



Research Article

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OPTIMIZATION OF PARISHEKA KRIYAKALPA (PROCEDURE FOR CLOSED EYE IRRIGATION) 2: RESPONSE FACTOR STUDY ON HEALTHY VOLUNTEERS

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ABSTRACT

Standard Operational Procedure (SOP) should contain purpose references, materials, procedure, forms and documentation. SOP will reduce system variation which is the opponent of production efficiency and quality control. The development and use of SOPs are the integral part of a successful quality system as it provides individuals with the information to perform the procedure properly and facilitates consistency in the quality and integrity of the treatment or management of a disease. To meet the above criteria and to achieve the objective of standardization; optimization of SOP of Netra parisheka (closed eye irrigation) procedure was thought to be the pre-requisite. The study was planned in three steps viz. survey study & moderation of SOP, then testing the moderated SOP on healthy individuals thus to further refine/moderate them and finally testing the refined SOP clinically. The data of survey on Netra parisheka (closed eye irrigation) procedure after critical discussion and analysis was tested on hundred volunteers for all the parameters and on the basis of their response & rejection factor optimal levels of each parameter was reached and were considered as standard operational procedure (SOP). Further in the third step these SOP were subjected for clinical validity evaluation in acute conjunctivitis using Triphala decoction. In the present article the second step of the study is presented. 1.5 to 2 mm thickness, 6-7 cm height, 99-100 °F temp of the irrigation stream (fluid) are most accepted. The volume of the solution required for a particular clinical condition is now ascertained after fixing the thickness of stream as the time duration is already fixed in the ancient classical literature.

KEY WORDS: Nethra Seka/Parisheka, Kriyakalpa, Optimization, SOP, Standardization, Topical Ocular Therapeutic procedures, Triphala.

INTRODUCTION

Kriyakalpa (Topical Ocular Therapeutic procedures) remained in a progressive phase of development since its inception in Agnivesha Tantra. In medieval period, Acharya Sharangadhara not only highlighted Pindi Kriyakalpa (Poultice), but also gave a specialized order of clinical application of these procedures. He opined that Seka (closed eye irrigation), Ashchyotana (Eye drops), Pindi (Poultice application), Bidalaka (Lid ointment), Tarpana (Satiation), Putapaka (retention of medicinal decoction along with Mansrasa (serum like material on eyes), Anjana (Collyrium/eye ointment) are the seven procedures in progressive order of their clinical application¹. The first four are applied in Aamavastha (acute inflammatory stage) whereas the later three are indicated in Niraamavastha (chronic stage) of Nethra roga (Diseases of eye).

Each of these therapeutic measures has their specific indications as well as technique mentioned in the classics of Ayurveda, but various ancient scholars have different opinions regarding these procedures. Nowadays, various centers of Nethra roga Chikitsa (Treatment of ocular diseases) are practicing these therapeutic measures by following their own accepted parameters.

Keeping in view above said facts and the importance of these local ocular therapeutic measures in eye care, it is necessary to optimize SOP for these Kriyakalpas (Topical Ocular Therapeutic procedures), so that it can be followed universally and thus, can be subjected for standardization after validation of

the SOPs. To begin with, the first and foremost ocular therapeutic procedure i.e. Nethra Parisheka/ Seka (closed eyes irrigation) has been taken and the project is completed in three steps/phases viz. 1. Status of prevailing practice of Nethra parisheka (closed eye irrigation) in different eye center – A survey study; 2. Optimization of SOP of Nethra Parisheka (Closed eye irrigation) on the basis of healthy volunteer's response to the various steps of the procedures & 3. Clinical efficacy evaluation of the optimized SOP in the treatment of acute conjunctival inflammation with Triphala decoction. The role of this procedure has been evaluated in different disease conditions at postgraduate center of Netra Chikitsa (treatment of ocular disease) (Shalaky)^{2,3,4,5} but question of optimization and standardization has not been addressed so far anywhere.

Nethra Parisheka (closed eye irrigation) is the method of pouring of a very fine stream of medicated fluid over the closed eye from a height of 8 cm (4 Angulas: Sharangadhara)⁶ for a specified time period. Parisheka (irrigation) is indicated in Aamavastha of Netra roga (highly exaggerated phase/acute inflammatory phase)⁷ representing redness, lacrimation, foreign body sensation, pain, itching, burning sensation, discharge and swelling etc. as main features.

Specific formulations having many attributes are indicated in different pathological conditions, for e.g. Snehana Parisheka (irrigation) in Vataja, Ropana Parisheka (irrigation) in Pittaja and Raktaja and Lekhana Parisheka (irrigation) in Kaphaja netrarogas⁸ (eye diseases). Therefore, a formulation which

pacifies all the Doshas i.e. Triphala⁹ decoction is chosen for this study, which is indicated in all types of Abhishyanda^{10,11} (ocular surface inflammation).

The present research article is the end result of study conducting in the second phase or the optimization process based on the outcome of the survey study in first phase.

AIMS: Optimization of ‘Standard Operational Procedure’ of Netra Parisheka Kriyakalpa (procedure for closed eye irrigation) on the healthy volunteer’s response.

OBJECTIVES: To make the optimized SOP on healthy individual as baseline for its clinical validity evaluation in acute conjunctival inflammation using Triphala Kwatha (Decoction).

MATERIALS AND METHODS

Logically analyzed and moderated prevalent practices of Nethra parisheka kriyakalpa (procedure for closed eye irrigation) founds through the survey study in phase I, were subjected for Optimization of SOP by acceptance and rejection response using Triphala⁹ decoction Netra parisheka on 100 healthy volunteers for their response (acceptability or rejection) in respect of following variables:

- Dosage & Method of preparation of parisheka drug.
- Volume of liquid used (dose),
- Height of Parisheka dhara (stream)
- Temperature of dhara (stream)
- Width of dhara (stream) and
- Time duration of application in single sitting,
- Number of repetitions per day

Highest acceptability point/range with comfort by healthy individual was the basis to be adopted as the optimized SOP of that variable of the procedure of Nethra Parisheka (closed eye irrigation). Similarly, all variables were tested for response and the mostly accepted among the healthy individuals were taken/ adopted as the optimized standard operational procedure (SOP) of Nethra parisheka (closed eye irrigation).

These adopted SOP of Nethra parisheka (closed eye irrigation) were subjected for clinical evaluation in the patients of Aamavastha of Nethra roga (Acute conjunctival inflammation of eye) using same dosage of Triphala decoction; to be presented as next research article.

In survey study¹² all the Shalakya practitioners were well cooperative and showed much enthusiasm to share their clinical experiences. All were of the opinion that standardization of all Kriya Kalpa (Topical ocular therapeutic procedures) procedures is need of the hour. It was also observed that method of practicing Netra parisheka varied from one institute to another as well as among the clinicians of the same institute. Nowhere, neither the classical method was practiced nor basic concepts were applied in modifying the procedure. Dimension of the device, height and width, time, temperature of the dhara (stream) was highly variable among the institutes. Most of the practitioners consider it as a safe, best and simple procedure. Since the procedure is more soothing in nature, showed good compliance from the patients.

The study has been registered in the Clinical Trial Registry of India (CTRI) Reg. No CTRI/2013/05/03647.

By summarizing all the observations from the centers, these are the common observations

Which are highlighted below in the table as follows:

S. No	Survey Questionnaire	Common observations
1	Paribhasa (Terminology which signify clinically)	Netra seka
2	Indications	Classical
3	Dimension of the vessel used for seka (specification)	Nothing specific
4	Dhara(stream)-Single/ Multiple(suksma Dharabhi)	Single
5	Position	Supine
6	Any preoperative or postoperative measures, if yes mention with its advantage	Nothing specific
7	Open/Closed eyes	Closed eyes
8	Height of dhara (following any specific height other than classical method)	Less than classical height (3-6cm)
9	Site of application of dhara	Whole eye
10	Temperature of Dhara (following in clinical practice) ¹³	Patient comfort
11	Duration of performing Dhara	Avg. 2-4mins
12	Number of times seka performed in a day	Two times
13	Whether same kwatha can be used again & again in same sitting?	Not recommended
14	Whether the kwatha prepared in the morning can be used in the evening also?	Yes
15	Whether the kwatha can be refrigerated & used for next day?	No
16	Any complication /clinical findings during the procedure or after the procedure by not following the classical method?	No
17	How can we understand Hina & Atiyoga of Parisheka	Nothing specific

Healthy Volunteer survey Performa was prepared with following points:

- a) Color of the skin: Krishna/ Shyama/ Shyamaavadata/ Avadata
- b) Preference to Cold / Luke warm
- c) Temperature
- d) Preference of application site: Kaneenaka Sandhi (Medial canthus)/ Whole eye (orbital area)
- e) Height of dhara Preferred (Height in which the patient feel comfort)
- f) Width of the dhara preferred: 1mm/1.5mm/2mm/4mm
- g) Reason for dhara preference
- h) Reason for rejection

Later the patient response factors were graded as follows:

- Grade 1- No irritation, No tingling sensation, No pressure
- Grade 2-No irritation, No tingling sensation, No pressure, soothing and comfort
- Grade 3- No irritation, No tingling sensation, No pressure, soothing, comfort and feeling lightness while opening the eyes

In the present study maximum number of volunteers i.e. 85% belonged to the age of 21-30 years followed by 7%, 2% volunteers from the age group of 31-40yrs and 41-50 yrs respectively. 3% of each from the age group of 11-20 yrs and 51-60 yrs. (Table 1).

Male preponderance was noted in the study. Out of 100 volunteers studied, 79% were male and 21% were female (Table 2).

Education background was also evaluated in the present study in which maximum volunteers 92% were graduates (Table 3). In the skin color there were 38% of the volunteers had skin of Shyama color, 27% were of Shyama avadata, 18% were of Krishna and 17% were of Avadata (Table 4). Temperature of the water was also assessed and based on the observation; almost all the volunteer's i.e. 100% preferred Luke warm water (Table 5). In the preferred area of site almost all the volunteer's i.e 100% preferred whole orbital area as application site (Table 6).

Next criteria taken into consideration were height of dhara with 1mm width. 49% of the volunteers preferred 6 cm as height of the dhara when width of the dhara is 1mm, 38% preferred 6.5 cm, 8% preferred 7 cm and 5% preferred 5.5 cm. None of the volunteers preferred 5cm, 7.5 cm and 8cm (Table 7).

Height with 1.5 mm of width 44% of the volunteers preferred 6 cm as height of the dhara when width of the dhara is 1.5 mm (Table 8) 39% preferred 6.5 cm, 10% preferred 7 cm, 5% preferred 5.5 cm and 1% each preferred 5 cm and 7.5 cm. None of the volunteers preferred 8cm.

With 2 mm width (Table 9) 40% each of the volunteers preferred 6cm and 6.5cm as height of the dhara when width of the dhara is 2 mm, 13% preferred 7 cm, 7% preferred 7 cm, none of the volunteers preferred 5 cm, 7.5 cm and 8 cm and with 4 mm width (Table 10) 38% of the volunteers preferred 5.5 cm as height of the dhara when width of the dhara is 4 mm, 32% preferred 6 cm, 18% preferred 5 cm, 9% preferred 6.5 cm and 03% preferred 7 cm and 1% each preferred 5 cm and 7.5 cm. None of the volunteers preferred 7.5 cm and 8 cm.

Regarding temperature of decoction (Table 11) 68% of the volunteers preferred the temperature between 99-100°F, 29% preferred 100.1-101°F and 3% preferred 101-102°F. Preference wise distribution of width of dhara is (Table 12) 43% of the volunteers preferred 2 mm as ideal width of dhara, 30% preferred 1.5 mm, 14% preferred 1mm and 13% preferred 4mm.

Next point to be considered was response factor wise distribution (Table 13) among 43 volunteers who preferred 2 mm as ideal width of dhara, 24 of them had a response of Grade 3, 15 of them had Grade 2 and 4 of them had Grade 1. Among 14 volunteers who preferred 1mm as ideal width of dhara, 10 of them had a response of Grade 2, 04 of them had Grade 1 and none of them had Grade 3 response. Among 13 volunteers who

preferred 4 mm as ideal width of dhara 07 of them had a response of Grade 1, 4 of them had Grade 2 and 02of them had Grade 3.

The summarization of the Standardized observation based upon the above mentioned points are depicted in Table 14.

Time and Quantity

By keeping above said parameter as standard, Time and Quantity Parameters can be calculated which is as follows:

Seka Dharana kala (Time period for irrigation)
Dharana kala matra (Time period for irrigation) depending upon the type of Parisheka/seka (closed eye irrigation) i.e. Snehana, Ropana, and Lekhana¹⁴ in Netra roga (eye diseases) is calculated. In this article three Nimesha is taken as 4.38 sec. according to Ayurvedic pharmacopeia by this 1 Nimesha equal to 1.46 sec¹⁴ which is otherwise termed as 1 matra kala. Thus 100 matra kala (100x1.46 =146 seconds) can be considered as 2.4 mins.

As per above optimized parameter, it can be calculated & deducted in metric scale as follows,

In Netra roga (eye diseases) time of seka is 600, 400 and 200 matra kala in Vata, pitta, and Kaphaja roga respectively (Table 15, 16), so it becomes approximately 15 mins in Vataja roga, 10 mins in Pittaja roga and 5 mins in Kaphaja roga.

Quantity of Dravadravya for the procedure:

As per the volunteer survey, the most preferred width of dhara is 2 mm, Height 6-6.5cm – By keeping above said parameter as constant, the quantity measured was an average of 50ml/min so it comes to be as follows (Table 17).

Overall the optimized parameter of Netra parisheka procedure (procedure for closed eye irrigation) is tabled in (Table 18).

Difference of method of Nethra seka/Parisheka is depicted in different center performed by various consultants (Plate 1, 2, 3, 4). The concept of multiple dhara in Netra dhara (stream) is rarely practiced, not only that it has its own practical difficulties to practice in eye. So the parameters are optimized only for single dhara of Netra parisheka (closed eye irrigation). Here an attempt was made to developed different types of Netra dhara (stream) patra (vessel) as a part of academic interest (Plate 5, 6, 7).

Table 1: Age wise distribution of 100 Volunteers

Age (Years)	No of volunteers	Percent
11-20	03	3%
21-30	85	85%
31-40	07	7%
41-50	02	2%
51-60	03	3%
Total	100	

Table 3: Education wise distribution of 100 Volunteers

Education	No of volunteers	Percent
Higher secondary	05	5%
Graduate	92	92%
Others	03	3%
Total	100	

Table 2: Sex wise distribution of 100 Volunteers

Sex	No of volunteers	Percent
Male	79	79%
Female	21	21%
Total	100	

Table 4: Color of the skin wise distribution of 100 volunteers

Color of the skin	No of volunteers	Percent
Krishna	18	18%
Shyama	38	38%
Avadata	17	17%
Shyama avadata	27	27%
Total	100	

Table 5: Preference of water wise distribution of 100 Volunteers

Preference	No of volunteers	Percent
Cold water	-	
Luke warm water	100	100%
Total	100	

Table 6: Preference of application site wise distribution of 100 volunteers

Preference	No of volunteers	Percent
Kaneenaka sandhi	-	
Whole orbital area	100	100%
Total	100	

Table 7: Height of the dhara preferred by volunteers (100) when width of the dhara is 1mm

Preference of height in cm Width of dhara (1mm)	No of volunteers	Percent
5cm	-	-
5.5cm	05	5%
6cm	49	49%
6.5cm	38	38%
7cm	08	8%
7.5cm	00	-
8cm	00	-
Total	100	

Table 8: Height of the dhara preferred by volunteers (100) when width of the dhara is 1.5mm

Preference of height in cm Width of dhara (1.5mm)	No of volunteers	Percent
5cm	01	1%
5.5cm	05	5%
6cm	44	44%
6.5cm	39	39%
7cm	10	10%
7.5cm	01	1%
8cm	00	-
Total	100	

Table 9: Height of the dhara preferred by volunteers (100) when width of the dhara is 2mm

Preference of height in cm Width of dhara (2mm)	No of volunteers	Percent
5cm	00	-
5.5cm	07	7%
6cm	40	40%
6.5cm	40	40%
7cm	13	13%
7.5cm	00	-
8cm	00	-
Total	100	

Table 10: Height of the dhara preferred by volunteers (100) when width of the dhara is 4 mm

Preference of height in cm Width of dhara (4mm)	No of volunteers	Percent
5cm	18	18%
5.5cm	38	38%
6cm	32	32%
6.5cm	09	09%
7cm	03	03%
7.5cm	00	-
8cm	00	-
Total	100	

Table 11: Temperature wise distribution of 100 volunteers

Temperature	No of volunteers	Percent
99-100°F	68	68%
100.1-101°F	29	29%
101-102°F	3	3%
Total	100	

Table 12: Width of dhara (preferred) wise distribution of 100 volunteers

Width of dhara	No of volunteers	Percent
1mm	14	14%
1.5mm	30	30%
2mm	43	43%
4mm	13	13%
Total	100	

Table 13: Response factor wise distribution of 100 volunteers

Response factor	Grade 1	Grade 2	Grade 3
1mm	04	10	-
1.5mm	05	20	05
2mm	04	15	24
4mm	07	04	02

Table 14: Standardized Parameters of Netraparisheka procedure as per Survey study (Part two) is as follows

Parameters	Most accepted parameter by the volunteers
Preference of water	Luke warm water
Preference of Application site	Whole eye(orbital area)
Height of dhara -1mm (width)	6-6.5cm
Height of dhara -1.5 mm (width)	6-6.5cm
Height of dhara -2 mm (width)	6-6.5cm
Height of dhara -4 mm (width)	5.5-6cm
Width of dhara	1.5- 2mm
Temperature	99-100°F
Response -1 mm (width)	Grade 2
Response -1.5 mm (width)	Grade 2
Response-2 mm (width)	Grade3
Response-4 mm (width)	Grade1

Table 15: Dharana Kala according to types of Seka

Type of sheka	Sushruta samhita	Yogaratanakara	Sarangadhara	Bhavaprakasha
Snehana	400	600	600	600
Ropana	600	400	400	400
Lekhana	200	300	300	300

Table 16: Dharana Kala according to types of Seka

Type of sheka	Sushruta samhita	Yogaratanakara	Sarangadhara	Bhavaprakasha
Ropana	10min (approx.)	10min	10min	10min
Snehana	15min (approx.)	15min	15min	15min
Lekhana	5min (approx.)	7.5min	7.5min	7.5min

Table 17: Dharana Kala according to types of Seka

Netra Roga	Time	Quantity of Dhara
Vataja Netra Roga	15min	750ml (approx.)
Pittaja Netra Roga	10min	500ml(approx.)
Kaphaja Netra Roga	5 min	250ml (approx.)

Table 18: Optimized Parameters of Netrapariseka procedure as per Survey study (Part two) is as follows

Parameters	Most accepted parameter by the volunteers
Preference of water	Luke warm water
Preference of Application site	Whole orbital area
Height of dhara -1mm (width)	6-6.5cm
Height of dhara -1.5mm (width)	6-6.5cm
Height of dhara -2mm (width)	6-6.5cm
Height of dhara -4mm (width)	5.5-6cm
Width of dhara	1.5- 2mm
Temperature	99-100°F
Response -1mm (width)	Grade 2
Response -1.5mm (width)	Grade 2
Response-2mm (width)	Grade3
Response-4mm (width)	Grade1
Time	5-15min
Quantity	250-750ml

Plate 1: The picture clearly shows the height & width of Netra dhara, here the same kwatha is used for seven times except in infectious conditions with maximum quantity of 100-150ml.



Plate 2: Here the picture shows, the subject is forced to open the eyes during the procedure and the vessels used for dhara.



Plate 3: Here the pictures different method of practicing the procedure between the physicians of the same institute



Plate 4: Here the picture clearly shows the *dhara patra*, which is causing irregular flow of *dhara*



Plate 5: Vessel nozzles with dimensions 1mm, 1.5mm, 2mm, 4mm



Plate 6: Vessel with Multiple *dhara*



Plate 7



Modified vessel (syringe) with multiple nozzle

RESULTS AND DISCUSSION

Optimization of SOP of Netra parisheka (closed eye irrigation) procedure

Since the assessment of parameters needs precise observation and response, volunteers were from I.P.G.T & R.A, Jamnagar. Hence most of them were under the age group of 21-30 yrs old & Graduate.

Strenuous life style habits like late night awakening, usage of computers etc may be the reason why all the healthy volunteers preferred Luke warm water by which it may act as an upasaya

for Vata dosha. Meanwhile cold water application leads to heaviness in the eyes. Thought behind observing the color of the skin was to avoid the bias in the parameters due to the sensitivity of the skin. But the data doesn't reveal any significant observation. Height of the *dhara* was between 6-6.5cm, the range in which the volunteers felt more comfort. This range is near to the classical reference mentioned height of four Angulas ($1.96 \times 4 = 7.84\text{cm}$ AFI). Width of the *dhara* preferred by volunteers was between the ranges of 1.5-2mm. At this range volunteers felt no irritation, no tingling sensation, no pressure, soothing, comfort and feeling lightness while opening the eyes. Rest of the width of *dhara* too showed the comfort but failed to show above qualities. Meanwhile there was no co-relation

between the height and width of the dhara. This shows the wiseness of our ancient scholars that different width of dhara at this height i.e four angula never leads any iatrogenic effect.

Analysis of the data and presentation of the results: The data obtained in the clinical study was critically analyzed presented in systemic way. The obtained data was assessed by using suitable statistical method i.e. Student 't' test.

Seka Dharana kala and Quantity was between the range of 5-15 min and 250-750ml respectively. This observation would definitely give a new output & breakthrough in the management of Netra roga because traditionally all were practicing only 2-4 min and maximum of 200 ml.

The above facts were also supported by clinical study which cumulatively increased the efficacy of the procedure with above said parameters.

CONCLUSION

Terminology of procedure: Netra Seka/ Parisheka/Netra Dhara (procedure for closed eye irrigation)

Dosage form- Kwatha (decoction) preparation: 1 part Dravya (raw drug-Triphala powder) + 4 Part Dravadravya (water) – ¼th Reduced till ¾ remaining decoction is available.

Procedure: Performed in Supine position, closed eyes, maximum of two times a day. Freshly prepared kwatha is most preferable & kwatha can also be used after twelve hours but not after 24 hours.

Application site: Orbital area as a whole

Height of Stream/Dhara: 6-6.5cm

Thickness/Width of Stream/Dhara: 1.5-2mm

Temperature: 99-100°F

Time: 5-15min as per the type of Netra parisheka.

Quantity of Dravadravya: 750, 500 ml & 250 ml for Vata, Pitta & Kaphaja Netra rogas respectively which will take prescribed time in the classics with 2mm width of dhara.

Scope for further research on Netra parisheka procedure

All these optimized parameters can be subjected to standardization. Parisheka vessel of 750ml with 2mm of dhara outlet like that of Jala neti pot can be manufactured and propagated. Estimation of Tannin contents (quantitative & qualitative) as a marker in different proportions of Triphala powder and parisheka decoction prepared out of it. This acute ocular surface inflammation is a common clinical condition & is managed better with this simple, cost effective procedure which has no unwanted effects; can be propagated in all Ayurvedic treatment centers as a first line of treatment in Aamavastha of Netra roga.

REFERENCES

1. Sharangadhara Samhita - Deepika commentary by Adhamalla, uttarakhand published by Chaukhamba Orientalia, Varanasi; 2008.p.379.
2. Prabhakar Vardhan, Kartar Singh Dhiman. Clinical study to assess the efficacy of *Keshanjana* and *Netra Parisheka* in the management of Shushkakshipaka (dry eye syndrome). AYU 2014;35:277-82. <http://dx.doi.org/10.4103/0974-8520.153744>
3. Islam MA. The management of Myopia with Triphala Kashaya. PG Thesis, Puri: Gopabandhu Ay. Mahavidyalaya;2003.
4. Kumar D. Role of Triphala eye drops in the management of Abhishyanda (Acute Conjunctivitis). PG thesis, Varansai: IMS BHU; 2000.
5. Dhiman K.S., Shukla Jaishankar. Nethra rogeshu kriyakalpa vimarsh. Ph.D. thesis, Varanasi: Sampurnanand Sanskrit University; 2007.
6. Sharangadhara Samhita - Deepika commentary by Adhamalla, uttarakhand published by Chaukhamba Orientalia, Varanasi; 2008.p.379-380.
7. Sushruta Samhita – Nibandhsangraha commentary by Dalhana, Uttarantra, published by Chowkhambha Orientalia Varanasi; 2002.p.635.
8. Sushruta Samhita – Nibandhsangraha commentary by Dalhana, Uttarantra, published by Chowkhambha Orientalia Varanasi; 2002.p.636.
9. Bali chouhan, Ramesh Chandra kumawat, Mita kutecha, A Ramamurthy, Sumit Natham. Triphala: A comprehensive Ayurvedic Review. Int. J Res Ayurveda Pharm 2013;4(4):612-617. <http://dx.doi.org/10.7897/2277-4343.04433>
10. Agarwal riju, Rani Manju, Dhiman KS. A clinical study on the effect of Rasanjana extract of Berberis aristata) eye drops in the treatment of Netra Abhishyanda (Infective Conjunctivitis). Int Res J Pharma 2014;5(3):198-202. <http://dx.doi.org/10.7897/2230-8407.050342>
11. Sharangadhara Samhita - Deepika commentary by Adhamalla, uttarakhand published by Chaukhamba Orientalia, Varanasi; 2008.p.382.
12. KS Dhiman, G Gopinath, Riju Agarwal, V J Shukla. Optimization of Nethra parisheka kriyakalpa (procedure for closed eye irrigation) I – A survey study on prevalent practice. Int J Ayu Alt Med, 2015;3(5): 268-274
13. Sharangadhara Samhita - Deepika commentary by Adhamalla, uttarakhand published by Chaukhamba Orientalia, Varanasi; 2008.p.381.
14. Sushruta Samhita – Nibandhsangraha commentary by Dalhana, Uttarantra, published by Chowkhambha Orientalia Varanasi; 2002.p.636.

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