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EFFICACY OF YAVA KSHARA PRATISARANA AND YASTIMADHU KSHEERAPAKA GANDUSHA IN THE MANAGEMENT OF DANTA SARKARA

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ABSTRACT :

Importance of Oral Hygiene:Oral hygiene is having at most importance in *Dinacharya*, if one regrets will lead to various *danta rogas*. Among the 8 *danta* rogas mentioned in the classical texts of *Ayurveda*, *Danta Sarkara* is considered to be occurring due to inadequate oral hygiene. It is a disease characterized by hardened accumulation of mala on tooth surface which harms the teeth and its supporting structures. The prime line of treatment as told in our classics is removal of the *Sarkara* by *Shastra* followed by *pratisarana*.

Danta sarkara and dental calculus: The disease *Danta Sarkara* can be compared to Dental calculus in Modern Dentistry. Calculus is dental plaque that has undergone mineralization. Calculus formation results in a number of clinical manifestations, including bad breath, bad taste in the mouth, receding gums and mild to moderate gingivitis. Hence its removal is very essential to prevent periodontal diseases.

Usability of Yava kshara: *Yava kshara* is having *lekhana* and *shodana* property, with scrapping effect which controls *danta sarkara* formation, along with that *Yastimadhu ksheerapaka* with its *sleshmapittahara* and *shodhahara* action helps in preventing gingival complications.In modern medicine the treatment modality includes scaling and polishing (oral prophylaxis). Scaling (by scalars) is to remove the etiologic agents which cause inflammation of the gums like dental plaque and calculus, thus helping to establish a periodontium that is free of disease. It is performed using hand instruments, ultrasonic instruments or rotating instruments. Now a day ultrasonic scalars are widely used by the dentists. Though it is more efficient and convenient method, it may have certain reactions as, studies have shown that ultrasonic scaling leaves behind a rough tooth surface which makes further plaque accumulation and recurrence made easier.

Key words: *Danta Sarkara, Yastimadhu ksheerapaka, Yava kshara Pratisarana.*

INTRODUCTION: Earliest reference about *danta* is available in *Susrutha Samhitha* (2350B.C.) *Uttara sthana* and some description in nidana and Chikitsa sthana. He has mentioned it under *Danta*gata rogas in mukharoga prakarana. Even other Bhrihatrayees and Laghutrayees have explained about *danta* rogas and *danta sarkara* in certain. *Danta sarkara* can be correlated to dental calculus. It is most commonly encountered oral disease in day to day practice. It is often caused by plaque. The advancement of plaque leads to dental calculus. The cause of plaque induced gingival disease is the accumulation of bacterial plaque at or near the gingival margin. It may localize on a single tooth or group of teeth, or it may be generalized throughout the mouth. If there are no plaques control measures Gingivitis may progress to involve deeper structures and cause destruction of the

periodontal fibers and resorption of alveolar bone and thus lead to the destruction of the whole tooth. Inadequate oral hygiene invariably leads to *danta sarkara* which is related to inflammatory response of the gingiva without the destruction of supporting tissues. Dental calculus is clinically recognized as hard, stone like concretion, varying in color from creamy yellow to black, and that forms on the teeth or dental prostheses through calcification of dental plaque. The signs include receded gums, inflamed gingiva, and halitosis, hypersensitivity of tooth, discoloration, mobility and toothache. The prevalence rate of dental diseases in India can be postulated as 80 – 90%. Currently there are no reliable predictors of which individuals are susceptible to this disease progression, so prevention and control of *danta sarkara* is essential in every case.

The treatment described in our classics for *danta sarkara* are *Pratisarana*, Pralepa, *Gandusha* and *nasya* which are aimed at breaking the pathogenesis of the disease and improving the health of the gingiva. A reference in *Ashtanga Hridaya* describes the line of treatment in *danta sarkara* is *danta sarkara* nirharana by *danta Shanku* followed by *Pratisarana*, *Kavala* and *Nasya*. These are simple procedures, free from side effects and cost effective.

Pratisarana with *Yavakshara* mentioned in *Ashtanga Hridaya* in the management of *danta sarkara* possess qualities like *kaphahara, Vrana shodhaka, ropaka* as well as crapping effect[1]. *Gandusha* in the form of *ksheerapaka* has been mentioned in our classics in the treatment of *danta* harsha which is a major sign in *danta sarkara.*[2] Hence *Yastimadhu ksheerapaka* has been selected for *Gandusha.*[3, 4]

Management of dental calculus according to modern dentistry is by mechanical removal of plaque by ultra-sonic hand scaling.[5]Many a times there will be persistent gingival inflammation even after repeated scaling.

Considering the above factors, this study has been taken up to evaluate its efficacy in the management of *danta sarkara*.

AIMS AND OBJECTIVE

1. Efficacy of *Yavakshara pratisarana* and *Yastimadhu ksheerapaka Gandusha* in the management of *danta Sarkara*.
2. Efficacy of modern ultrasonic scaling in the management of dental calculus.
3. Comparison of efficacy of *yava kshara pratisarana* and *Yastimadhu ksheerapaka* with ultra-sonic scaling in the management of *danta Sarkara*.

MATERIALS AND METHODS:

Source of Data: Cases of *Danta sarkara* from outpatient and in-patient department of Shalakya tantra, SDM College of *Ayurveda* and Hospital, Hassan as well as cases referred by other physicians of other departments were included in this study.

Inclusion Criteria

- Patients presenting with the classical features of *Danta sarkara*.
- Patients were selected irrespective of gender, occupation, religion, socio – economic status and duration of illness.
- Aged between 15 to 70 years.
- Mild to moderate level of gingivitis.
- Supra gingival calculus

Exclusion Criteria:

- Uncontrolled diabetes
- Deep, pus producing pockets.

- Artificial dentures, crowns and fillings
- Sub-gingival calculus.

Assessment criteria: The efficacy of the therapy was assessed on the basis of subjective criteria, for statistical analysis scoring was designed according to the severity of symptoms.

Subjective Parameter

Danta shoola
Dantamoola Shotha
Dourgandhya
Krishnata
Chalatva
Harsha

Objective parameters-

Calculus index
Gingival index

Danta shoola (Tooth ache)

0-no complaints
1-mild toothache
2-moderate level of toothache
3-severe toothache

Dourgandhya (Halitosis)

0-no halitosis present
1-mild level and person himself can't feel
2-moderate and can get smell from more than 30 cms
3- Severe and from below 30 cms

Krinatha (Discoloration)

0-Absent
1-mild discoloration of tooth
2-moderate discoloration of tooth
3- Continuously present throughout the day
4-severe discoloration of tooth

Chalatva (Mobility)

0-no mobility
1-1 ^{o} mobility of teeth
2-2 ^{o} mobility of teeth
3-3 ^{o} mobility of teeth

Danta Harsha (Sensitivity)

0-Absent
1-mild and occasional
2-moderate and always
3- Severe and always

Grading System for Objective Parameter

Plaque index = $\frac{\text{Total PI score per tooth}}{\text{Total no: of tooth examined}}$

Gingival index = $\frac{\text{Total GI score per tooth}}{\text{Total no: of tooth examined}}$

Overall effect of therapy:

• Cured: 100% relief in subjective and objective symptoms.
• Marked improvement: 76-99% relief in subjective and objective symptoms.
• Moderate improvement: 51-75% relief in subjective and objective symptoms.
• Mild improvement: 26-50% relief in subjective and objective symptoms.
• Unchanged: Up to 25% relief in subjective and objective symptoms

Study Design:

Group "A" was treated by *danta sarkara nirharana* by *Danta Shanku* in all the 4 quadrants and *Yava kshara pratisarana* followed by *Yastimadhu ksheerapaka Gandusha*. *Danta sarkara* nirharana is planned to be done with the help of hand scalars and patient is asked for one dental sitting of hand scaling and asked to do *yava kshara pratisarana* and *Yastimadhu ksheerapaka Gandusha* for 2 months. *Pratisarana* and *Gandusha* to be done once in a day and patient is asked to prepare *Yastimadhu ksheerapaka* themselves.

Group "B" was treated by modern ultrasonic dental scaling of all the 4 quadrants followed by regular mouth wash.

Duration of therapy : 2months

Follow up study: After completion of the scaling, the patients were observed after 7th day, 1st month and 2nd month.

Statistical test: The data obtained on the basis of observations was subjected to statistical analysis in terms of mean, standard deviation error by applying the unpaired't' test. The results were interpreted at the level of P0.01 as insignificant.

Medicine Preparation: *Yavakshara* procured from SDM pharmacy and *Yastimadhu* given in choorna form.

Research design: 30 patients fulfilling the criteria of selection will be taken up and will be treated as double group exploratory study design.

Ethical clearance IEC No: SDMCAH/IEC/177/13-14 The study was cleared by the institutional ethics committee. Written consent from each patient willing to participate before starting the study was taken. For those patients who were unable to read or write consent of their relative was taken. Patients were free to withdraw their name from the study at any time without giving any reason.

Observations and Results: It is observed that majority of the patients belonged to the age group of 15-30 years i.e.59.38%, 78.13% were males, and 30% patients were from student category, while 17% were housewife. 59.36 % patients were married, 87.50 % patients were Hindus, 93.75 % were belonging to mixed diet, 62.50% reported with no addictions, 100% of patients were reported as they are using tooth brush as their oral hygiene aid, 93.8 were using tooth paste as the cleaning material, 84.4% patients were cleaning their teeth once daily, 71.9% were belonging to madhura Rasa.

Total effect of therapy: In Group-A, all patients showed relief in *dantashoola* followed by *danta*moola sotha, *dourgandhya, Krishnata, chalatva and danta harsha*, statistically all the results were found highly significant at the level of $P < 0.0001$.

In Group-B, patients showed 100.00% relief in *danta*shoola followed by *danta*moola sotha, *dourgandhya, Krishnata, chalatva* and *danta* harsha. The results were found highly significant at the level of $P < 0.0001$ except *danta*shoola and *danta* harsha where it was significant at the level of $P<0.001$ and 0.007 respectively

There was improvement in the reduction of toothache, gum swelling, halitosis, discoloration, mobility and hyper sensitivity noticed in x value which obtained by Freidman test on both group during the time of treatment which is statistically significant at the level of significance less than 0.001.

After 60 days of treatment toothache, gum swelling, halitosis, discoloration, mobility and hyper sensitivity got reduced in both groups there was no increase in any of the subjects which was statistically significant at the level of p value less than 0.001.

By using Wilcoxon signed rank test with boniferonic correction, group A is more significant (with p-value 0-001 than group B with 0.005) noticed in the subject as the p-value less than 0.0125 indicates that group A is more significant than group B.

Result on Plaque Index -GROUP-A

		N	Mean	t- Value	p- Value	
Baseline	BT	15	.59227	4.175	.001	S
	AT	15	.24			
1st ob	BT	15	.59227	4.224	.001	S
	1OB	15	.22527			
2nd ob	1OB	15	.22527	-1.678	.116	NS
	2OB	15	.30			
3rd ob	2OB	15	.30	1.641	.123	NS
	AT	15	.24			

Result on Plaque Index GROUP-B

		N	Mean	t- Value	p- Value	
baseline	BT	15	.66093	3.801	.002	S
	AT	15	.40			
1st ob	BT	15	.66093	5.655	.000	S
	1OB	15	.24473			
2nd ob	1OB	15	.24473	-4.164	.001	S
	2OB	15	.43			
3rd ob	2OB	15	.43	.444	.664	NS
	AT	15	.40			

Showing the Unpaired t-test results in reduction of Plaque Index of 30 patients of group B after treatment and during follow up.

Un-Paired T-test was performed to evaluate the significant difference in mean value of Plaque Index. It was observed that there is significant difference in mean values of before and after treatment in relation to Plaque Index with group A less than group B is with t-Value of (Group-A = 4.175, Group B = 3.801) at significant level of P-Value <0.001 in group A than group B. So it indicates that group A is more significant than group B

Result on Gingival Index GROUP-A

		N	Mean	t- Value	p- Value	
baseline	BT	15	.62	8.666	.000	S
	AT	15	.19			
1st ob	BT	15	.62	7.945	.000	S
	1OB	15	.30			
2nd ob	1OB	15	.30	1.752	.102	NS
	2OB	15	.20			
3rd ob	2OB	15	.20	.173	.865	NS
	AT	15	.19			

Result on Gingival Index GROUP-B

		N	Mean	t- Value	p- Value	
baseline	BT	15	.38	2.421	.030	S
	AT	15	.26			
1st ob	BT	15	.38	6.169	.000	S
	1OB	15	.22			
2nd ob	1OB	15	.22	-.875	.412	NS
	2OB	15	.24			
3rd ob	2OB	15	.24	-.757	.462	NS
	AT	15	.26			

Showing the Unpaired t-test results in reduction of Gingival Index of 30 patients of group B after treatment and during follow up.

Un-Paired T-test was performed to evaluate the significant difference in mean value of Gingival Index. It was observed that there is significant difference in mean values of before and after treatment in relation to Gingival Index with group A less than group B is with t-Value of (Group-A = 8.666 , Group B = 2.421) at significant level of P-Value <0.001 in group A than group B. So it indicates that group A is more significant than group B.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Plaqueindex_BT is the same across categories of Group.	Independent-Samples Mann-Whitney U Test	.776[1]	Retain the null hypothesis.
2	The distribution of Plaqueindex_1fu is the same across categories of Group.	Independent-Samples Mann-Whitney U Test	.233[1]	Retain the null hypothesis.
3	The distribution of Plaqueindex_2fu is the same across categories of Group.	Independent-Samples Mann-Whitney U Test	.021[1]	Reject the null hypothesis.
4	The distribution of Plaqueindex_AT is the same across categories of Group.	Independent-Samples Mann-Whitney U Test	.003[1]	Reject the null hypothesis.
5	The distribution of Gingivalindex_BT is the same across categories of Group.	Independent-Samples Mann-Whitney U Test	.004[1]	Reject the null hypothesis.
6	The distribution of Gingivalindex_1fu is the same across categories of Group.	Independent-Samples Mann-Whitney U Test	.174[1]	Retain the null hypothesis.
7	The distribution of Gingivalindex_2fu is the same across categories of Group.	Independent-Samples Mann-Whitney U Test	.325[1]	Retain the null hypothesis.
8	The distribution of Gingivalindex_AT is the same across categories of Group.	Independent-Samples Mann-Whitney U Test	.045[1]	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.
[1]Exact significance is displayed for this test.

DISCUSSION: *Danta rogas* are considered under *mukha rogas*. They are eight in number by *Sushruta* and 10 by *Vagbhatta* , one among them is '*danta Sarkara*' in which kapha doshas get vitiated by vata and giving to symptoms like *danta shoola*, *Danta*moola sotha, *dourgandhya Krishnata*, Chalatva of *danta*. As per modern medicine, improper oral hygiene will lead to above conditions i.e. debris formation on the surface of teeth called as dental calculus. *Ayurveda* adopted so many therapies since time immemorial in treatment of *mukha rogas*. The procedures like *Pralepa, pratisarana, Gandusha, Kavala dhumapana; Nasya, raktamokshana* etc. are practiced for *mukha rogas*.

Thirty patients have been selected randomly and divided into two groups A and B having 15 patients in each. Group A is treated with *danta Sarkara* nirharana by *danta Shanku* along with *yava kshara pratisarana* and *Yastimadhu ksheerapaka Gandusha* for two months and Group B will be treated by modern ultrasonic dental scaling of all the 4 quadrants followed by regular mouth wash. Patient is advised to come for consultation and dental checkup once a month for next 2 months.

DISCUSSION ON OBSERVATIONS:

Probable Mode of action of Obtained results and observation

Age: In the present study, it is observed that majority (59.38%) of patients were age group between 15-30. It may be due to the excess intake of junk foods along with improper oral hygiene. Altered gingival response during the developmental stage is thought to be the result of hormonal changes that magnify the vascular and inflammatory response to dental plaque. So the maximum number of patients was between the age group of 15 and 45, which suggests that the periodontal disease is

quite common among the adolescent, middle age and the elderly people.

Sex: As for as sex is concerned in present study. It is observed that 78.13%% of the patients were male and 21.88% of the patients were female. It may be concluded that male are less care for their oral hygiene as well as more prone to pan chewing and smoking which may lead to formation of stains on the surface of dental structures which is the underlying cause for formation of plaque and calculus.

Socio-Economic status: It can be attributed to lack of awareness and practice regarding oral hygiene in low and middle classes.

Education: The educational status of the present study reveals that 30% of the patients are students, whereas 17% of the patients were belongs to house wife category and businessmen. It suggests that students are more prone to junk foods and liquids along with the maintenance poor oral hygienic conditions.

Diet: In the present study, it is observed that *danta Sarkara* is seen in majority of the patients (93.75%) of mixed diet and 6.25% vegetarians. This may be due to the fact that the majority of the population in this area was of mixed diet. It may also be concluded that the habit of consuming *matsya* and *mamsa* contribute to the manifestation of the disease as described in the literature review.

Habits: Majority of patients were addicted to tea followed by 18.75% pan and 12.5% were smokers. In present study the majority of patients noticed that they are addicted to tea which is extensively used as a beverage in present society. Tea is having carbohydrates which lead to plaque formation. Betel and tobacco chewing stains the teeth and helps for plaque accumulation. Thus causing infection of gums and leading calculus formation.

Oral Hygiene method: 100% of patients were reported as they are using tooth brush as their oral hygiene aid. This indicates that tooth brush is the extensively used tool for cleaning teeth in modern world and it was noticed that majority were using horizontal brushing pattern The fibers of the brush will remove food debris and microbial plaques from sulcus of gingiva but may be due to uni-directional movement which debris at interdental area, pits and fissure area and more or less at cervical area may not be removed. This plays a major role in initiation of the disease. And moreover it causes injury to the gingiva which adds up to the inflammation.

Cleaning material: In the present study it is observed that 93.8% of patients were using tooth paste while remaining was using tooth powder. The importance of cleaning material is to prevent gums and teeth from microbes.

Frequency of Teeth Cleaning: In this study we found 84.4% were cleansing teeth once and 15.6% patients were cleaning teeth twice. This indicates that less frequency in brushing causes more susceptibility to disease of teeth and gums.

Lakshanas: All the Lakshanas of *danta Sarkara* were observed in all 30 patients either in mild, moderate or severe degrees. Highly significant reduction in signs and symptoms like *danta* shoola, *Danta*moola shotha, *Krishnata*, *danta* harsha were observed in Group A than Group B patients.

DISCUSSION ON PROCEDURES

Probable Mode of action of *yava kshara Pratisarana*

Yavakshara choorna *pratisarana* used in the management of *danta Sarkara* is having *Ushna, Tikshna Guna* and *ksharana* properties which cause Lekhana *Karma* on *datamamsa* and *ruchkasthi*. Thus the recurrence rate of dental plaques was minimum seen in the patients treated with *yava kshara* formulation is mainly due to its scrapping effect, which may help in control over the *danta Sarkara* formation.

In Group B the *lakshanas* did not increase in severity, rather *lakshanas* like *dourgandhya, Chalatva* remains same. This may be due to the ultra-modern dental scaling followed by maintaining proper oral hygiene and brushing techniques which helps in avoidance of recurrence of *danta Sarkara* in patients.

The above mentioned choorna is mixed with water and massaged over the gums.

Pratisarana mainly possess 2 types of therapeutic efficacy:

1. *Shodhana* (Cleansing) and *Ropana* (Healing).
2. Pseudo-inflammatory reaction.

Vrana Shodana (Debridement) and Vrana Ropana Action:

By *pratisarana* mechanical pressure is exerted on teeth surface as well as gingiva in the direction of sulcus which removes food debris, plaque, nerotic tissue remnants, inflamed granulation tissue and bacterial colonies too.

Pseudo-inflammatory reaction:

Pratisarana will have constant irritation to the gingival tissues there by it produces pseudo-inflammatory reaction on tissues and in turn it may cause altered permeability of the blood capillaries. Due to this altered permeability of the vessels there will be a supportive atmosphere to the active principles of the drugs to gain access into the local vasculature. Thus producing the desirable effect that which controls the inflammation of gingiva caused by severity of calculus.

Benefits of *Pratisarana*: By the action of *pratisarana* with yava kshara, as it holds *Ushna Tikshna guna* Gingival Crevicular Fluid production is increased by gingival massage which is done in *Pratisarana*. This crevicular fluid promotes bacterial diffusion into the tissues as it has phagocytic leukocytes, specific anti-bodies & enzymes of several specificities. Gingival massage produces epithelial thickening increased keratinization and increased mitotic activity in the epithelium and connective tissue. *Pratisarana* also promotes salivation which brings about faster cure.

Probable Mode of action of *Yastimadhu ksheerapaka Gandusha*

Gandusha is *Sthanika Chikitsa* and its action can be understood under two headings,

1) Local action 2) Systemic action

1) **Local action:** *Gandusha* has many local actions they are as follows

Increases local defense mechanism, enhancing both mechanical and chemical digestion of food that starts in the mouth, removes the metabolic wastes (urea and uric acid), Soothing effect, strengthening of muscles of oral cavity.

The action of *Gandusha* (holding mouthful of liquid) exerts increased mechanical pressure inside the oral cavity. So this increased pressure stimulates press receptor (stretch reflex) that is present in the mouth. Once the press receptor is stimulated they send signals to salivary nuclei in the brain stem (pons and medulla). As a result para sympathetic

nervous system activity increases and motor fibres in facial (VII) and glossopharyngeal (IX) nerve trigger dramatically increased output of saliva.

The enzyme salivary amylase in saliva and lingual lipase secreted by lingual gland initiates digestion of CHO and fat respectively. *Gandusha* may increase secretions of these enzymes.Excessive salivary secretion, which predominantly contains water, removes metabolic wastes present in oral cavity. Some of dravya used for *Gandusha* like *Yastimadhu* has anti-inflammatory and anti-ulcerative action thus prevents gingiva from physical and chemical injury.

The action of *Gandusha* gives proper exercise to the muscles of Cheeks, Tongue, Lips and Soft palate there by increasing the motor functions of these muscles.

2) Systemic action: Mucosal layer inferior to the tongue (sublingual) is thin and highly vascular enough to permit the rapid absorption of the lipid soluble drugs into systemic circulation. Some of the drugs irritates the oral mucosa (by their chemical nature) and increases vascular permeability. Thus an active principle of drug gets absorption in systemic circulation. Most of the *Dravyas* given for *Gandusha* are warm (*Sukoshna*), so raised temperature may cause the increased vascular permeability thereby enhancing systemic absorption of drugs.

Gandusha also has an advantage in the following aspects. It can be popularized as one among the routine procedure in daily regimen (*Dinacharya*).

1. Mode of procedure: *Gandusha* is very simple procedure which does not require any expert observation and can be performed at any place. Its *Atiyoga Lakshana* are also not that much complicated

2. Economical: Yoga explained for the *Gandusha* are easily available.

3. Time saving.

4. More acceptable: As compared to other procedures like *Abhyanga* and *Matra Basti Gandusha* is most acceptable because of less number of pre and post procedures.

5. Efficacy rate: The quantity of *Dravya* used for the *Gandusha* is very little; even then its action is appreciated satisfactorily.

Probable Mode of action of drugs : Medicinal plants are of great importance to the health of individuals and communities. The medicinal value of these plants lies in the properties that produce a definite physiological action on the human body. The most important of these bioactive constituents of plants are triterpenoid saponin, flavonoids, tannins, alkaloids, phenolic compounds.

Probable mode of Action of yava:*Yava* is having *madhura* and *Kashaya rasa, mrdhu* and *ruksha guna, sheeta Virya* and *madhura Vipaka*. By the virtue of above qualities it may does the *kapha-vata Shamana, ama pachana, rakta shodana, Vrana Ropana and kledohara* effects.*Yavakshara* is considered as superior and best among other *Kshara* (alkali). *Yava kshara* is *Katu rasa in taste* and *Katu Vipaka, Ushna Virya, Vata, Kaphaghna* in action. *Ushna Tikshna Guna* of *Yavakshara* causes *Stroto vivaran* & *Strotoshodhana*. The constituents of the *yava kshara* have the property of *kapha pitta shamaka* and on *shareera* it is having *lekhana, shodhahara, Vrana Ropana, Medohara, Varnya, Balya and Abhisyandi* properties. So the *lekhana* action of *yava kshara* may have an important role in management of *danta Sarkara*, because it

hardly supports the recurrence of plaque on dental surfaces. As *yava* is having shodhahara property it may also plays a role in the prevention of recurrence of inflammation in the gingiva caused by dental calculus.

Studies have revealed that *yava kshara* have a pH value of 4.74 in 10% solution and also good percentage of potassium and traces of sodium. Potassium content in *yava kshara* may works in reducing hyper sensitivity caused by dental calculus and also works by strengthening the enamel and thus reduces the chance of formation of plaque.

The presence of sodium traces proved to absolutely prevent all destructive periodontal diseases and also cleanses the teeth surface so as to prevent the chance of plaque formation. Potassium nitrate and sodium bicarbonate are becoming the major ingredients in many leading tooth paste brands. *Yava kshara* c an be made as an alternate for tooth paste as it possesses the above mentioned properties, as well as cost effective when comparing to other market products.In my clinical trials it is observed that the *pratisarana* with *yava kshara* which is mixed with water showed the potent effect in the treatment of *danta Sarkara* by reducing the symptoms like *danta* shoola, *danta*moola shotha, *danta harsha* and *Krishnata*.

Probable mode of Action of *Yastimadhu*:*Yastimadhu* is having madhura rasa, anurasa of *Kashaya*, *guru* and *snigdha guna*, *sheeta Virya* and *madhura Vipaka*. By the virtue of above qualities it does the *kapha-pitta Shamana*, *sophanashaka*, *sotha nashaka*, *Vrana Ropana*, *bala-varnakritha*, *Raktapittagna* and *balya* effects. Some references were quoted as *Yastimadhu* is having *vata pitta shamaka* action. Because of the *Kashaya gunatva* of *Yastimadhu* it helps in teeth to be intact.

Yastimadhu contains glycyrrhizin which is having anti-inflammatory action and the action of *Gandusha* (holding mouthful of liquid) exerts increased mechanical pressure inside the oral cavity and thus provides a direct contact of medicine into the surface, mainly inflamed gingiva by dental calculus.

Yastimadhu in the form of *ksheerapaka* may help in pittahara actions like inflammation of the gums, along with pain and sensitivity by dental calculus. *Yastimadhu* which is having *guru guna* and *rukshatva* are neutralized by adding it with milk and also milk's property to increase the lipids in blood is also neutralized. It is noted that patients have affection towards the taste of *ksheerapaka*.

CONCLUSION:*Nidana* explained in Ayurvedic treaties seems to be initiating or precipitating factor for *danta Sarkara*. The following conclusions were drawn after considering the clinical aspects and theoretical facts.

Overall assessment of the results showed that the patients of group A who were treated with hand scaling along with *yava kshara pratisarana* and *Yastimadhu ksheerapaka Gandusha* showed 100% good response, whereas Patients of Group B who were treated with modern ultra-sonic scaling followed by proper oral hygiene aids showed 80% good response, 20% Moderate response and 0% Mild response. There were mild increases in the symptoms like discoloration and sensitivity with no complications observed during the study in group B. It can be concluded that the total significance level of patients in Group A is statistically better

than the significance level of patients seen in Group B.

Pratisarana with *yava kshara* seems to be good measure to decrease the severity of the disease immediately and to control the pathology because of scrapping action of *yava kshara* on the plaque build ups. *Gandusha* have a remarkable effect in the management of sensitivity after the removal of *danta Sarkara.* Drug like *Yastimadhu* have significant anti-microbial activity, plaque inhibition effect, anti-inflammatory, hemostatic, antioxidant action. Kashaya rasa of *Yastimadhu* helps to gain *sthiratha* of the gums and thus helps in reducing mobility of teeth.

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