



## A CLINICAL STUDY TO EVALUATE THE EFFECT OF DANTADHAWANA WITH VYAPYA TRIVARGA CHOORNA IN MUKHA

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**ABSTRACT:** Ayurveda is one of the ancient systems of holistic medicine which mainly highlights on preventive medicine than curative. This concept reflects in all the treatises of Ayurveda which follow a common mode of unfolding the concepts starting with prevention and later dealing with curative medicine. Utmost important is given to Dinacharya and Ritucharya which describes the routine to be followed by a healthy individual for maintaining the health. Dantadhavana is one among Dinacharya practice in order to maintain the oral hygiene. **Objective:** 1. To evaluate the effect of Dantadhavana by using the Vyapya Trivarga choorna with madhu in the mukhaswasthya. 2. To review the concept of Dantadhavana in Mukhaswasthya. **Methodology:** A single group clinical study was carried out on 50 subjects who were having poor oral health. Selected individuals were subjected for Dantadhavana by using 5gms of the Vyapya Trivarga choorna mixed with madhu twice daily for 60 days. **Result:** Vyapya Trivarga choorna showed improvement in subjective and objective parameter in poor oral hygiene individuals. **Conclusion:** In present study, it may be concluding that Vyapya Trivarga choorna with madhu as a Dantadhavana is effective in promoting oral hygiene and preventing from Mukha Roga. **Keywords:** Dantadhavana; Vyapya Trivarga choorna; Madhu; Mukhaswasthya; Oral hygiene.

### INTRODUCTION:

Ayurveda was considered as an ancient system of medicine which was practiced in India from Vedakala. It is considered as one of the Upaveda of Atharvaveda. The main aim of Ayurveda is to maintain the healthy state of an individual and to cure the diseases.<sup>1</sup> Dinacharya, Ritucharya and Nishacharya should be followed to maintain the health of an individual or if not followed may end up in diseases. Acharya have given more importance to Dinacharya which describes the daily routine to be followed by a healthy individual for maintaining the health. Ayurveda has given more importance to oral hygiene. It has mentioned many procedures for maintenance of oral health which includes Dantadhavana, Jihwa nirlekhana, Kavala, Gandusha etc. Regular practice of same not only maintains good oral health but also prevents many oral disorders<sup>3</sup>. Most of the people are unaware of these procedures and some may not be able to follow and

they all are prone to many oral diseases. Oral Diseases are major public problems on global level<sup>4</sup>. It has direct influence on quality of life by having a serious impact on an individual well-being.<sup>5</sup>

In Present era, People are giving less importance to their health. Due to their busy lifestyle, even the basic personal hygiene measures like tooth brushing, tongue cleaning etc. was not done in the way it has to be done. Moreover, people are getting accustomed to the improper eating habits like junk foods, ice creams, sweets, addictions like tobacco, gutka chewing etc. which can predispose to oral diseases more of dental origin. Oral diseases pose major health burden for many countries and affect people throughout their life time, causing pain, discomfort, disfigurement and even death<sup>6</sup>. Prevalence of oral diseases is about nearly 3.5 billion worldwide. Good oral health enables us to

speak, smile, breath, taste, eat, bite, chew. The oral cavity plays a central role for intake of basic nutrition and protection against microbial infection.<sup>7</sup>

According to a 2012 WHO fact sheet on oral health, "Oral health is essential to general health and quality of life. It is a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal disease, tooth decay, tooth loss, other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing".<sup>8</sup> The main goal of proper oral hygiene is to remove the formation of plaque and tartar, it prevents from dental caries, periodontal diseases and decreases the incidence of halitosis.<sup>9</sup>

Dental plaque is a sticky biofilm that attached to teeth comprising of bacteria in oral cavity, acid produced by bacteria from food, food debris and saliva.<sup>10</sup> The role of dental plaque in the initiation of dental caries and periodontal disease result from the bacterial products of the plaque flora.<sup>11</sup> The biofilm will also mineralize into tartar, also known as calculus, which along with plaque, acts as irritant on gums. This irritation results in gingivitis.<sup>12</sup> Maintaining good oral hygiene is one of the essential attributes of overall well-being. It is the most important thing which includes health of teeth and gums. Healthy teeth qualify an individual to look and feel good and also helps in normal digestion of food. Preventive care of oral cavity by proper brushing helps to control the ailments of oral cavity before they develop. So primary aim of prevention of oral disease is plaque control and prevention of plaque accumulation on tooth and gingival surface.<sup>13</sup> Dental plaque control measures include mechanical aids like toothbrushes, floss, inter dental cleansers, and chewing gums and chemotherapeutic agents like mouth rinses, dentifrices.<sup>14</sup>

Mukha is the one among the nine orifices of our body.<sup>15</sup> It is the beginning of gastrointestinal system. Mukha swasthya is very essential to remain healthy, because many of the infections start from the Mukha. Teeth (Danta) are the important part of oral cavity. Healthy teeth define healthy body. Hence, Dantadhavana upakrama mentioned in Dinacharya of Ayurveda can play an important role in maintenance of oral hygiene.<sup>16</sup> Various drugs have been enlisted for Dantadhavana in ayurvedic classics which are katu, tikta and Kashaya rasa pradhana.<sup>17</sup> Dantadhavana is a primary oral cleansing technique, and one of the specialized therapies to treat as well as to prevent oral diseases. Daily practice of Dantadhavana helps in removing Mukha dourgandhya, Upadeha, it acts as Shleshmapakarshana, and amplify Annabhiruchi.<sup>18</sup> So, in classics it is mentioned that avoiding Dantadhavana is the major cause for Mukha Roga.<sup>19</sup> Hence present study "A clinical study to evaluate the effect of

Dantadhavana with Vyapya Trivarga Choorna in Mukha swasthya (oral hygiene)" emphasizes the importance on promoting Mukha Swasthya and prevention of common Mukha Roga.<sup>20</sup>

## AIMS AND OBJECTIVES

**Aims:** To Evaluate the Effect of Dantadhavana with Vyapya Trivarga Choorna in Mukha

### Objectives:

1. To evaluate the effect of Dantadhavana by using the Vyapya Trivarga choorna with madhu in the mukhaswasthya.
2. To review the concept of Dantadhavana in Mukhaswasthya.

## MATERIALS AND METHODS

### METHODOLOGY

Vyapya trivarga Choorna was mixed with honey (2.5 gm) so that it can be easily rubbed on teeth by soft toothbrush for 4-5 minutes.

### SOURCE OF DATA:

Literary source: For the present study the primary source of literature was collected from Ayurvedic text books, contemporary text books, various journals, previous studies conducted on similar subjects in different universities, and from the websites about the study.

### Sample source:

50 subjects fulfilling inclusion criteria were selected for study, irrespective of sex from the OPD and IPD of SDM Hospital, Kuthpady, Udupi.

### Study Design

- StudyType: Interventional
- Allocation: Randomized
- Endpoint Classification: Efficacy Study
- Intervention Model: Single group Assignment
- Masking: Open label
- Primary purpose: Preventive

**Dose Fixation**

Dose for Dantadhavana choorna was fixed as 5 grams in divided dose i.e., morning 2.5grams and night 2.5 grams based on Previous studies (previous work done) the dose was fixed.

**DURATION OF THE STUDY:**

60days

**Observational period:**

**0, 30<sup>th</sup> ,60<sup>th</sup> Day**Patients were observed before, during and after Dantadhavana upakrama treatment. Observational periods were taken on 0, 30th and 60th day.

**DIAGNOSTIC CRITERIA:**

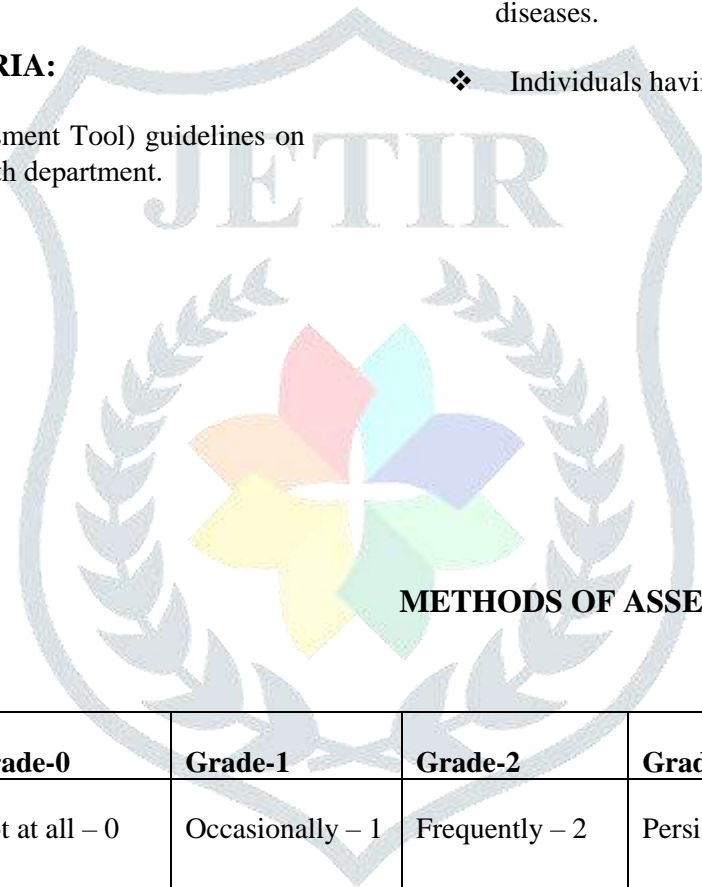
OHAT (Oral Health Assessment Tool) guidelines on 2007 Halton Region's Health department.

**Criteria for Selection of Volunteers****Inclusion Criteria**

- Individuals who are willing to participate in Dantadhavana procedure.
- Individual with poor oral health based on OHAT guidelines.
- Individuals aged between 18 to 50 years.
- Individuals of either sex.

**Exclusion Criteria**

- ❖ Individuals with any acute and chronic oral diseases.
- ❖ Individuals having any systemic disorder

**METHODS OF ASSESSMENT****Subjective Parameters**

Symptoms/grade	Grade-0	Grade-1	Grade-2	Grade-3
Mukha Dourgandya(Halitosis)	Not at all – 0	Occasionally – 1	Frequently – 2	Persistently – 3
Upadeha (coating)	Not at all – 0	Occasionally – 1	Frequently – 2	Persistently – 3
Annabhiruchi(taste perception)	Absent – 0	Abnormal – 1	Moderate – 2	Good – 3
Soumanasya (Freshness)	Absent – 0	Occasionally – 1	Frequently – 2	Significant – 3

## Objective Parameters

OHAT GUIDELINESS (2007 Halton Region's Health Department modified with permission Chalmers 2004).

Sl.No	OHAT	Grade
1.	Lip changes:	
	Smooth, Pink, Moist	0
	Dry, Chapped, or red at corners	1
	Swelling/ lump, White/red/ulcerated patch bleeding/ulcerated at corner.	2
2.	Tongue changes:	
	Normal, moist, rough less, pink.	0
	Patchy, fissured, red, coated	1
	Patch that is red and /or White, ulcerated, swollen.	2
3.	Gums and tissues change:	
	Pink, moist, smooth, no bleeding.	0
	Dry, shiny, rough, red, swollen, around 1 to 6 teeth one ulcer or sore spot under dentures.	1
	Swollen, bleeding around 7 teeth or more loose teeth ulcer and/ or white.	2
4.	Saliva changes:	
	Moist tissue, Watery and free- flowing saliva.	0
	Dry, sticky tissue, little saliva present	1
	Tissues parched and red, very little/ no saliva present, saliva very thick	2
5.	Natural teeth changes (yes/no):	
	No decayed or broken teeth / roots	0
	1-3 decayed or broken teeth / roots or teeth very worn down	1
	4 or more decayed or broken teeth / roots or fewer than 4 teeth, or very worn-down teeth.	2
6.	Oral cleanliness:	
	Clean and no food particles or tartar in mouth or on dentures.	0
	Food particles, tartar, and/or plaque in 1-2 areas of the mouth or on small area of dentures, bad breath	1
	Food particles, tartar, and/or plaque in moist area of the mouth or on most of dentures, severe bad breath.	2
7.	Dental pain:	
	No behavioral, verbal or Physical signs of pain.	0
	Verbal and/or behavioral, signs of pain such as pulling of face, chewing lips, not eating aggression.	1
	Physical signs such as swelling of cheeks or gums, broken teeth ulcer. Gum boils as well as Verbal and/or behavioral signs.	2

### Oral Hygiene Index scale (OHI):

#### Scoring Criteria:

#### Debris:

Grade	Criteria
0	No debris or stain present
1	Soft debris covering not more than one third of the tooth surface, or presence of extrinsic stain without other debris regardless of surface area covered.
2	Soft debris covering more than one third, but not more than two thirds, of the exposed tooth surface.
3	Soft debris covering more than two thirds of the exposed tooth surface.



**Calculus:**

Grade	Criteria
0	No calculus presents.
1	Supragingival calculus covering not more than third of the exposed tooth surface.
2	Supragingival calculus covering more than one third but not more than two thirds of the exposed tooth surface or the presence of individual flecks of subgingival calculus around the cervical portion of the tooth or both.
3	Supragingival calculus covering more than two third of the exposed tooth surface or a continuous heavy band of subgingival calculus around the cervical portion of the tooth or both.

**RESULTS**

It shows improvements in subjective and objective parameters.

Statistically highly Significant improvement in reduction of Mukha dourgandhya, Upadeha, increased Annabhiruchi, Soumanasya.

Statistically highly significant improvement in parameters like OHAT, Oral Hygiene Index and Dantamala.

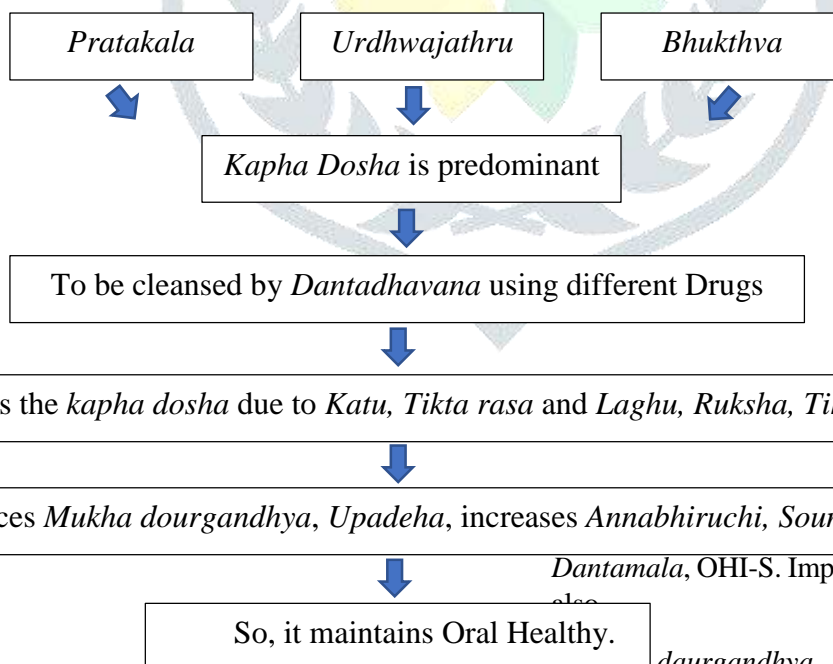
**Table No.1 Effect on Oral Hygiene Index**

Parameters	Mean	N	Std. Deviation	Std. Error Mean	Mean difference	%	t	P value	Interpretation
Oral Hygiene index 30 <sup>th</sup>	1.5882	50	.68256	.09653	-.36360	18.6	-10.491	.000	HS
Oral Hygiene index BT	1.9518	50	.75527	.10681					
Oral Hygiene index AT	.9912	50	.55350	.07828	-.96060	49.2	-14.026	.000	HS
Oral Hygiene index BT	1.9518	50	.75527	.10681					

**Table No.2 Results in Wilcoxon signed ranks test**

Wilcoxon Signed Rank Test									
Subjective Parameter	Mean score			Z value		P value		Inference	
	BT	30th	AT	BT-30th	BT-AT	BT-30th	BT-AT	BT-30th	BT-AT
Lip Changes	1.00	0.89	0.46	-1.732	-3.873	0.083	.000	NS	HS
Tongue Changes	1.00	0.30	0.00	5.292	.000	.000	.000	HS	HS
Saliva changes	1.00	0.42	0.00	-2.000	-2.646	0.046	0.008	S	S
Oral cleanliness	1.78	1.32	1.00	-4.796	-6.245	0.000	0.000	HS	HS
OHAT score	3.50	2.24	1.32	-5.970	-6.277	0.000	0.000	HS	HS
Oral Hygiene Index	1.13	0.77	0.28	-4.000	-6.008	0.000	0.000	HS	HS
Mukha Dourgandya	1.36	0.24	0.02	-6.548	-6.355	0.000	0.000	HS	HS
Mukha Vaishadyakara B	1.40	2.76	3.00	-6.162	-6.301	0.00	0.00	HS	HS
Upadeha	1.82	0.64	0.00	-6.330	-6.359	0.000	0.000	HS	HS
Annabhiruchi	2.50	2.98	3.00	-4.899	-5.000	0.000	0.00	HS	HS
Soumanasya	1.10	2.90	3.00	-6.509	-6.614	.000	.000	HS	HS

**Probable mode of Action of Vyapya Trivarga Churna:**



Study was designed to evaluate the effect of Vyapya Trivarga Choorna Dantadhavana with madhu in promotion of Mukha Swasthya and prevention of Mukhagata Roga. Significant reduction in sign and symptoms of Poor oral Hygiene was observed, that includes Mukha dourgandhyahara, Upadehahara, Mukha Vaishadyahara, Annabhiruchi, Soumanasya,

Dantamala, OHI-S. Improvement in OHAT parameter. So, it maintains Oral Healthy. *dourgandhya* had statistically significant improvement after treatment. Vitiated *kapha* along with food debris causes *Dourgandhya* in oral cavity. *Kaphahara* action of the drugs and the aromatic property of the drugs like *twak, ela, patra* might be responsible for the positive changes in the study.

*Upadeha* had statistically significant improvement after treatment. The reduction in *upadeha* can be

attributed to the *laghu*, *Ruksha* and *tikshna* gunas. More over most of the drugs in the trial formulation possess *katu rasa* and the action of *katu rasa* is *mukhasodhana*, that which cleans the oral cavity and *madhu* is having the action of *lekhana*, *vishada guna* also contributes to this action.

Improvement in *Annabhiruchi* could be due to the ingredients like *shunti*, *ela*, the action of which is mentioned as *Ruchya*. *Tamala patra* and *twak* are also *aruchihara* in action.

Improvement in *Mukha vaishadyakara* (clarity in mouth). Due to reduction of *pichila guna* of *kapha* which produces clarity in mouth.

Oral Hygiene Index had statistically significant improvement after treatment. It has two compartments the Debris Index and calculus and its indication for oral cleanliness. Debris is the soft foreign matter attached to the teeth, consists of mucin, bacteria, and varies in colour from greyish white to green or orange and Calculus is mineralized plaque. Then *Vyapya Trivarga choorna* with *Madhu Dantadhavana* shows a reduction of 49.2% in OHI. But the change was observed only in debris scores.

Statistically significant improvement in *Dantamala* after treatment due to *Chedana* and *Lekhana* properties of the drugs used in the formulations could be the reasons for reduction in Debris Score. Moreover, *Laghu*, *ruksha*, and *tikshna gunas* of the drugs also contribute to the same.

Statistically significant improvement in *Tongue Changes* after treatment due to most of the drugs in the trial formulation possess *Katu*, *Tikta rasa* so it reduces the coating in the tongue.

### Conclusion:

The *Mukha* is considered to be one of the most important parts of the *Urdwajatru* because it works as the reflector of the body health, it helps in Ingestion of food, taste perception, mastication, and it also helps in production of speech. *Mukha* is one among the nine *Bahirmukha Srotas* comprises of seven sub sites *Aushta*, *Dantamoola*, *Danta*, *Jihwa*, *Talu*, *Gala*, *Sakala* Good oral hygiene is key for oral health and also inevitable for the maintenance of proper health Maintaining Oral hygiene helps to prevent most common problems like dental carries, periodontal disease, and malodor. *Dantadhavana* is one among the oral cleansing procedures mentioned in *Dinacharya* to promote oral health, to prevent most common oral problem. *Vyapya Trivarga choorna* with *Madhu* has *Katu*, *tikta rasa* and *Laghu*, *Tikshna* and *Ruksha guna*, thus prevents dental problems. Daily practice of *Vyapya Trivarga choorna* with *Madhu* helps in alleviating the conditions like *Mukha dourgandhya*, *Upadeha*, and increase *Annabhiruchi Soumanasya*. Practicing *Dantadhavana* with *Vyapya Trivarga Choorna* mixed with *Madhu* can be adopted for a better oral health.

Saliva, which was sticky, thick due to *shlakshna*, *pichhila guna* of *kapha* was reduced by the qualities of *katu*, *tikta rasa* of *choorna*. When saliva is thin and free flowing, it flushes bacteria from teeth, which reduces the risk of gum disease or other infections.

Oral cleanliness changes like debris, plaque in most of the area of the teeth and bad breath are results of poor oral hygiene. Due to action of *Lekhana*, *chedana* of the drug it reduced debris and plaque and aromatic property of the drugs like *twak*, *ela*, *patra* where be the responsible for positive changes in bad breath.

*Vyapya Trivarga choorna* with *Madhu* was found to be effective in *OHAT* parameter due to its properties like *Anti-microbial*, *Anti-oxidant*, *Anti- Plaque*, wound healing, *Analgesic* action.

Media used for Bacterial count (Microbial load analysis) is *Casein Soya bean Digest Agar Medium (CSDAM)*. The microbial load before and after the treatment in the given sample was more than 300CFU/mL but on observation there was reduction in bacterial colonies. *Triphala* has *Anti-microbial* property due to presence of various chemical constituents like *flavonoids*, *terpenes* and *alkaloids*, which would have acted against gram positive and gram-negative bacteria. The *tannic acid* in *Triphala* which gets adsorbed into the surface of the bacterial cell leading to protein denaturation and ultimately to cell death. So *Triphala* helps in controlling dental plaque and Microbial growth also

**Limitation and Further Recommendation:**

- Study duration was limited to two months.
- The parameter taken to assess the results were of broad spectrum.
- Vyapya Trivarga choorna is found effective in Dantaharsha and Mukhapaka so further study can be conducted on the same.
- Identification of bacteria can be done in further studies.

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