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## RESEARCH ARTICLE

### STANDARDIZATION OF BINDU FOR NASYA.

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#### Abstract

Dose is a very important factor in any of the Panchakarma procedures to get optimum efficacy of the therapy. Nasya is the major procedure in Panchakarma. Bindu is the unit of measurement explained for the dose of Nasya. In routine Ayurvedic practice one Bindu is considered as one drop (0.05ml), but according to the definition of Bindu and standardized quantity mentioned by Acharayas, it is 1 Shana .which is ten times more than routinely practiced dose .The present paper deals with classical concept of Bindu and its standardization for Nasya.

**Objective:-** 1. to standardize the process to measure the dose of Bindu.2.Accordingly to standardize the dose of one Bindu.

**Method and Material:-** 90 volunteers aged between 16 to 60 years were considered, 30 in each group, irrespective of sex and age were selected for the study. Group A: 32 **drops** of Tila Taila (sesame oil) were dropped from anguli. Group B: 32 **drops** of Tila Taila by dropper. Group C- 32 **Bindu** of Tila Taila the method explained by **Acharya Hemadri**. **Statistical analysis:** Results were observed and tabulation of data with a statistical commentary based on percentages of different observations has been done.

**Results:-** Study shows variation in quantity of Bindu.

**Conclusion:-** Analysis of the results showed that Bindu is not equivalent to drop. Routinely practised dose counted by dropper is 10 times less compared to classical Bindu.

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#### Introduction:-

Ayurveda the art and science of living is at the doorstep of global acceptance. Among the various treatment modalities of Ayurveda, Panchakarma procedures are the one which are mostly highlighted in the present scenario. Among five purification (Panchakarma) procedures, Nasya is said to be effective in curing the diseases of Oordhvajatru (supraclavicular region). The procedure by which medicine is administered through nasal route is called as Nasya.

Nasya is practiced in many clinical conditions in different medicinal forms, such as Swarasa, Kalka, Kwatha, Choorna, Sneha etc. Among these Sneha is routinely practiced because of its practical feasibility, easy availability and inherent Kaphahara property<sup>1</sup>.

#### **Importance of subject:-**

Dose is a very important factor in any of the Panchakarma procedures to get optimum efficacy of the therapy. Change in dose can change the result and it can lead to side effects or no effect. Bindu is the unit of measurement explained for the dose of oil or any other liquid medium, Bindu is such an area where lot of disparity exists when compared with classical references and routine practice.

#### **Classical concept of Bindu in Nasya:-**

In the context of dose of Sneha Nasya<sup>2</sup> the term Bindu was first coined by Acharya Sushruta. Acharya Charaka had not mentioned specific dose for Sneha to be used in Nasya. Only for Anutaila, Acharya Charaka mentioned the dose as ½ Pala<sup>3</sup>. Other Aacharyas used the term Bindu as the unit of measurement for any medicine in liquid form used for Nasya.

#### **Definition of Bindu:-**

Bindu is defined as the total quantity of collected liquid medicine (Sneha, Swarasa, Kashaya etc.) that dribbles down when the first two digits of index finger (proximal and middle phalanges) are dipped into it and taken out of the same.

#### **Bindu Pramaana for Sneha Nasya:-**

For the first time, Acharya Vagbhata in Samgraha had classified Sneha Nasya into two types depending on the dose of Nasya i.e. Bindu as, Marsha Nasya and Pratimarsha Nasya<sup>4</sup>. Acharya Charaka has used the term Naavana while Acharya Sushruta used the term Nasya. Acharya Vagbhata has mentioned three different doses as 10 Bindu (Uttama) 8 Bindu (Madhyama) & 6 Bindu (Heena) for Marsha Nasya (SnehaNasya) depending on the Dosha and Bala of the patient. Acharya Sushruta has not classified Nasya depending on the dose of Sneha used, but has mentioned three different doses for Sneha Nasya. In as, 8 Bindu, Shukti and Panishukti, which are the Heena, Madhyama and Uttama Maatra are respectively. Acharya Dalhana commented that 8 Bindu are to be instilled in each nostril as Heena Maatra. He says that Shukti is 32 Bindu and Panishukti is 64 Bindu. Similar opinion is also mentioned by Acharya Sharangadhara<sup>5</sup>, Acharya Chakradatta<sup>6</sup>, Acharya Vangasena<sup>7</sup> and Acharya Bhaavamishra<sup>8</sup>.

Also it is evident from the observations that the quantity of one Bindu may vary from person to person as the size of the index finger is different. The quantity of Bindu also varies according to the Drava dravya used for the Nasya. It would be practically convenient if standard or fixed quantity of one Bindu can be decided for any of the Drava dravya used for Nasya. Such an attempt of Standardization of Bindu for Nasya was at first successfully done by Acharya Sharangadhara in 14<sup>th</sup> century.

Acharya Sharangadhara calculated and cleared all the doubts by mentioning exact quantitative calculation of one Bindu as follows,

#### **Evam vidhair Bindu sanjnair ashtbhih shana ucyate (Sa. Utt. 8/40):-**

Sarangadhara has stated that, 8 Bindu is equal to one Shana and further the dose of Marsa Nasya is explained in multiples of Shana itself, as 8 Shana, 4 Shana and 2 Shana for Pradhana, Madhyama and Heena Maatra.

According to Sharangdhara 1 Shana = 4 Maasha.

4 Maasha = 4 gm = 4ml (Ayurvedic Formulary of India).

Thus, 8 Bindu = 1 Shana = 4 ml.

1 Bindu = 0.5 ml.

According to Ayurvedic Formulary of India, 1 drop = 0.05ml.

10 drops = 0.5 ml.

It can be stated from the above explanation that standardized quantity of one Bindu for Nasya is 0.5 ml (10 drops).

**Aim and objective:-** To standardize the process to measure the dose of Bindu. Accordingly to standardize the dose of one Bindu.

### **Materials and Methods:-**

Subjects attending the OPD of panchkarma in PDEA's Ayurveda hospital, Pradhikaran, Nigdi, Pune were recruited for the study. Then detailed examination of the subject was done on the basis of a specially prepared CRF incorporating all the detail as about measurement of fingers.

#### **Materials:-**

##### **Instruments-**

1. Tila Taila
2. Dropper
3. Auto pipette
4. Beaker
5. Measuring pipette

#### **Selection of subjects:-**

The recruited subjects were selected for the study irrespective of sex, religion, occupation, etc.  
Age Group:-16-60yrs

#### **Methods:-**

##### **Grouping**

The selected healthy volunteers were randomly divided and studied under three groups.

##### **Group A (32 drops of Tila Taila from Anguli):-**

Subjects in this group were asked to drop 32 drops of Tila Taila by dipping two digits of index finger and total drops fallen after dipping, were counted separately and average was calculated. Each and every single drop which dribbles down from the first two parts of index finger is considered as one Bindu. Total 30 subjects carried out this test and data was collected.

##### **Group B (32 drops of Tila Taila by dropper):-**

Subjects in this group were asked to drop 32 drops of Tila Taila by dropper and drops fallen were counted separately and average was calculated. Total 30 subjects carried out this test and data collected.

##### **Group C (32 Bindu as mentioned by Acharya Hemadri):-**

The comment on this by Hemadri proves beyond doubt that not just the first drop is one Bindu, but it is the total quantity dribbling down from the index finger when immersed in the liquid should be considered as one Bindu.

##### **Yaavat patati taavaan Binduh na prathama patita eva (Acharya Hemadri on As. H. Su. 20/10):-**

Subjects in this group were asked to drop 32 Bindu of Tila Taila in the said way and drops fallen after dipping, were counted separately and average was calculated. Total quantity dribbling down from the index finger when immersed in the liquid is considered as one Bindu despite of the number of drops after each dip. Total 30 subjects carried out this test and data was collected.

#### **Parameters for assessments:-**

Weight and height of volunteer with BMI.

Measurement of index finger – Height of index finger.

Diameter of index finger.

#### **Observations:-**

A study was conducted in 90 subjects to assess the quantity of one Bindu of taila between age group 16 to 60 yrs, irrespective of sex, height, weight and dimensions of index finger. The study was conducted in 3 different groups with different methods.

**Table no. 1:** 32 drops of Tila Taila from Anguli.

Sr no.	Age	Sex	Height(cm)	Weight(cm)	BMI	Index Finger Height(cm)	Diameter(cm)	Measuring pipette in $\mu$ l
A	33	F	153	43	18.4	4.5	4.5	1400
B	30	F	152	70	30.3	4.4	5	1550
C	35	F	156	71	28.6	4	4.9	1500
D	27	M	170	63	21.8	4.7	5.6	1950
E	26	F	168	52	18.5	4.2	5	1300
F	33	F	162	90	34.6	4.5	5.7	2200
G	22	F	152	50	21.5	4.8	5.2	1700
H	50	F	140	58	29.7	4	5.8	1750
I	60	M	167	55	19.6	4.8	5.8	1500
J	43	F	152	68	29.3	4.4	5	1750
K	44	F	164	75	27.5	5.2	5.6	1650
L	26	M	169	54	18.9	4.5	5.7	1650
M	27	M	153	63	26.9	4.8	5.7	1500
N	36	M	172	63	21.3	4.8	5.4	1550
O	42	M	164	72	26.4	4.9	6	1600
P	33	M	164	85	31.2	5.2	6	1400
Q	24	F	159	59	23.3	4.7	5.4	1500
R	26	F	162	56	21.2	5.4	5	1400
S	47	M	167	72	25.6	4.7	5.7	1500
T	27	M	173	67	22.4	5.1	5.5	1400
U	26	F	160	50	19.5	4.7	4.7	1400
V	33	M	162	84	32	4.8	6.3	1500
W	25	M	162	48	18.3	4.5	5	1700
X	27	M	164	67	24.9	4.6	5.9	1400
Y	41	M	174	120	39.6	4.6	6.7	1650
Z	47	M	168	88	31.2	5.1	5.9	1400
AA	45	F	164	87	32.4	4.7	5.4	1500
AB	48	F	137	63	33.6	4.3	5.2	1700
AC	41	M	152	63	27.3	4.2	5.7	1450
AD	26	F	154	50	21.1	3.9	4.7	1300
							Average=	1558.3

The Average of 32 drops of Tila Taila from Anguli =1558.3 $\mu$ l

**Table no 02:** 32 drop by dropper.

Name	Age	Sex	Measuring Pipette in $\mu\text{l}$
A	27	M	1.4
B	24	F	1.5
C	24	F	1.3
D	22	F	1.2
E	21	F	1.2
F	21	F	1.2
G	21	F	1.2
H	21	F	1.2
I	20	F	1.2
J	24	F	1.3
K	24	M	1.2
L	37	F	1.2
M	26	M	1.3
N	25	F	1.2
O	24	F	1.2
P	25	M	1.2
Q	25	M	1.2
R	20	M	1.2
S	41	F	1.2
T	44	M	1.5
U	45	F	1.4
V	48	F	1.2
W	50	F	1.2
X	43	F	1.2
Y	47	M	1.4
Z	50	F	1.4
AA	60	M	1.2
AB	27	M	1.2
AC	25	M	1.3
AD	41	M	1.4
		Average=	1.266667

The Average of **32 drop** by dropper =1.266667 $\mu\text{l}$

**Table no 03:** 32 Bindu as mentioned by Acharya Hemadri.

Sr.no	Age	Sex	Height in cm	Weight in kg	Index finger Height	Diameter in cm	BMI	Measuring pipette
A	27	M	170	70	4.5	5.2	24.22	13800
B	24	F	152	62	4	5	26.84	13250
C	24	F	155	68	4.4	4.8	28.3	12800
D	22	F	165	60	5.2	5.7	22.4	13050
E	21	F	165	55	4.4	4.5	20.2	12300
F	21	F	165	46	4.5	4.9	16.9	8400
G	21	F	160	56	4.4	4.9	21.87	15150
H	21	F	148	45	4	4.6	20.54	13250
I	20	F	162	45	4.2	4.6	17.15	12600
J	24	F	155	48	4.4	4.5	19.98	12900
K	24	M	148	76	4.5	5.8	34.7	22900
L	37	F	162	55	4.9	5.4	20.96	13350
M	26	M	174	78	4.8	5.5	25.76	12050
N	25	F	160	48	4.3	5.4	18.75	17400
O	24	F	157	44	4.3	4.9	17.85	12650
P	25	M	160	67	5.2	6	26.17	19600
Q	25	M	165	56	4.6	5.1	20.57	13650
R	20	M	160	56	4.4	4.9	21.87	12650
S	41	F	160	75	4.5	5.7	29.3	12800
T	44	M	164	75	5.2	5.6	27.51	14600
U	45	F	164	87	4.3	5.4	32.35	21650
V	48	F	137	63	4.3	5.2	33.57	18600
W	50	F	165	60	4.3	5.2	22.04	17050
X	43	F	152	68	4.4	5	29.28	12250
Y	47	M	167	72	4.7	5.7	25.62	12600
Z	50	F	140	58	4	5.8	21.53	13550
AA	60	M	167	55	4.8	5.8	19.57	12950
AB	27	M	164	67	4.6	5.9	24.91	14400
AC	25	M	164	48	4.5	5	18.29	14150
AD	41	M	152	63	4.2	5.7	27.27	13950
Average								14343.33

The Average of 32 Bindu as mentioned by Acharya Hemadri =14343.33 $\mu$ l

### Discussion:-

1. From the above study and observations it is clear that dose for Nasya differs if one goes with textual method than routinely prescribed method.

Even it is observed that the quantity calculated by counting each single drop (32 drop = 1.5 ml) is almost equal to drop by dropper method (32 drop = 1.2 ml).

It is also observed that Bindu method given comparatively very large quantity for the administration of Nasya (32 drops = 14.34 ml).

2. All the above calculations show that current practice of counting 8,16,32 drops from dropper for Nasya administration is grossly incorrect and leading to false results or one can say it must be leading to Ayoga of Nasya karma. It might be leading to Dosha Utkleshana only and not to Dosha Nirharana (expulsion of Doshas).
3. One can now easily carry out Acharya Charaka's way of dose explanation for Nasya. He had advised the exact quantity of Nasya to administered i.e. **Half Pala** (20 ml approximately). He might have done this to avoid further confusion and misinterpretation of Bindu.

**Conclusion:-**

1. Bindu is not equivalent to drop.
2. Routinely practiced dose is 10 times lesser when compared to classical dose.
3. Measurement of Bindu should be defined in milliliter in standard literature or in Formulary so as to avoid the misinterpretation of quantity of Bindu.
4. Quantity of one Bindu by Bindu method is approximately 0.44 ml (14.34 / 32Bindu).

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