



## Original Research Article

## To evaluate the efficacy of Gritakumari (Aloe Vera Gel) in the management of Shushkakshipaka (Dry Eye Syndrome)

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## ARTICLE INFO:

**Article history:**

Received: 23 November, 2015

Received in revised form:

08 December, 2015

Accepted: 15 December, 2015

Available online: 30 December, 2015

**Keywords:**

Alo vera gel

Carboxy methyl cellulose

Dry eye syndrome

Gritakumari

Shushkakshipaka,

## ABSTRACT

**Background:** The tear film is fundamental of the maintenance of the ocular surface. Deficiency in tear quantity or quality, which can be caused by low tear production or excessive tear evaporation, results in an unstable tear film and dry eye syndrome (DES). Dry eye syndrome is characterized by symptoms of ocular dryness and discomfort. It is a disease of deficient or deranged tears and ocular surface disorder producing symptoms of discomfort, visual disturbance and tear film instability. Shushkakshipaka, an etymologically and clinically similar entity to DES, is defined in Ayurveda as the disease affecting all parts of the eye characterized by Paka (inflammation) due to Shuskatva (dryness) caused by altered coherence of Ashru (tears) with ocular surface or due to lack of Ashru. **Objective:** To compare the effect of Gritakumari (Aloevera gel) and artificial tear drops Carboxy methyl cellulose [CMC 0.5%] in the management of Shushkakshipaka (dry eye syndrome). **Design:** Randomized prospective clinical control trial. **Material and methods:** Patients were divided into two groups 18 in group A (trial group) and 17 in group B (control group). Group A was treated with Aloevera gel and group B treated with artificial tear drops 4 times a day for one month. **Results:** The effect of Aloevera gel was found to be equivalent to CMC 1%. **Conclusion:** Gritakumari (Aloevera gel) can be used as potent, safe and cost effective treatment to ameliorate the symptoms of DES.

### 1. Introduction

Dry eye is one of the most frequently encountered ocular morbidities, a growing public health problem and one of the most common conditions seen by eye care practitioners[1]. In the light of new knowledge about the role of ocular surface inflammation and tear hyperosmolarity in dry eye and the effects of dry eye on visual function, the International Dry Eye Workshop (DEWS) defined dry eye as a "Multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface"[2].

Dry eye can be classified into two types, evaporative (tear sufficient), and tear deficient. In tear deficient dry eyes, there is disorder of lacrimal gland to secrete or transfer fluid to the conjunctival sac. In tear sufficient (evaporative) dry eyes, there is increased evaporation of tear fluid from the ocular surface. In dry eye syndrome, patient complaints various type of symptoms like dryness, soreness, burning sensation, foreign body sensation, itching and there may be intermittent blurring vision[2]. Evaluation of dry eye is determined with various symptoms questionnaires and clinical test[3,4]. The conventional approach to the treatment of dry eye is to provide lubricating eye drops or tear substitute. Topical anti-

inflammatory as well as immunosuppressant corticosteroids and cyclosporine A, may be useful in dry eye associated with inflammatory ocular surface disease such as keratoconjunctivitis sicca, Sjogren's syndrome. Despite a number of researches being carried out, no curative treatment for DES has been achieved. Only palliative measures in the form of tear replacement therapy with a variety of artificial tear solutions are available which are to be used for lifelong by the patients, further burdening them financially. Palliative measures also fail to alleviate the symptoms later on due to preservative induced damage to the epithelial lining and basic secretors.

Shushkakshipaka, an etymologically similar entity, has been described in Ayurvedic texts whose etio-pathogenesis and clinical features of dryness and inflammation of the ocular surface remarkably correlates with that of DES. Shushkakshipaka is a Sarvagata Roga, that is, disease affecting all parts of the eye; a Vataja or Vata-Pittaja/Vata-Raktaja curable disease[5]. While the description in Sushruta demarcates the early stage, Vagbhatta gives details of a fully-fledged picture including Paka (inflammatory) stage of the disease[6-8]. Ayurvedic texts enlist a number of treatment modalities for treatment of the disease, including both localized and systemic measures. In view of the magnitude of the problem, this case study was

undertaken to achieve cost-effective treatment modalities of *Ayurveda* in treating this chronic ailment.

In the present clinical study, an attempt was made to observe the role of *Ghridakumari* (*Aloe Vera* gel) in dry eye syndrome. *Aloe vera* has wide spectrum of therapeutic and medicinal properties. The gel has lubricating[9], wound healing[10] and anti-inflammatory properties[11], as researched in previous studies, this clinical study was planned to evaluate the effect of *Ghridakumari* gel (*Aloe vera* gel) as compared to the CMC 1% in clinical parameters of dry eye.

## 2. Materials and Methods

**Design:** Randomized prospective clinical control trial.

### Selection of patients

Patients were selected from the *Shalakya Tantra* (*Netra roga*) Out Patient Department of the National Institute of Ayurveda, Jaipur.

### Inclusion criteria

- Patients between the age group of 30 to 70 years.
- Patients having clinical features with dry eye and those mentioned *Shushkakshipaka* will be included.

### Exclusion Criteria

- Patients with history of ocular trauma.
  - Patients with ocular surgery prior to three month of study.
  - Patients with visual media disorder or any other degenerative disorder of eye.
  - Patients suffering from any systemic/metabolic disorder.

### Grouping and Dosing

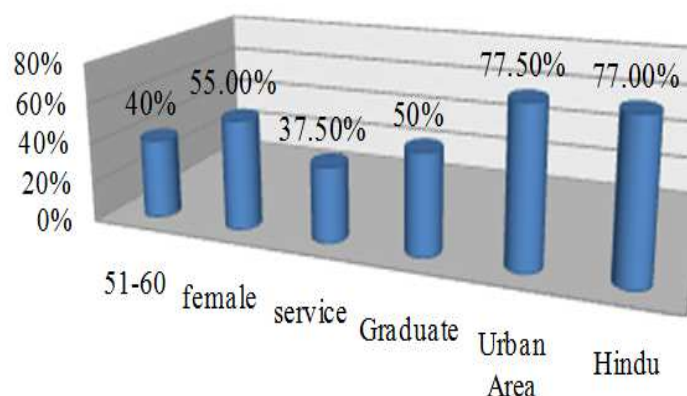


Chart No.1: Demographic detail has shown by graph

### Group A

In Trial group 18 patients was treated with drops of *Aloe vera* gel topically 4 times per day for 28 days.

### Group B

In Control group 17 patients was treated with 1% ophthalmic solution of Carboxy methyl cellulose topically 4 times per day for 28 days.

### Preparation of fresh *Ghridakumari* gel

Fresh gel of *Ghridakumari* was extracted from *Ghridakumari* leaf before application in the eye. Leaf was washed, dried well and gel was collected by giving an incision on leaf surface. Deep seated pulp was directly applied to the eye as eye drops.

### Assessment criteria

#### Subjective criteria

*Rukshata* (dryness), *Kunita* (shrunken), *Darunata* (hardness), *Aavila darshan* (blurring of vision), *Karacho unmilna* (difficulty in opening and closing of eye), *Gharsha* (foreign body sensation), *Toda* (stinging pain), *Bheda* (tearing pain) and *Updeha* (sticking of eye).

#### Objective criteria

Schirmer's - I test  
Tear film breakup time

#### Assessment criteria

Grading and scoring system was adopted for assessing each clinical feature before the commencement of trial and after the completion of the trial.

### Observation

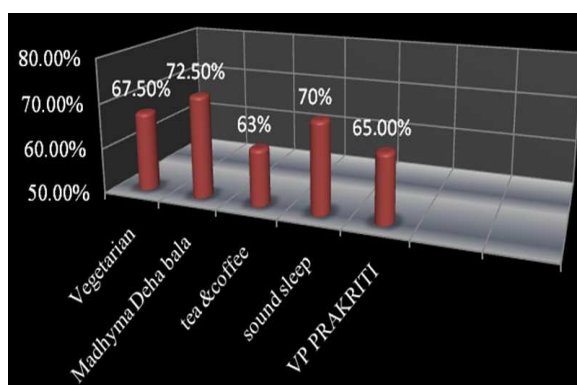
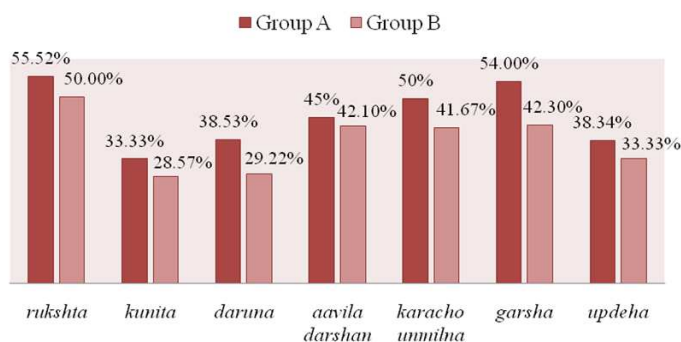
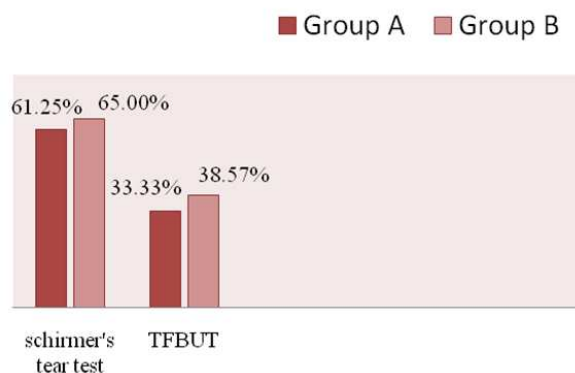


Chart No. 2: Demographic detail has shown by graph

## Results



**Chart No.3:** Effect of *Aloe vera* gel (Group A) and artificial tear drop (Group B) in subjective parameter



**Chart No.4:** Effect of *Aloe vera* gel (Group A) and artificial tear drop (Group B) in objective parameter

**Table No.1:** Comparative effect of both groups on clinical symptoms

Symptom	Group	N	Mean score BT-AT=D	% Relief	SD ±	SE ±	't'	'p'	M.W	'P'																																																																																																																		
RUKSHATA	A	16	1.05	65.52	0.539	0.127	3.8	0.0006	53.5	<0.001																																																																																																																		
	B	16	0.470	50	0.514	0.124					KUNITA	A	4	0.5	33.33	0.577	0.288	0.26	0.7980	9	>0.05	B	5	0.4	28.57	0.54	0.244	DARUNA	A	4	1.25	58.53	0.5	0.56	1.4	0.2070	4.5	>0.05	B	4	0.75	29.22	0.5	0.25	AAVILA DARSHAN	A	16	1	63.62	0.554	0.148	2.012	0.0543	69	>0.05	B	13	0.615	42.10	0.615	0.140	KARACHO UNMILNA	A	11	0.9	69.24	0.31	0.1	1.88	0.0756	32	>0.05	B	09	0.55	41.67	0.52	0.17	GARSHA	A	17	1.11	74.07	0.68	0.15	2.33	0.0271	86	<0.05	B	16	0.65	42.30	0.49	0.11	TODA	A	3	0.65	33.33	0.58	0.33	0.70	0.5185	3	>0.05	B	0	0.00	00	0.77	0.34	UPDEHA	A	8	0.875	58.34	0.353	0.125	1.96	0.0659	25	>0.05	B
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**Table No. 2:** Comparative effect of both groups on objective parameters

Symptom	Group	Eye	N	Mean score BT-AT=D	% Relief	SD ±	SE ±	't'	'p'	M.W	'P'																																															
Schirmer's Tear Test	RE	A	11	0.81	50	0.40	0.122	0.45	0.6595	56	>0.05																																															
		B	13	0.69	50	0.480	0.133					LE	A	11	0.90	55.55	0.539	0.162	1.385	0.1794	56	>0.05	B	12	0.384	27.78	0.50	0.140	TFBUT	RE	A	14	0.857	66.7	0.66	0.177	1.649	0.1127	52	>0.05	B	13	0.76	73.72	0.66	0.201	LE	A	11	0.50	38.89	0.513	0.138	2.083	0.0486	48	>0.05	B
	LE	A	11	0.90	55.55	0.539	0.162	1.385	0.1794	56	>0.05																																															
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## 3. Discussion

There is ample description of *Sushkakshipaka* in *Ayurvedic* literature. It has been described as a *Vata or Vata -Pittaja* eye disorder affecting all parts of the eye which is curable by medical means. It is clear from the etymological derivation of the *Sushkakshipaka* that the disease can occur in two ways, viz., either by absent or decreased secretion of tears or their

altered coherence with the ocular surface resulting in *paka* (inflammation) of the *Netra*. Similar classification of dry eye in two broad categories of tear deficient and tear sufficient dry eye is in vogue in modern ophthalmological literature.

Whereas the abstraction of tear is described vividly in modern, literature, it is not so in texts of *Ayurveda*. To ascertain the *Ayurvedic* concept of fluids which bathe the ocular surface, a thorough search was done which yielded

that though no structure was linked with the formation of *Ashru* in *Ayurveda*, the ancient sages knew the importance of tear fluid very well and drainage pathway of lacrimal system was known to them. It was concluded from the evidences scattered in *Ayurvedic* literature that *Ashru* is derived from the *Rasa Dhatu*, and its functions in the eye is similar to that of *Rasa Dhatu* in the body. It restores the wear and tear and provides nutrition to the outer tunics. It lubricates the eye and keeps the eye wet[12]. A number of treatment modalities have been described in *Ayurveda* for the management of *Sushkakshipaka*. It not only includes localized measures, but also systemic use of drugs has also been indicated. This variety of treatment modalities points toward the diverse pathology of the disease.

#### Clinical profile

Majority of the patients were in the age group of 51–60 years which indicates decrease in tear production with age. Majority of patients were female of postmenopausal age reflecting toward the role of hormonal changes in the causation of DES. Most of the patients registered in this study were Hindu of urban habitat signifying predominance of this community in the area where the trial was conducted. Most of the patients were having *Vata -Pittaja Prakriti* and as the disease is *Vata -Pitta* dominating, the person with similar *Prakriti* is more prone to develop this disease. Thus, the disease was a challenge to treat due to the similarity in *Kala* (age group affected), *Prakriti* (*Vata -Pittaja Prakriti* of the patients) and *Dosha* (*Vata -Pittaja* disease) besides being of *Dvidoshaja* nature[13]. Maximum number of patients had *Madhyam Dehabala*. It can be ascribed to the age (middle age) group affected by this disease in which *Pitta* and *Vata* show their predominance respectively.

#### Probable action of drug (*aloe vera* gel)

*Aloe vera* has a wide spectrum of therapeutic and medicinal properties. The therapeutic uses of *Aloe vera* have been mentioned in ancient texts like *Bhavprakash Nigantu*[14] *Kaiydeva Nigantu*[15], *Sharangadhar Samita*[16]. The herb (*Aloe vera*) proposed in the clinical study has been used for various disease like *Vrana*, *Kustha*, *Gulma*, *Pliharoga*, *Yakritvridhi*, *Kaphaja jwara*, *Granthi*, *Agnidagdha*, *Vishaphota*, *Pita- rakta vikar*, *Chuddraroga* etc. Various experimental as well as clinical studies suggest the role of *Aloe vera* in the management of Dry eye[09], inflammation[17] and skin disorder[18] etc. considering these factors this drug had been selected for assessing its symptoms for dry eye.

Group A (Trial group) has shown significantly better results in the chief complaints like *Ruksta*, *karachounmilna*, *Garsha* and in tear quantity tests (Schirmer tear test), Tear film stability test (Tear film break up time) than group B (control group). In rest of signs and symptoms trial drug was almost equally effective to control group.

#### 4. Conclusion

The effect of *Ayurvedic* treatment was found to be equivalent to standard therapy of tear supplementation (CMC eye drops), although *Aloe vera* gel provided more relief in certain symptoms like, *rukshata* and *krachounmilna* etc., This

*Ayurvedic* management can be used as a potent, safe and cost-effective treatment to ameliorate the symptoms of DES. This is a very small sample and short duration study, so it is suggested that large sample and long duration studies should be conducted, with *Aloe vera* gel. This study is an eye opener for future research scholars to study the efficacy of *Aloe vera* gel in the management of disease *Shushkakshipaka*- Dry eye on large scale.

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*Source of support: Nil, Conflict of interest: None Declared*

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