

**ROLE OF MEDICINAL PLANTS IN ORAL HYGIENE -A REVIEW**

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**ABSTRACT**

Plants always play major role in the treatment of several diseases in different way. Number of plants have been experimented for their medicinal properties and hence has gained good reputation in the field of Ayurvedic, herbal and in naturopathy. The aromatic medicinal plants known for their fragrance are utilized in aromatherapy. Moreover, different researchers have reported their valuable researches about remarkable properties of plants against different diseases. Considering this all the present work is review approach to enlist the herbs for oral hygiene. Plants play their role for oral hygiene by

different ways i) as mouth ii) as gargle ii) as gum paints and so many.

**KEYWORDS:** plants, Role, fragrance, Oral. Hygiene.

**INTRODUCTION**

Oral health is an integral part of general health. Poor oral health reflects social inequalities hence the prevention of oral diseases should be the priority of developed and under developed countries around the world. India is a large country with a mixture of various cultures and traditions, with a large amount of disease burden including dental caries and periodontal diseases.<sup>[1]</sup> Teeth are very precious organ of the body, governing lot of functions like chewing, speech control, giving shape to the mouth and the most important of all is to maintain the beauty of the face, once they are destroyed, they cannot regrow.<sup>[2]</sup> Access to oral health care is essential to promoting and maintaining overall health and well-being. When individuals are able to access oral health care, they are more likely to receive basic preventive services and education on personal behaviors. They are also more likely to have oral diseases detected in the earlier stages and obtain restorative care as needed. In contrast, lack of access

to oral health care can result in delayed diagnosis, untreated oral diseases and conditions, compromised health status, and, occasionally, even death. Unfortunately, access to oral health care eludes many Americans.

## Ginger

Ginger is the dried rhizome of *Zingiber officinale* belonging to family Zingiberaceae.

### Chemical Constituents

Ginger consists of volatile oil (1-4%), starch (40-60%), fat (10%), fiber(5%), inorganic material (6%), residual moisture (10%) and acrid resinous matter (5-8%). Ginger oil is constituted of monoterpene hydrocarbons, sesquiterpene hydrocarbons, sesquiterpene hydrocarbons and phenyl propanoides. Sesquiterpene hydrocarbons content of all type of ginger oil from different countries is found to be same and includes  $\alpha$ -zingiberene,  $\beta$ -bisabolene,  $\alpha$ -farnesene,  $\beta$ -sesquiphellandrene and  $\alpha$ -curcumene. Aroma and flavour are the main character of ginger. Aroma is due to fragrant principles of volatile oil while the flavour, pungency and pharmacological action is exerted by phenolic ketones of oleo-resin.<sup>[3]</sup>

### Uses

1. It is used to relieve toothache, as a sialogog, In the treatment of oral thrush.
2. Ginger may reduce the toxic effect of the chemotherapeutic agent cyclophosphamide.
3. It should not be used in pregnancy and patients with the biliary disease. Because ginger can interfere with blood clotting, it should be used cautiously in patients an anticoagulant therapies such a Coumadin or heparine.<sup>[4,5,6]</sup>

### Marketed Formulation

1. It is the one ingredient of the Natural Toothgel Ginger .
2. It is the one ingredient of the Botot Toothpaste.
3. It is the one ingredient of the Marvis Toothpaste.
4. It is the one ingredient of theDantKanti Toothpaste.
5. It is the one ingredient of the Crest Pro.Health Toothpaste.
6. It is the one ingredient of the Herbodent Toothpaste.

## Aloe Vera

Aloe vera is a leaves of plant *Aloe barbadensis* (Liliaceae) used in several cosmetology and as medicine. The main use of the plant for oral hyiegne is here under.<sup>[7,8,9,10]</sup>

Toothpick injuries,	Gingivitis,	Popular dermatitis
Gum abscesses,	Painfully inflammation	(topical gum abscesses
Denture sore mouth,	and	application).

### Marketed Formulation:

1. It is the one ingredient of the Aloe Dent Toothpaste .
2. It is the one ingredient of the Bright Aloe Vera Toothgel.
3. It is the one ingredient of the Bioactive Aloe Vera Toothpaste.
4. It is the one ingredient of the Natural Aloe Vera Toothpaste.

### Caraway

Caraway is a dried fruit of *Carum carvi* (Umbelliferae).

### Uses

- a) Some of the properties of caraway include antihistaminic, antimicrobial, antiseptic, expectorant, anti-inflammatory, spasmolytic, flavoring agent.
- b) Literature has documented its use in gingivitis, periodontal disease, but definite evidence is lacking.
- c) Caraway is not used in children under 2 years of age. Some of the adverse effects reported are irritation of the skin and mucous membrane.<sup>[11]</sup>

### Market product

FDgaurd<sup>R</sup>-medicinal food for dietary management of functional dyspepsia.

Black seed oil (caraway+Fennel+ black seed)

Caraway essential oil by esoteric oils.

Caraway is an ingredient of Relaxing oil by purity herbs.

Caraway seed essential oils by Peen Herbs co.Ltd.

Ananda<sup>R</sup> Caraway seed essential oil.

### Haritaki

It is a full matured fruit of *Terminalia chebula* ( Comeritaceae)

### Chemical Constituents

Myrobalan fruits are an important source of tannin. The approximate analysis of the fruits is as follows.

Moisture- 10%; Tannin-25 to 32%

Water-insoluble matter-40 to 50%.

The tannins of myrobalan are of pyrogallol type, which on hydrolysis yield chebulic acid and d-galloyl glucose. Chebulagic, chebulinic, ellagic and gallic acid are the other contents of myrobalan. Myrobalan also contains glucose and sorbitol (about 3.5%).

1. Uses- It is used in the treatment of dental caries, bleeding and ulcerated gums.
2. Contraindicated in children under 12 years, pregnant and lactating women.
3. Daily dosage: 3-9 g of crude drug for decoction In divided doses [12].

### Market Formulation

- a. Haritaki is an ingredient of Triphala churna along with Amla and Behra.
- b. Ayurvedic formulations-  
Abhayarista; Agastya haritaki rasayana; Citraka. haritaki; Danti haritaki; Dasamula haritaki; Brahma rasayana; Triphala churna.

### Tulsi

**Botanical Name:** Tulsi is fresh leaves *Ocimum sanctum* (Labiatae).

### Chemical Constituents

Tulsi leaves contain bright, yellow coloured and pleasant volatile oil (0.1 to 0.9%). It contains approximately 70% eugenol, carvacrol 3% and eugenol-methyl-ether 20%. Seeds contain fixed oil with good drying properties.

The plant is also reported to contain alkaloids, glycosides, saponin, tannins, an appreciable amount of vitamin C and trace of maleic, citric and tartaric acid.

### Uses

1. It has got antihelminthic, analgesic, antipyretic, immune stimulatory, antimicrobial, anti-inflammatory property.
2. Used in periodontitis.
3. Contraindicated in pregnant and lactating women, used with caution in children [13,14].

### Market formulations

1. Tulsighanvatti
2. Tulsipanchng juice
3. Neem and Tulsi

**Babool**

Babool is bark, pods, flower, gum, leaves and roots of *Acacia arabica* or *Acacia nilotica* (Mimosaceae)

**Chemical Constituents**

Gallic acid, protocatechuic acid and leucocyanidin isolated from pods. Gum is slightly dextro-rotatory, unlike the true gum arabic from A. Senegal. Gum constituents: galactose, I-arabinose, I-rhamnose and 4 aldobiouronic acids, arabinobioses. Bark, several polyphenols. Bark from Egypt, higher tannin content (27%) than that from India, 30 phenolics from tanning extracts. Pods contain gallic acid and its Me-ester-digallic acid and 2 condensed tannins. Root bark, octacosanol, betulin,  $\beta$ -amyrin and  $\beta$ -sitosterol, heartwood.

**Uses**

1. It is recommended in any kind of mouth related ailments.
2. Flowers, pods and gum-resin used as tonic in diarrhea and dysentery.
3. Paste of burnt leaves effective ointment in itch.
4. It is various plant parts used in hair-fall. Earache, syphilis, cholera, dysentery, leprosy and rinderpest roots and trunk paste to heal wounds.
5. Babool bark is popularly used for oral and dental hygiene. In fact, in the earlier days, people used to chew on piece of this bark to strengthen their teeth and gums [15,16].

**Market formulation-** Mrtasanjivani Sura, Babbularista (Ayurvedic) Babool Toothpaste<sup>R</sup>.

**Peppermint**

**Part Used:** Steam and fresh flowering tops

**Botanical Name:** *Mentha piperita*

**Family:** Labiatae

**Description of peppermint**

**Colour:** Green to dark green and peppermint oil colourless to yellow, Steam are purple.

**Odour:** Aromatic, characteristic and pleasant.

**Taste:** Aromatic ( but not followed by cooling sensation as in peppermint), leaves are sessile, flowers are arranged in spikes and pungent followed by cooling sensation.

### Chemical Constituents

Peppermint oil contains chiefly l-methanol to the extent of 70% in free, as well as, in the form of ester, depending upon variety (like American, Japanese, India). Other important constituents of the peppermint oil are menthone, menthofuran, jasmone, methyl isovalerate, methyl acetate and several other terpene derivatives. Jasmone and ester are responsible for pleasant flavour, while menthofuran causes resinification and develops dirty smell.

### Uses

1. It is used in toothpaste, tooth powder.
2. It is analgesic and also has muscle-relaxing action. Peppermint oil application for toothache by soaking a cotton ball in the oil and placing it in the cavity or rubbing it on the tooth.

Avoided by people with severe liver damage, inflammation of the gallbladder or obstruction of bile ducts. Adverse effects reported are burning and gastrointestinal upset, skin rashes, headache, heartburn, perianal burning, bradycardia, muscle tremors and ataxia.

### Turmeric

**Part Used:** Fresh rhizomes

**Botanical Name:** *Curcuma longa*

**Family:** Zingiberaceae

### Macroscopic Characters

**Colour:** Yellowish –brown in colour and The fracture is horny and internal surface is orange.

**Odour:** Characteristic

**Taste:** Slightly bitter

**Size:** Round turmeric rhizome are oblong, while long variety is cylindrical and short branched. Root scars and annulations are present.

### Chemical Constituents

Turmeric include volatile oil (6%) composed of a number of monoterpenes and sesquiterpenes, including zingiberene, curcumin,  $\alpha$ - and  $\beta$ -turmerone among others. The colouring principles (5%) are curcuminoids, 50-60 of which are a mixture of curcumin, monodesmethoxy curcumin and bisdesmethoxy curcumin.

**Uses**

1. It is used in dental caries, oral lichen planus, gingivitis, halitosis, pit and fissure sealant, dental plaque detection system.
2. It is antimutagenic, anticarcinogenic, antioxidant, antibacterial.
3. Massaging the aching teeth with roasted, ground turmeric eliminates pain and swelling<sup>[17]</sup>.

**Neem**

**Part Used:** Aerial parts

**Botanical Name:** *Azadirachta indica*

**Family:** Meliaceae'

**Macroscopic Characters**

**Colour:** Green in colour leaves and brown in colour bark, Internally starchy white.

**Odour:** Laminated with characteristic smell of neem.

**Taste:** Bitter in taste.

**Shape:** Imparipinnate leaflets 20-25cm length lanceolate closely clustered towards the ends of branches.

**Chemical Constituents:** Neem consists of genin, sodium nimbinate, salannin, nimbin, azadirachtin, nimbiol, quercetin and nimbidin. Neem leaves contain fiber, carbohydrates and at least 10 amino acid proteins, calcium, carotenoids, fluoride.

**Uses**

1. Neem has antiviral, antifungal, antimicrobial, antibacterial, antipyretic, anti-inflammatory, antitumor, analgesic, antihelminthic, anticariogenic, antioxidant activity.
2. It is used in the treatment of dental caries, gingivitis, periodontitis.
3. Dosage-Infusion (1:20):15-30 ml; Tinctur (1:5): 4-8 ml. External applications: 70% ethano extract of the leaves diluted to 40%, apply twicedaily<sup>[18]</sup>.

**Liquorice**

**Part Used:** Peeled or unpeeled, root and stolon

**Botanical Name:** *Glycyrrhiza glabra*

**Family:** Leguminosae

**Macroscopic Characters**

**Colour:** Unpeeled-yellowish –brown or dark brown externally, and yellowish internally, while the peeled liquorice is pale yellow in colour.

**Odour:** Faint and characteristic.

**Taste:** Sweet.

**Size:** Length 20 to 50 cm and 2 cm in diameter.

**Shape:** Cylindrical pieces which are straight may be peeled and unpeeled. Peeled liquorice is angular.

**Fracture:** It is fibrous in the bark and splintery in wood.

### Chemical Constituents

Major components in liquorice are triterpene saponins, glycyrrhizin (is the major component (2-9%)); minor components occur in proportion that vary depending on the species and geographical location. Glycyrrhizin occurs as a mixture of potassium and calcium salts. Flavonoid constituents include liquiritigenin and isoliquiritigenin.

### Uses

1. It has antimicrobial, anti-inflammatory and antiviral activity and used in dental caries.
2. Contraindicated in patient with hypertension, cholestatic disorders or cirrhosis of the liver, hypokalemia, or chronic renal insufficiency, and during pregnancy.
3. Some of the adverse effects reported are pseudo aldosteronism, which includes potassium depletion, sodium retention, edema, hypertension, and weight gain.

### Marketed Formulation

1. It is the one ingredient of the Vicco vajradanti Toothpaste<sup>R</sup>.
2. It is the one ingredient of the Auomere Toothpaste<sup>R</sup>.
3. It is the one ingredient of the Natural Propolis Toothpaste<sup>R</sup>.
4. It is the one ingredient of the Meswak Toothpaste<sup>R</sup>.

### Clove

**Part Used:** Flower buds

**Botanical Name:** *Eugenia caryophyllus*

**Family:** Myrtaceae

### Macroscopic Characters

**Colour:** Crimson to dark brown.

**Odour:** Slightly aromatic.



**Taste:** Pungent and aromatic followed by numbness.

**Size:** About 10 to 7.5 mm in length, 4 mm in width and 2 mm thick.

**Shape:** Hypanthium is surmounted with 4 thick acute divergent sepels surrounded by dome shape corolla. The corolla consist of unexpanded membranous petal with several stamens and single stiff prominent style. Cloves are heavier than water.

### Chemical Constituents

Clove consists of essential oil, eugenol, eugenol acetate and  $\beta$ -caryophyllene, volatile oil(15 to 20%), tannin (10 to 13%), resin, chromone. Oil of clove is colourless to pale yellow in colour. It becomes thick and darker in colour on stronge.

### Uses

1. Clove is used as a dental analgesic, carminative, stimulant, flavouring agent an aromatic and antiseptic.
2. It has been used to relieve toothache, in periodontitis, as an anesthetic and also to treat bleeding gums.
3. Clove oil helps in the reduction of amount of plaque deposition on oral hard tissues.
4. It is available as a tincture (1:5, 25% ethanol), lozenges and mouthwash.

### Marketed Formulation

1. It is the one ingredient of the Dabar Red Toothpaste <sup>R</sup>.
2. It is the one ingredient of the Babool Toothpaste <sup>R</sup>.
3. It is the one ingredient of the Herbal Colgate Toothpaste.

### CONCLUSION

By knowing the importance of above studied drug it bbecome clear that extracts from these drugs can be studied for more effective formulation for oral health.

### REFERENCES

1. M. Rajmohan et al. Awareness on oral health among Ayurveda and Siddha practitioners in Chennai, T.N. A questionnaire study., 2012; 20(2): 43-48.
2. MakulMansuri et al. A clinical study on krimidanta with reference to dental caries and its management with jatipatradigutika and yavanadichurna. Jr. of Ayurveda., 2010; 31(2): 223-227.

3. Kokate C.K, Purohit A.P, Gokhale S.B, Published by Nirali Prakashan, pharmacognosy Volume-1 and Volume-2, 46<sup>th</sup> edition. 181-186. 395-397.
4. WHO Monographs on Selected Medicinal Plants. Available from: [http://www.who.int/medicine\\_docs/en/d/20.html](http://www.who.int/medicine_docs/en/d/20.html) 1999;1,
5. Sudarshan GR, Vijayabala S. Role of ginger in medicine and dentistry - An interesting review article. Southeast Asian J Case Rep Rev., 2012; 1: 66-72.
6. Oswal R, Charantimath S. Herbal therapy in dentistry: A review. Innov J Med Health Sci., 2011; 1: 1-4.
7. Taheri JB, Azimi S, Rafieian N, Zanjani HA. Herbs in dentistry. Int Dent J., 2011; 61: 287-96.
8. WHO Monographs on Medicinal Plants Commonly used in the Newly Independent States. Available from: [http://www.apps.who.int/medicine\\_docs/en/m/abstract/Js17534en](http://www.apps.who.int/medicine_docs/en/m/abstract/Js17534en).
9. Wynn RL. Aloe vera gel: Update for dentistry. Gen Dent., 2005; 53: 6-9.
10. Alternative Medicine Aloe vera is Good for Teeth and Gums, Too. Available from: <http://www.knowyourteeth.Com>.
11. Taheri JB, Azimi S, Rafieian N, Zanjani HA. Herbs in dentistry. Int Dent J., 2011; 61: 287-96.
12. WHO Monographs on Selected Medicinal Plants. Volume 4. Available from: [http://www.apps.who.int/medicine\\_docs/en/m/abstract/Js16713](http://www.apps.who.int/medicine_docs/en/m/abstract/Js16713).
13. Guidelines on Developing Consumer Information on Proper Use of Traditional, Complementary and alternative medicine. Available from: <http://www.who.int/medicinedocs/en/d/Js5525/10.html>.
14. Kukreja BJ, Dodwad V. Herbal mouthwashes: A gift of nature. Int J Pharma Bio Sci., 2012; 3: 46-52.
15. Taheri JB, Azimi S, Rafieian N, Zanjani HA. Herbs in dentistry. Int Dent J., 2011; 61: 287-96.
16. Kamat S, Rajeev K, Saraf P. Role of herbs in endodontics: An update. Endodontology., 2011; 23: 98-102.
17. Chaturvedi TP. Uses of turmeric in dentistry: An update. Indian J Dent Res., 2009; 20: 107-9.
18. Kukreja BJ, Dodwad V. Herbal mouthwashes: A gift of nature. Int J Pharma Bio Sci., 2012; 3: 46-52.