



## Research Article

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### AN OBSERVATIONAL STUDY ON THE EFFECT OF KAVALA ON MUKHA SWASTHYA WITH SPECIAL REFERENCE TO KSHIRI VRIKSHA HIMA

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Received on: 08/10/13 Revised on: 28/10/13 Accepted on: 29/11/13

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DOI: 10.7897/2277-4343.04611

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#### ABSTRACT

Mukha Swasthya (oral hygiene) has gained importance now a day, because Mukha is such Anga, which is exposed to many risk factors in day-to-day life. Habits like tobacco chewing, smoking etc. have increased incidences of diseases pertaining to oral cavity. Hence it has become necessary to develop an easy and economic Ayurvedic medical measure. Various Dravyas have been mentioned in the classics for Kavala. Among these Kshiri Vriksha Hima has been mentioned both in Dinacharya and Mukharoga Adhikara. The aim of this study was to carry out an observational study on the effect of Kavala on Mukha Swasthya with special reference to Kshiri Vriksha Hima. In the present study 30 individuals were randomly selected between the age group 20-50 years from either sex. Follow ups were taken on 10<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup> and 45<sup>th</sup> (post treatment) days and observation was noted. Kshiri Vriksha Hima having Kashaya Rasa, Shita Virya and Kapha Pittaghna properties, it removes the aggravated Kapha and Pita Guna from oral cavity. Kavala also gives strength to the gingiva, tooth and other structures in the oral cavity. 27 % individuals showed good response, 56 % shown moderate response, and 17 % shown mild response. Practicing of Kavala with Kshiri Vriksha Hima as a routine Karma should be popularized among population for leading a better Mukha Swasthya.

**Keywords:** Kshiri Vriksha, Pancha Valkala, Kavala, Oral hygiene, Mukha Swasthya

#### INTRODUCTION

Mukha Swasthya (oral hygiene) has gained importance now a day, because Mukha is such Anga, which is exposed to many risk factors in day-to-day life. Habits like tobacco chewing, smoking etc. have increased incidences of diseases pertaining to oral cavity. Swasthavritta is such contribution, which aims at individual and social health. Our ancient Ayurveda Acharyas in connection with social and preventive medicine (Swasthavritta), gave special instructions to “Mukha Swasthyam” as it is the basic necessity for the overall hygiene of the human body. For prevention of disease and to maintain the health, there are some principles which are mentioned in old classical texts are ‘Dincharya Upakrama’. By following rules of Dinacharya, we can take care of our Indriya i.e. sensory organs and keep them clean, so they can do their functions normally. Most of the diseases can be prevented effectively (primary or secondary) only by the maintenance of personal hygiene. Even though dentistry was not a specialized branch of Ayurveda, it was included in its system of surgery. In ancient India, problems such as deformities of the oral cavity, plaques and infections could be managed and even cured. Many remedies are prescribed in modern medicine for the treatment of problems related to oral hygiene. But these methods are quite costly and causing lots of inconvenience to the patients. Hence it became necessary to develop an easy and economic Ayurvedic medical measure. The quantity which can be rolled out in the mouth is called as Kavala.<sup>1,2</sup> Various Dravyas have been mentioned in the classics for Kavala. Among these Kshiri Vriksha Hima (also known as Pancha Valkala) has been mentioned both

in Dinacharya and Mukharoga Adhikara.<sup>3</sup> Hence this study was undertaken to study the effect of Kavala of Kshiri Vriksha Hima on Mukha Swasthya.

#### Aim

An observational study on the effect of Kavala on Mukha Swasthya with special reference of Kshiri Vriksha Hima.

#### Methodology

##### Selection of Drug

Identification, Authentication of Kshiri Vriksha was done from Department of botany, University of Pune. Standardization of prepared Kshiri Vriksha Hima was done from Late Prin. B.V. Bhide Foundation, Pune, India.

##### Properties of Kshiri Vriksha

- Vata - *Ficus bengalensis* Linn.
  - Asvatha - *Ficus religiosa* Linn.
  - Udumber - *Ficus racemosa* Linn.
  - Plaksha - *Ficus lacor* Linn.
  - Parisha - *Thesposia populnea* (Linn) soland
- Rasa, Virya and Vipaka of Kshiri Vriksha<sup>4,5</sup>[Table 1]

##### Guna and Karma of Kshiri Vriksha Dravyas

In General Kshiri Vriksha having Kashaya rasa (Udumbara having Madhura as Anurasa), Shita Virya do Kapha Pitta Shamana and Karma like Shothahara, Vedanasthapana, Vranashodhana and Vranaropaka. Kavala with these drugs acts as Shamana Rupi as well as Ropana Rupi Kavala.

### Preparation of Hima

10 g of Kshiri Vriksha churna was added to 80 ml of water and was kept overnight. It was filtered next morning and used for Kavala.<sup>6,7</sup>

### Type of Study

A single group clinical study consisting of 30 individuals was carried out and observations were recorded before and after treatment.

**Period of study:** 45 days

**Dose:** 60 ml, **Time:** once in a day (after brushing)

### Standard Operative Procedure for Gandusha

#### Pradhan karma

Individual was asked to keep his face slightly lifted up and advised to hold Hima, allowing the movements of Hima inside the mouth till the secretion occur in the mouth, nose and eyes.

#### Pashchat karma

After spitting out the contents, mouth was cleaned with lukewarm water.

#### Follow up

- 1<sup>st</sup> follow-up - 10<sup>th</sup> day
- 2<sup>nd</sup> follow-up - 20<sup>th</sup> day
- 3<sup>rd</sup> follow-up - 30<sup>th</sup> day
- 4<sup>th</sup> follow-up - 45<sup>th</sup> day (post treatment)<sup>8,9</sup>

#### Assessment Criteria

##### Mukhadauryagandha

Gradation for Mukhadauryagandha [Table 2]

##### Dantamalinta (Plaque Index)

Gradation for Dantamalinta [Table 3]

##### Asyavairasyata

Gradation for Asyavairasyata [Table 4]

##### Vaktra Laghavata (Freshness of the Mouth)

Gradation for Vaktra laghavata [Table 5]

#### Inclusion criteria

- Individuals with Mukhadauryagandha, Dantamalinta, Asyavairasya, and Vaktra Laghavata were only included.
- Individuals between the age group of 20 to 50 years were included.
- Individuals of either sex were included.

#### Exclusion criteria

- Contraindications for Kavala Upakrama as per Ayurvedic classics were excluded.<sup>10</sup>
- Individuals having any systemic disorders were also excluded.
- Individuals having Stomatitis, secondary infections of oral cavity, Oral malignancies and benign tumor Syphilitic lesion T.B. Lesion and immunosuppressive diseases like AIDS etc. were excluded.

#### Observation

The cases were selected randomly for the study. Each and every case was observed for prevalence according to age, sex, occupation, Prakriti, Vyasana, and Mukha Swasthya Karma etc. Second part consisted of comparisons of pre treatment measurements of the outcome with that of post treatment measurements where we used inferential methods and statistics. In the descriptive part, we used frequency tables. In the inferential part, we used Paired t-test procedure at 5 % level of significance and data interpreted using the value of the test statistic and the probability (p) value.

#### Classification of individual according to Age

Distribution according to Age [Table 7]

#### Classification of individual according to Sex

Distribution of individuals in relation to sex [Table 8]

The distribution according to sex indicates that male were more as compare to females.

#### Classification of individual according to Prakruti

Distribution according to Prakruti [Table 9]

Among this, Vata is more potent because incidence is more in Vata Pitta Prakruti (40 %) followed by Vata Kapha Prakruti (33.33 %).

#### Classification of individual according to Vyasana

Distribution of individuals based on habits. [Table 10]

Observations based on habits indicate tobacco chewing (30 %), excess tea/coffee (33.33 %), smoking (10 %) and no habits (26.66 %) show almost equal susceptibility.

#### Classification of individual according to Mukha Swasthya Rakshak Upaya

Practice of Mukha Swasthya Rakshak karma [Table 11]

Practice of Mukha Swasthya karma indicate high incidence in category of individuals with only 'brushing' as Mukha Swasthya karma (50 %) followed by category of 'brushing with tongue cleaning' (26.66 %).

#### Duration of commencement of Srava in Asya

Duration of commencement of Srava in Asya, 80 % of cases showed duration of commencement of Srava in Mukha in the range of 91-100 seconds. [Table 12]

#### Statistical Analysis of Reduction in Mukhadauryagandha

Statistical analysis of reduction in Mukhadauryagandha, mean BT (Before treatment) for Mukhadauryagandha was 1.633, which was reduced to 0.533. It has shown 67.36 % relief. P value is greater than 0.05 so it was significant. [Table 13]

#### Statistical Analysis of Reduction in Asyavairasya

Statistical analysis of reduction in Asyavairasya, mean BT for Asyavairasyata was 1.767, which was reduced to 0.3667. Here t-cal value is greater than t table value. It has shown 79.25 % relief. P value is greater than 0.05 so it was significant. [Table 14]

**Table 1: Properties of Kshiri Vriksha**

| S. No | Dravya   | Guna          | Rasa             | Virya | Vipaka | Dosha- Ghnata   | Karma                  |
|-------|----------|---------------|------------------|-------|--------|-----------------|------------------------|
| 1.    | Vata     | Guru, Ruksha  | Kashaya          | Shita | Katu   | Kapha-Pittaghna | Shothahara Vranaropaka |
| 2.    | Ashvatha | Guru, Ruksha  | Kashaya          | Shita | Katu   | Kapha-Pittaghna | Shothahara Vranaropaka |
| 3.    | Udumbara | Guru, Ruksha  | Kashaya, Madhura | Shita | Katu   | Kapha-Pittaghna | Shothahara Vranaropaka |
| 4.    | Plaksha  | Laghu, Ruksha | Kashaya          | Shita | Katu   | Kapha-Pittaghna | Shothahara Vranaropaka |
| 5.    | Parisha  | Guru, Ruksha  | Kashaya          | Shita | Katu   | Kapha-Pittaghna | Shothahara Vranaropaka |

**Table 2: Gradation for Mukhadauryagandha**

|   |   |
|---|---|
| No foul breath throughout day i.e. 12 h after cleansing of teeth.                         | 0 |
| Gets foul breath usually 6 h after cleansing.   | 1 |
| Gets foul breath usually 3 h after cleansing.   | 2 |
| Gets foul breath usually thought the day, No diminished foul breath even after cleansing. | 3 |

**Table 3: Gradation for Dantamalinta**

|   |   |
|---|---|
| No plaque.  | 0 |
| A film of plaque adhering to the free gingival margin and adjacent area of the tooth. The plaque may be seen in situ only after application of disclosing solution or by using the probe on the tooth surface | 1 |
| Moderate accumulations of soft deposits within.   | 2 |
| Abundance of soft matter within the gingival pocket and/or on the tooth and gingival margin.  | 3 |

**Table 4: Gradation for Asyavairasyata**

|   |   |
|---|---|
| Proper taste perception, enjoys taste of the food | 0 |
| Often complains regarding the taste of food       | 1 |
| Shows disinterest towards food                    | 2 |
| Often skips meal                                  | 3 |

**Table 5: Gradation for Vaktra laghavata**

|  |   |
|--|---|
| Feeling of freshness throughout the day                              | 0 |
| Feeling of freshness up to 6 h after cleaning                        | 1 |
| Feeling of freshness up to 3 h after cleaning                        | 2 |
| No feeling of freshness even immediately after cleaning of the teeth | 3 |

**Table 7: Distribution according to Age**

| Age Group | No of case | %     |
|-----------|------------|-------|
| 20-30     | 20         | 66.66 |
| 30-40     | 6          | 20    |
| 40-50     | 4          | 13.33 |

**Table 9: Distribution according to Prakruti**

| Prakruti    | No of case | %     |
|-------------|------------|-------|
| Vata-Kapha  | 10         | 33.33 |
| Pitta-Kapha | 8          | 26.66 |
| Vata-Pitta  | 12         | 40    |

**Table 11: Practice of Mukha Swasthya Rakshak karma**

| Karma                                 | No. of case | %     |
|---------------------------------------|-------------|-------|
| Only Brushing                         | 15          | 50    |
| Brushing with tongue cleaning         | 8           | 26.66 |
| Brushing + Gargling                   | 4           | 13.33 |
| Brushing + Tongue cleaning + Gargling | 3           | 10    |

**Table 8: Distribution of individuals in relation to sex**

| Sex    | No of case | %  |
|--------|------------|----|
| Male   | 21         | 70 |
| Female | 9          | 30 |

**Table 10: Distribution of individuals based on habits**

| Habit           | No. of case | %     |
|-----------------|-------------|-------|
| Tobacco chewing | 9           | 30    |
| Smoking         | 3           | 10    |
| Tea/coffee      | 10          | 33.33 |
| No habits       | 08          | 26.66 |

**Table 12: Duration of commencement of Srava in Asya**

| Time duration   | No of case | %     |
|-----------------|------------|-------|
| 80-90 seconds   | 04         | 13.33 |
| 91-100 seconds  | 24         | 80    |
| 101-110 seconds | 01         | 3.33  |
| 111-120 seconds | 01         | 3.33  |

**Table 13: Statistical Analysis of Reduction in Mukhadauryagandha**

|      | B.T.   | A.T.   | t <sub>cat</sub> | T table | P-value    |
|------|--------|--------|------------------|---------|------------|
| Mean | 1.633  | 0.533  | 9.104            | 2.0452  | P < 0.0001 |
| S.D  | 0.4901 | 0.5074 |                  |         |            |

**Table 14: Statistical Analysis of Reduction in Asyavairasya**

|      | B.T.   | A.T.   | t <sub>cat</sub> | T table | P-value    |
|------|--------|--------|------------------|---------|------------|
| Mean | 1.767  | 0.3667 | 12.34            | 2.0452  | P < 0.0001 |
| S.D  | 0.4302 | 0.4901 |                  |         |            |

**Table 15: Statistical Analysis of Reduction in Dantamalinta**

|      | B.T.   | A.T.   | t <sub>cal</sub> | T table | P-value |
|------|--------|--------|------------------|---------|---------|
| Mean | 0.533  | 0.2667 | 2.804            | 2.0452  | 0.0089  |
| S.D  | 0.7761 | 0.4498 |                  |         |         |

**Table 16: Statistical Analysis of Reduction in Vaktra laghavata**

|      | B.T.   | A.T.   | t <sub>cal</sub> | T table | P-value |
|------|--------|--------|------------------|---------|---------|
| Mean | 0.8333 | 0.30   | 4.287            | 2.0452  | 0.0002  |
| S.D  | 0.9129 | 0.4661 |                  |         |         |

**Statistical Analysis of Reduction in Dantamalinta**

Statistical analysis of reduction in Dantamalinta, mean BT for Dantamalinta was 0.533, which was reduced to 0.2667. Here t-cal value is greater than t table value. It has shown 49.96 % relief. P value is greater than 0.05 so result was significant. [Table 15]

**Statistical Analysis of Reduction in Vaktra laghavata**

Statistical analysis of reduction in Vaktra laghavata, mean BT for Vaktra laghavata was 0.833, which was reduced to 0.30. Here t-cal value is greater than t table value. It has shown 63.98 % relief. P value is greater than 0.05 so it is significant. [Table 16]

**RESULT AND DISCUSSION**

**Kavala**

Sushruta explains Gandusha as Asanchari Mukha Purna where-as Kavala is Chalana Shila.<sup>1</sup> The quantity of powder of drugs to be added to the liquid for Gandusha is one Kola, and that of the paste to be put into the liquid for Kavala is one Karsha.<sup>11</sup>

Kavala is of 4 kind's namely<sup>12, 13</sup>

1. Snaihika
2. Shamana
3. Shodhana
4. Ropana

**Kavala in Dinacharya**

Hima Kalpana of Kshiri Vriksha has to be used for washing the Mukha for Swastha person to prevent diseases that may be caused due to Kapha.<sup>3</sup> Hima of Kshiri Vriksha is used for Kavalagraha to alleviate Arochaka, Asyavairasya, Malinata, Puti (Mukha daurgandata) and Praseka.<sup>14,15</sup> Kavala in Dinacharya has been explained with two intentions (objectives). 1) Preventive (prevention of the diseases) 2) Health promotive (by improving the oral hygiene).

**Kavala in Niyata Vihara**

**Dinacharya**

All the Acharyas have mentioned Kavala as one of the Karma in Dinacharya with mainly two intentions i.e. to improve the Swasthya of Mukha (oral hygiene) as well as enhancing the Prakruta Karma of Mukha and to prevent various Vyadhis occurring in Mukha.

**Ritucharya**

In Vasant Ritu Kavala graham is advocated to remove Prakupita Kapha. Sometimes it can be implemented as an accessory measure to evacuate Avashishta Kapha after Shodhana.<sup>16,17</sup>

**Kavala in Aniyata Vihara**

Kavala is indicated in Chhardi Vega Dharanjanya Vikaras to pacify the Kapha Dosha.<sup>18</sup>

**Kavala as Sneha Pravicharana**

Sneha Pravicharana is indicated for those having Swabhavika Aruchi towards Sneha, having Mridu Koshta, addicted to alcohol. 24 types of Sneha Pravicharana have been mentioned among which Kavala is also one.<sup>19</sup>

**Age**

The possible presumption for high incidence of poor oral health in 20-23 years age group may be due to lack of awareness and ignorance towards oral hygiene.

**Sex**

May be due to the habits like tobacco chewing, smoking, alcohol, excess tea /coffee are seen more in males.

**Prakruti**

The possible presumption is that Vata and Kapha Dosha are potent cause for Mukha Swasthya one over the other. Again among this Vata is more potent because incidence is more in Vata Pitta prakruti (40 %) compared to Vata Kapha Prakruti (33.33 %). People who are of Vata Kapha or Pitta Kapha Prakruti should take utmost care in order to avoid poor oral health.

**Vyasana**

Distribution of patients based on habits indicates tobacco chewing (30 %), excess tea/coffee (33.33 %), smoking (10 %) and no habits (26.66 %) show almost equal susceptibility. The possible presumption for this is that all the habits are considered as causes having Katu, Ushna, Tikshna and provoke poor oral health. As per Ayurveda all the Nidanans can be attributed to Dosha Prakopa.

**Mukha Swasthya karma**

Distribution based on practice of Mukha Swasthya karma indicate high incidence in category of individuals with only 'brushing' as Mukha Swasthya karma (50 %) followed by category of 'brushing with tongue cleaning. So it may be inferred that only practicing brushing and tongue cleaning are not sufficient enough to provide protection against oral health. Daily practice of Kavala may be good for oral health.

**Mukha daurgandya**

As Kshiri Vriksha having Kashaya Rasa, Ruksha Guna and Kapha Pittaghna properties, it removes the aggravated Kapha and Pitta Guna from oral cavity and reduces Mukhadaurgandhya.

### Asyavairasyata

Properties like Kashaya Rasa, Shita Virya and Kapha Pittagnata of Kshiri Vriksha, the coating of Kapha and aggravated Vata subsides and increases taste.

### Dantamalinta

As Kshiri Vriksha Hima is having the qualities of Mala Puti Har Karma and Kapha Pittagnata, it helps in removing the Mala which is adherent to the teeth.

### Vaktra laghavata

Properties like Kashaya Rasa and Ruksha Guna of Kshiri Vriksha, helps to keep Laghavata of Mukha.

### Overall Results

27 % individuals have shown good response, 56 % shown moderate response and 17 % shown mild response.

### Probable Mode of Action

As Kshiri Vriksha having Kashaya Rasa, Ruksha Guna and Kapha Pittagna properties, it removes the aggravated Kapha and Pitta Guna from oral cavity. Gargling creates pressure in the oral cavity and bringing out toxins and other debris from the interdental, gingival, and gingival margins. The pressure exerted by gargling also helps in penetration of the drug into the oral mucosa (gingiva). Kavala helps in dilation of the blood vessels in the oral mucosa (gingiva) and thus helps in absorption of the active ingredients present in medicine, which in turn gives strength to the roots of the teeth.

### CONCLUSION

Kavala is an important Upakrama of Dincharya mentioned in Samhitas which should be followed regularly in today's era, in order to prevent Mukharogas and to maintain Mukha swasthya. Kavala also gives strength to the gingiva, tooth and other structures in the oral cavity. As Kshiri Vriksha Hima having Kashaya Rasa, Shita Virya and Kapha Pittagna properties, it removes the aggravated Kapha and Pitta Guna from oral cavity. 27 % individuals have shown good response, 56 % shown moderate response and 17 % shown mild response. Post treatment results shown reduction of Asyavairasya, Mukhadaurgandhya, Dantamalinta and Vaktra laghavata.

Practicing of Kavala with Kshiri Vriksha Hima as a routine Karma should be popularized among population for leading a better Mukha Swasthya.

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### Cite this article as:

Shukla Rakesh R, Patil Vipul C, Mishra Preeti. An observational study on the effect of Kavala on Mukha swasthya with special reference to Kshiri vriksha hima. Int. J. Res. Ayurveda Pharm. 2013;4(6):836-840 <http://dx.doi.org/10.7897/2277-4343.04611>