika* having astringent and cooling action which gives soothing effect to eyes and reduces burning sensation and itching sensation.

Probable Mode of Action of *Bilwadi Kwatha (Seka)*

Pariseka is a type of *Drava sweda*[15] and *Sweda* has a property of *'स्रोतसां निर्मलत्वम्'* [16] which removes *Sroto sanga. Seka* increases duration of contact time of *Dravya* with *Vartma.* Thus increasing the *Rakta sanchara* in *Netra siras* and giving ample time to *dravya* to absorb. After local absorption, *dravya* undergo *paka* by *Bhrajaka pitta* present in the skin of the eyelids to manifest its actions i.e. *pachana* and *shamana* of *doshas*[17]. *Raktashodhaka* property of *Brahati* acts on *rakta dushti,* thus hampering the pathogenesis of disease. Other contents of *Bilwadi Kwatha* have *Shothahara, Vednasthapana, Dahaprashmanam* and *krimighna* properties which act on *Shotha,*

daha, toda and *bheda,* thus reducing symptoms of *Shushkakshipaka.*

Mode of action of *Bilwadi Kwatha* (Modern perspective)

The active molecules of *Kwatha* penetrate lids through the stratum corneum and into viable epidermis and dermis and produce its characteristic pharmacological response through receptors. Some amount of the *Kwatha* gets absorbed through the hair follicles of eye lashes. Cornea also determines the intra-ocular penetration of the drugs. Firstly, oil constituents of *Bilwadi Kwatha* (Ricinoleic acid in *Erund,* Arginine in *Shigru*) act as lipidophillic on corneal epithelium which is lipophilic. Then, corneal stroma allows rapid passage of the drug through endothelium into anterior chamber. Also, irrigation of tissues by *Kwatha* due to passage through nasolacrimal duct enhances the efficacy of drugs of the *Kwatha.* Moreover, the lukewarm *kwatha* also reduces the increased viscosity of meibum, and thus cleansing the expressed meibum at lid margins and quality of meibum can be enhanced.

CONCLUSION

In this study, statistically highly significant results were found in dryness, burning sensation (sandahaytein), foreign body sensation (gharsha), transient blurring of vision (avildarshanam), itching sensation, and inflammation at lid margin, meibomian gland expression and Schirmers 1st test in both the eyes and blocked meibomian gland opening (RE). Statistically significant results were found in Blocked meibomian gland opening (LE) and Flourescein staining (RE). Only insignificant result was found in TBUT (RE). Hence it can be concluded that *Haritkyadi lepa (vidalaka)* followed by *Bilwadi kwatha (seka)* has shown very good results in the management of *Shushkakshipaka* w.s.r. Meibomian gland dysfunction.

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