



ORIGINAL RESEARCH ARTICLE: CLINICAL STUDY

STANDARDIZATION OF *BIDALAKA KRIYAKALPA* WITH SPECIFIC REFERENCE TO *SAINDHAVADI YOGA* - A PILOT STUDY

CHINMAYEE CHOUDHURY¹ MANJUSHA RAJAGOPALA² NARAYAN BAVALATTI³ PANKAJ KUNDAL⁴

ABSTRACT

Introduction- The *kriya kalpa* is the special therapeutic procedures which are the basis of the treatment of eye diseases. In the field of ophthalmology *Acharyas* have given equal importance to systemic and local administration of the drugs. It clearly indicates that during ancient time, *Acharyas* were well aware of the importance of the topical route in treating the ocular ailments. It is the need of hour to standardize *Ayurvedic* therapeutic procedures which have been mentioned in *samhitas*. There are regional variations in the application of these procedures, therefore a standard operating procedure need to be set or prepared to maintain uniformity around the world to maintain the quality standards. There are few work which have been done on the standardization of *Tarpana*, *Ashchyotana*, *Seka*. Till now none of works has been done on standardization of *Bidalaka*. There is high demand to explore the scientific evaluation of *Kriyakalpa* procedures in order to get acceptance throughout the world. In present article sincere efforts has been made to standardize the *Bidalaka netra kriyakalpa* with specific reference to *Saindhavadi yoga*.

Materials & Methods- External application of *Saindhavadi Bidalaka kriyakalpa* was done on 09 healthy volunteers and the observations were noted.

Results - The Particle size of powder- 60, 80, & 100 mesh no - in 5:2:1 ratio, Thickness of *Bidalaka* –both 6.5mm and 5.0 mm, Average Quantity of the powder required - 31gm (range 30-33gm.) for 6.5mm thickness & 24 gm (range 20-25gm) for 5.0 mm thickness, Average Proportion of Liquid- 26ml (range 24-28 ml) for 6.5mm thickness and 17ml (range 15-20ml) for 5.0 mm thickness, Average Retention time -24 minutes (range 20 -25 minutes) for 6.5mm thickness and 20 minutes (range 18 -22 minutes) for 5.0 mm thickness was finalized.

Keywords: *Kriyakalpa*, *Bidalaka*, Standardization, Particle size

¹P.G. scholar, ²Professor & HOD, ^{3,4}Asst. Professor, Department of Shalaky Tantra, All India Institute of Ayurveda, NEW DELHI (INDIA)

Corresponding Email id: choudhury.chinmayee.dr.05@gmail.com Access this article online: www.jahm.in

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INTRODUCTION:

Standardization of *Ayurvedic* therapeutic procedure is taken up on priority these days. WHO has framed a code of drug manufacturing practice in *Ayurveda* [1]. But apart from herbs, minerals and herbo-mineral compositions, *Ayurveda* also advocates specialized therapeutic procedures as to eliminate the diseases [2]. The *kriya kalpa* is the special therapeutic procedures which are the basis of the treatment of eye diseases. In the field of ophthalmology *Acharyas* have given equal importance to systemic and local administration of the drugs. It clearly indicates that during ancient time, *Acharyas* were well aware of the importance of the topical route in treating the ocular ailments. There are regional variations in the application of these procedures, therefore a standard operating procedure need to be set or prepared to maintain uniformity among all the practitioners of *Shalakyas* to maintain the quality standards. There are few works which have been done on the standardization of *Tarpana* [3], *Ashchyotana*[4] and *Seka*. No work has been done on standardization of *Bidalaka* till now. So, there is high demand to explore the scientific evaluation of *Kriyakalpa* procedures in order to get acceptance throughout the world.

Bidalaka is the application of a paste over the eye lids avoiding the area of eye

lashes. It is one such ocular therapeutic procedure which gives relief in burning sensation, stickiness, lacrimation, swelling & redness. Hence it can be used in *amavastha* (acute stage) of all eye diseases[5]. According to *Acharyas*, the thickness of the *Bidalaka* coating is similar to that of a *mukha lepa* (face pack). Its thickness measure varies from 1/4th angula, 1/3rd angula & 1/2 angula[6]. In clinical practice, it is found difficult to apply it with preciseness and with calibrations to acquire desirable results. The dose of medication, thickness of paste, duration of the procedure is some of the variables which are usually decided on subjective basis. Therefore, there are variations in patient to patient judgments', which may affect the predictability of the therapeutic effectiveness of the procedure undertaken. That is why, standardization is considered as a priority field in clinical practices. Also, standardization will ease the scientific clinical studies in controlled designs to evaluate it in better way. In *Sushruta samhita* though the term *Bidalaka* is not used but many *yogas* were described under the heading of *Lepa* in the treatment of *Abhishyanda*. *Acharya Vagbhatta* & *Acharya Chakradatta* described some *Bidalaka yoga*. Among them *Saindhavadi* yoga was selected for the present study from *chakradatta*[7].

Hence in this article, effort is made to standardize the SOP of *Bidalaka kriyakalpa* with specific reference to *SAINDHAVADI YOGA*.

OBJECTIVES OF RESEARCH-

1. Standardization of *Saindhavadi Bidalaka yoga*

MATERIALS AND METHOD:

Study Design: Observational pilot study

Study Sample: Healthy volunteers of All India Institute of Ayurveda, New Delhi

Sample Size: 09

Table No. 1 Ingredients of *Saindhavadi Bidalaka yoga*

S.No	Name of Drug	Botanical Name	Parts used	Quantity
1	<i>Saindhava lavana</i>	<i>Rock salt</i>	<i>Salt</i>	1 part
2	<i>Daruharidra</i>	<i>Berberis aristata (DC)</i>	<i>Bark</i>	1 part
3	<i>Gairika</i>	<i>Haematite</i>	<i>Ore</i>	1 part
4	<i>Haritaki</i>	<i>Terminalia chebula (Retz)</i>	<i>Fruit</i>	1 part
5	<i>Rasanjana</i>	<i>Berberis aristata (DC)</i>	<i>Extract of Berberis aristata</i>	1 part

Preparation of drug:

The raw drug was procured from Kharibauli market, New Delhi. Then the raw drugs were powder separately with the help of a mixer grinder and passed through the three sieves of 60, 80, & 100 mesh number. According to the sieve number equal amount of each powder were mixed and kept in an air tight container. Before the procedure the powder according to the sieve number were mixed in required ratio.

Method of standardization of *Bidalaka Kriyakalpa* procedure-

The standardization was done after trying the *Bidalaka* with powder of different particle size from three sieves of 60, 80, 100 number. Thickness of *Bidalaka*, which was

mentioned in the classics, was converted into metric scale. Proportion of liquid & quantity of the powder required for the ideal process of *Bidalaka* was measured to standardize the procedure & compliance on the healthy volunteers (who were not suffering from the eye disease) was noted.

Saindhavadi Bidalaka was carried out as described in the classics & observation were recorded & analysed.

Poorva karma-

- The procedure was performed either in morning or evening.
- It was carried out in a neat, quiet & well illuminated room where there was no entry of air or sun light.
- The patient was kept in supine position.

- Medicated paste was prepared by mixing the powder with water.
- Eyes were cleaned with cotton soaked in luke warm water.

Pradhana karma -

- The medicament was applied as that of *lepa* over the closed eyes excluding the eye lashes till it becomes dry.
- Then gently removed the applied medications with the help of gauze piece dipped in luke warm water / cold water depending upon the season.
- Care should be taken that the particles of the drug should not enter inside the eye during application of the paste

Pashchat karma –

- Wiped the eyes & surrounding area with cotton soaked in water comfortably without putting much pressure.
- Care should be taken that the particles of the drug should not enter inside the eye during removal of the paste.
- Patients were instructed to stay indoors for 10-15 minutes

Points of consideration for standardization of

Bidalaka kriyakalpa-

1. Particle size of Powder
2. Amount of powder required
3. Water requirement for paste
4. Thickness of *Bidalaka*
5. Retention time

Standardization Units –

- **Particle size-** As there is no earlier study reported on the standardization of *Bidalaka* procedure, hence it was decided to procure different powders available in the market used for *mukhalepa*. Total three samples of different pharma companies i.e. Everyuth, Oushadhi and Yamuna pharmacy were procured. Their particle size was assessed by passing through the sieves of mesh numbers 60, 80 and 100.

Sample 1- (Everyuth) 5:2:1

Sample 2 – (Oushadhi) 1:5:20

Sample 3 - (Yamuna pharmacy) 1.50: 1:

5.50 respectively,

According to the ratio of the above 3 sample, the drugs were prepared and applied as *Bidalaka* in 3 healthy volunteers for each sample i.e. total 09 healthy volunteers. And observations made are given in the Table no. 2.

➤ **Thickness of *Bidalaka* -**

According to classics there are 3 type of thickness i.e-

Lowest thickness - 1/4 th angula,

Medium thickness - 1/3 rd angula &

Maximum thickness – 1/2 angula

According to A.F.I. (part 1, second revised English edition, pg no-483) 1 Angula- 1.95cm i.e. 19.5mm .Average measurement of 1 angula of 09 healthy volunteers was found to

be 20 mm. So the lowest thickness of *Bidalaka* was taken as equal to 5.0mm

Likewise medium thickness 6.5mm & maximum thickness 10mm .By applying *Bidalaka* in these thickness difference in observations were noted.

The 3 samples were applied to 3 healthy volunteers each i.e. total 9 and each volunteer was applied with 3 different thickness of *Bidalaka* and observations made are given in the Table no. 2.

➤ **Quantity of the powder required -**

Quantity of the powder required to apply *Bidalaka* in three different thickness is

measured in standard units and shown in Table no. 2.

➤ **Proportion of Liquid -**

It was taken in the amount that is sufficient to mix the powders & the amount was measured in standard units and shown in Table no. 2

➤ **Retention time-**

It is not mentioned in the classics.

It was measured on applying in 3 healthy volunteers for each thickness. After application of *Bidalaka* they were asked to observe when they feel drying sensation and time was noted. This is the time, when *Bidalaka* was removed.

Table No. – 2 Observation of standard units of *Bidalaka* on healthy Volunteer

S.No	Healthy Volunteer	Thickness of <i>Bidalaka</i> paste	Quantity of powder required In gram	Amount of water required In milliliter	Retention time in minutes
Sample 1 (5:2:1)	1	10mm	52	43	45
		6.5mm	33	28	25
		5 mm	25	18	20
	2	10mm	47	37	40
		6.5mm	30	25	22
		5mm	22	15	20
	3	10mm	50	42	47
		6.5mm	30	25	25
		5mm	25	18	20
Sample 2 (1:5:20)	4	10mm	50	35	47
		6.5mm	31	18	30
		5mm	25	12	25
	5	10mm	48	32	45
		6.5mm	35	20	33
		5mm	24	12	22
	6	10mm	50	35	49
		6.5mm	30	17	30

		5mm	25	12	25
Sample 3 (1.50: 1 : 5.50)	7	10mm	54	37	48
		6.5mm	32	18	31
		5mm	26	14	25
	8	10mm	50	35	50
		6.5mm	30	17	29
		5mm	25	13	23
	9	10mm	52	36	50
		6.5mm	30	17	30
		5mm	25	13	24

Table No. 3- Average mean of standard units of *Bidalaka* on healthy Volunteer

S.No	Thickness of <i>Bidalaka</i> in millimeter	Average mean of quantity of powder required in grams	Average mean of water required in mililitre	Average mean of retention time in minutes
Sample 1 (5:2:1)	10mm	49.66	40.66	44
	6.5mm	31	26	24
	5mm	24	17	20
Sample 2 (1:5:20)	10mm	49.66	34	47
	6.5mm	32	18.33	31
	5mm	24.66	12	24
Sample 3 (1.50: 1 : 5.50)	10mm	52	36	49.33
	6.5mm	30.66	17.33	30
	5mm	25.33	13.33	24

After applying *Bidalaka* in the healthy volunteers the comfort/satisfaction level was assessed by following parameter like feeling of discomfort, burning sensation, irritation, watering, and redness of eyes.

OBSERVATIONS -

Particle size-

By comparing these 3 samples in Table -3, it was found that the sample 1 which contain more coarse powder (60 particle size)

consume more water i.e.40.66ml, 26ml, 17ml according to the different thickness of *Bidalaka* and take less time to dry and it is more comfortable to the healthy volunteers.

The other two samples though consume less water i.e. sample 2 – 34.0 ml, 18.33ml, 12.0 ml & sample.3 - 36ml, 17.33ml, 13.33ml according to the different thickness of *Bidalaka*, but it is not retained for long time. Both of them start releasing water along with

powder particle enters into their eye which is very irritating & also not comfortable.

So for the present study the particle size of the drug i.e. 60, 80 & 100 in 5:2:1 ratio respectively was finalized and the other parameters of standardization were taken accordingly.

Thickness of *Bidalaka*- Both 6.5mm & 5.0mm were comfortable for patients. 10.0mm was very heavy, and it takes more time to dry which is not tolerated by the patient due to more thickness.

Average Quantity of the powder required- were found to be

49.66gm (range 47-52gm) for 10.0mm thickness

31gm (range 30-33gm.) for 6.5mm thickness &

24gm (range 20-25gm) for 5.0mm thickness

Average Proportion of Liquid- was found to be

40.66ml (range 37-42 ml) for 10.0mm thickness

26ml (range 24-28 ml) for 6.5mm thickness

17ml (range 15-20ml) for 5.0 mm thickness

The temperature of the water was depending upon the seasons. Like in summer –cold water & in winter –luke warm water can be used for mixing the powder.

Average Retention time- was found to be

44minutes (range 42-47minutes) for 10.0mm thickness

24 minutes (range 20 -25 minutes) for 6.5mm thickness

20 minutes (range 18 -22 minutes) for 5.0mm thickness

No adverse effect like burning sensation, watering of eyes, redness and irritation was found after the removal of the medicated paste in *Bidalaka*.

DISCUSSION-

Bidalaka is an ocular therapeutic procedure which is widely indicated in our classical texts for acute condition of eye diseases. Though it is found to be effective on clinical experience grounds, still it is not very commonly practiced. The limiting factors could be the lack of standardization and time constraints for consultant as well as patients. As per our knowledge and on searching the available sources no research article /clinical study have been found on *Bidalaka*. So an attempt has been made to standardize it. Particle size of powder ,thickness of *Bidalaka*, average quantity of powder required, average quantity of liquid required and average retention time were measured to standardize the procedure & compliance on the healthy volunteers was noted.

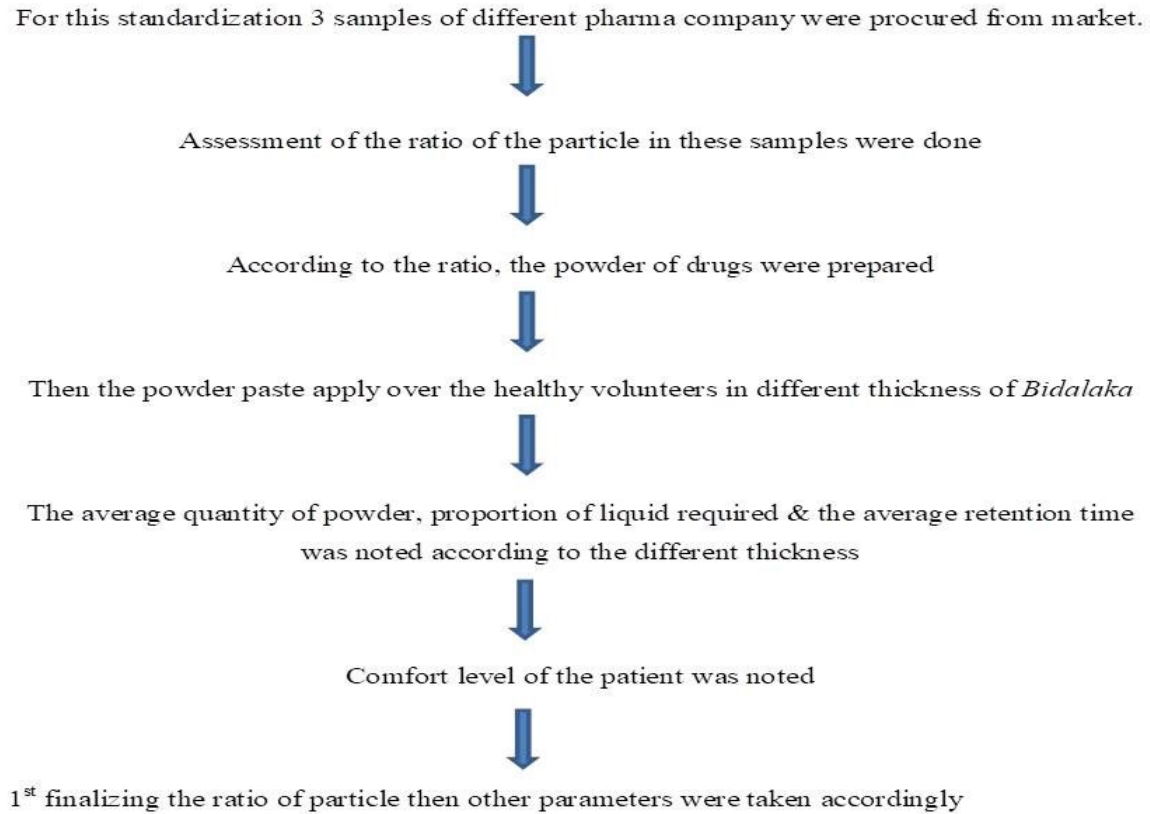


Fig. no. 1- Showing the SOP of *Bidalaka*

Discussion on SOP of *Bidalaka*

Poorva karma-

Timings and frequency –

Morning & evening times both are suitable for performing the procedure. In case of pain and other *ama lakshanas* this procedure can be done at any time of the day. This may be due to that the *ama lakshana* of *netra roga* are mostly predominant of *pitta-vata dosha* & mainly manifest at morning.

Particle Size of the drug-

Among the different market samples tried for *Bidalaka* in different ratios of particles, Sample-1 i.e. 60, 80 & 100 Mesh number was

taken in a ratio of 5:2:1 was finalized. Because the other ratio of powder paste, as they contain more proportion of fine particles (100 mesh size), release water along with the powder particle enter into the patients eyes. Which is very irritating to the patient, their consistency doesn't retain the shape uniformly & also not comfortable to the patient.

Average Quantity of the powder required-

The average quantity of powder were found to be 49.66 grams (range 47-52gm) for 10.0mm thickness, 31grams (range 30-33gm.) for 6.5mm thickness & 24 grams (range 20-25gm) for 5.0 mm thickness. It may be due to

difference in surface area & shape of the eyes which vary from person to person.

Average Proportion of Liquid-

The average proportion of liquid was found to be 40.66 ml (range 37-42 ml) for 10.0mm thickness, 26 ml (range 24-28 ml) for 6.5mm thickness and 17ml (range 15-20ml) for 5.0 mm thickness. This amount mainly depends upon the quantity of powder to make it a smooth paste.

The temperature of the water was used depending upon the seasons. Like in summer – cold water & in winter – luke warm water was used for mixing the powder.

Cleaning the eyes and periorbital area with luke warm water before the procedure, was reported to be good by all the patients. As it is beneficial to remove any dust particles which may further irritate during the procedure. It is a type of *mridu swedana* which increase the blood supply hence helps in better absorption of drug.

Pradhana karma -

The medicated paste of different thickness was applied in form of *Bidalaka* over the eye lids except the eye lashes as per finalized thickness.

Thickness of Bidalaka-

Both 6.5mm & 5.0mm were comfortable whereas 10.0mm was very heavy & not comfortable to the patients. It takes more time to dry. According to the severity of the

diseases these thickness can be used in *taruna netra roga*. (eye disease of recent origin)

Average Retention time-

It is not mentioned in the classics. In observation it was found that, retention time vary according to the different thickness of *Bidalaka* viz. 44minutes (range 42-47minutes) for 10.0mm thickness, 24 minutes. (range 20 - 25 minutes) for 6.5mm thickness and 20minutes (range 18 -22 minutes) for 5.0mm thickness.

Pashchat karma

Wiped the eyes & surrounding area with cotton pad or tissue paper comfortably without putting much pressure. Then removed the retained paste from ocular surface with a cotton soaked in lukewarm water. Patients were instructed to stay indoors up to for 10-15 minutes to prevent the photophobia from day light.

No adverse effect was found during the procedure.

CONCLUSION:

Kriyakalpa forms the basis of ocular therapeutics in *Ayurveda* and its selection depend upon the *vitiation* of *dosha* & the type of the diseases. Standardization of *Ayurvedic* therapeutic procedure provides the uniformity & enhances the possibility of replication of results.

On the basis of present study the finalized parameters for S.O.P. of *Bidalaka Kriyakalpa*

with specific reference to Saindhavadi yoga are given below-

The Particle size of powder- 60, 80, &100mesh no - in 5:2:1 ratio

Thickness of *Bidalaka* –both 6.5mm and 5.0 mm can be used

Average Proportion of Liquid- 26ml (range 24-28 ml) for 6.5mm thickness and 17ml (range 15-20ml) for 5.0 mm thickness

Average Retention time -24 minutes (range 20-25 minutes) for 6.5mm thickness and 20 minutes (range 18 -22 minutes) for 5.0 mm thickness.

REFERENCES:

1. Anonymous, guideline on safety monitoring and pharmacovigilance on herbal medicine (world health organization Geneva), 2003
2. Rastogi S, Ranjan & Singh RH, adverse effects of Ayurvedic drugs ;an overview of causes and possibilities in ref erence to a case of Vatsanava(Aconite) over dosing, Int. j Risk Safety Med,193(2007):117-125
3. Poonam et.al Standardization of Akshi-Tarpana &Role of Jeevantyadi Ghrita in the management of Timira w.s.r . to Myopia ,shalakya Department,I.P.G.T.&R.A ,2010
4. Udani jayashree et.al A compative study between traditional method of

Average Quantity of the powder required - 31gm (range 30-33gm.) for 6.5mm thickness & 24 gm (range 20-25gm) for 5.0 mm thickness.



Fig.no.2 Demonstration of *Bidalaka* on Healthy volunteer

- Aschyotana method & eye drops in bataja Abhishyanda w.s.r. to simple allergic conjunctivitis shalakya Department,I.P.G.T.&R.A ,2010
5. Brahmananda Tripathi (editor) Commentary: Nirmala hindi vyakshya on Ashtanga Hridaya of Shrimad Vagbhatta, Uttarsthana,chapter no.16,verse no.1, Chaukhamba Sanskrit Pratishthan,,Delhi, 2007:989 ,
6. Shree Brahma Sankara Mishra (editor) Commentary: Vidyotini on Bhavaprakasha of Bhava Mishra , Chikitsa prakarana,chapter no.63,verse no.161, Chaukhambha Sanskrit Bhawan,Varansi, Reprint-2015: 658

7. Ramanath Dwivedy (editor) Commentary:
Vaidayaprabha hindi commentary of
Indradeva Tripathi on Chakradatta of
Chakrapani,chapter no.59,verse no.9,
Chaukhambha Sanskrit Bhawan,Reprint-
2015: 347

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