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Review Article

Role of Clove, Piper nigrum, Curcuma longa and Savory in Dentistry: A Boon in Herbal Usage

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Abstract

Ayurvedic Medicine is a system of traditional medicine native to India and a form of alternative medicine. In Sanskrit, word Ayus, means "longevity", and Veda, means "related to knowledge or science". In dentistry, herbal medicine has been used as anti-inflammatory, antibiotic, analgesic, sedative agents, analgesics, astringents, edema-reducing, soothing and healing accelerating agents. There is an urgent need for a use of Evidence Based Herbal Medicine and the efficacy and safety of herbal remedies. So the aim of this article is to review Clove, Piper nigrum, Curcuma longa, Savory Extracts and their effects and their clinical implications in Dentistry.

Keywords: *Herbs; Dentistry; Ayurveda*

Introduction

Dental sciences in India are as old as the Vedas and Puranas. Ayurveda is the name which the ancient Indians gave to their sciences of medicine. Ayurveda is the science by the knowledge of which life expectancy can be prolonged or its nature is understood [1]. It is an ancient healing system that originated in India more than 5,000 years ago and relies on herbs for maintaining good health. Vedic philosophy believes that human beings are all part of nature and there is connection between the universe and human beings [2].

Herbs, botanically speaking are any plant that lacks the woody tissue characteristic of shrubs or trees [3]. According to WHO, Herbal medicine is defined as plant derived material or preparation which contains raw or processed ingredients from one or more plants with therapeutic values. It is a comprehensive system, which uses various remedies derived from plants and their extracts to treat disorders and to maintain good health [4].

In dentistry, herbal medicine has been used as anti-inflammatory, antibiotic, analgesic, sedative agents, analgesics, astringents, edema-reducing, soothing and healing accelerating agents [5]. With herbal, homeopathic remedies and holistic or alternative medicine gaining increasing popularity among the public, as dental practitioners we face a responsibility to explore and understand these products and extrapolate their implications on our current patient management strategies [6]. There is an urgent need for a use of Evidence Based Herbal Medicine and the efficacy and safety of herbal remedies [4]. So the purpose of this article is to review various Herbal Extracts and their effects and their clinical implications in Dentistry.

Phytotherapeutic substances are generally classified into three groups [7]:

1. Plant products
2. Animal products
3. Mineral origin

In dentistry they are used as:

1. Antimicrobial: *Matricaria chamomile, Salvadora persica, Azadirachta indica*.
2. Anti-inflammatory: *Plumeria acuminate, Kalanchoe Brasiliensis*, Guaco, Propolis.
3. Sedative and Anxiolytics: *Melissa officinalis, Passiflora incarnata, Piper meythsticum*
4. Miscellaneous: Endodontic irrigants, medicaments and endodontic retreatment.

Role of clove, Piper nigrum, Curcuma longa, savory herbs in dentistry

Clove (Laung) (*Syzygium aromatium*)

Cloves (*Syzygium aromaticum*) are an unopened flower bud from an Indonesian tree.

Botanical Name- *Eugenia caryophyllata, Caryophyllus aromaticus, Syzygium aromaticum* [8]

Common Name in Hindi - Laung

Common Name in English- Clove

Figure 1: *Clove Plant.*

Distribution: *Syzygium caryophyllatum* is one of the species that has been categorized as endangered tree species under the international nature for conservation of nature (IUCN) red list of threatened species [9]. Syzygium is a genus of flowering plants comprising of about 1200 species, having a native range in tropical Africa, subtropical to tropical Asia, Australia, New Caledonia, New Zealand, Pacific islands. 80 species are reported from China and more than 75 species from India [10].

Composition: The Essential oil comprises in total 23 identified constituents among them the main components are:

Eugenol - 76.8%

Beta-caryophyllene - 17.4%

Alpha-humulene -2.1%

Eugenyl acetate - 1.2%

A kilogram (2.2 lbs) of dried buds yields approximately 150 ml (1/4 of pint) of Eugenol.

Eugenol can be toxic in relatively small quantities-as low as 5 ml [11].

Figure 2: *Cloves.*

Medicinal Uses

- The dried flower buds of an East Indian evergreen tree, cloves are popularly used as a spice [11].
- They also yield a volatile oil used medicinally and in perfumes [12].
- Cloves have antiemetic properties and are used to treat the mouth, stomach, intestines, circulation, and lungs [13].
- With respect to the lipid peroxidation, the inhibitory activity of clove oil determined using a linoleic acid emulsion system indicated a higher antioxidant activity [9].
- It exhibits antidiabetic, antifungal, antihyperlipidemic, and growth inhibitory effects against oral pathogens [9].
- It possesses antihyperglycemic activity, cytotoxic, anti-angiogenic, and anti-nociceptive activity [11].

Dental Uses

Eugenol has pronounced anaesthetic property so when applied to a cavity in a decayed tooth, it relieves toothache [12]. Rubbing of oil of cloves on sore gums and teeth help to ease pain [13]. Eugenol depresses sensory receptors involved in pain perception by inhibiting prostaglandin biosynthesis. Eugenol also inhibits platelet aggregation and thromboxane synthesis [14].

TG neurons were classified into four types on the basis of their neurochemical and electrophysiological properties such as cell size, shapes of action potential (AP), isolectin-B(4) (IB(4)) binding, and were analyzed for the association of their distinctive electrophysiological properties and mRNA expression. It inhibits voltage-gated sodium channel (VGSC) and activates of transient receptor potential vanilloid subtype 1 (TRPV1). Subcutaneous injection of eugenol reduced the thermal nociception and capsaicin-induced thermal hyperalgesia in a dose-dependent manner. Eugenol also diminished digastric electromyogram evoked by noxious electrical stimulation to tooth pulp [15].

At cellular level, eugenol reversibly inhibited APs and VGSCs in IB(4) +/TRPV1+/Na(v)1.8+ nociceptive TG neurons (Type I-Type III) and IB(4)-/TRPV1-/Na(v)1.8- nociceptive TG neurons (Type IV). Both TTX-resistant I (Na) in Type I-Type III neurons and TTX-sensitive I (Na) in Type IV neurons were sensitive to eugenol. So Eugenol can be served as local anesthetics for other pathological pain conditions in addition to its wide use in dental clinic [16].

Chewing of cloves diminishes bad breadth: The microorganisms which cause bad breath are chosen from the group consisting of: *Eubacterium, Fusobacterium, Haemophilus, Neisseria, Porphyromonas, Prevotella, Treponema* and *Veillonella* species. Eugenol acetate present in clove oil is used for inhibiting the growth of microorganisms which cause bad breath and combat bad breath. Eugenol acetate is 4-allyl-2-methoxyphenyl acetate. The clove oils with the highest content of eugenol acetate are the oils which are obtained from the flower buds and which typically contain 75 - 90 wt% eugenol, 4 - 15 wt% eugenol acetate and 5 - 12 wt% beta-caryophyllene [17].

Clove helps to decrease infection due to their antiseptic properties: Eugenol is the most important compound of dianthus Essential oil with strong antibacterial and anesthetic properties. Eugenol shows strong destructive effect on viruses, bacteria, *Saccharomycetes*, moulds and protozoans. A very important characteristic of Eugenol is due to presence of essential oil in it is its activity against microorganisms resistant to synthetic antibiotics. Microorganisms are unable to become resistant to essential oils [18]. The Essential oil also shows significant inhibitory effect against hydroxyl radicals and acts as an iron chelator [19].

Eugenol is added to root canal sealers (Endomethasone, Caryosan), to temporary fillings and to pastes used for direct pulp capping (Caryosan, zinc oxide). It is used in the disinfection of the tooth canals in the treatment of pulp necrosis or as a precipitator while impregnating the dentin with silver nitrate [20].

Ethyl acetate extract of *S. caryophyllatum* has maximum zone of antimicrobial activity against *Staphylococcus aureus* and minimum zone against *Enterobacter faecalis* and antifungal activity effective against *Alternaria alternata*. The zone of inhibition gradually increased on increasing the concentration of the extract [21].

Debjit Bhowmik KP., et al. in 2012 [22] reviewed that Cloves (*Syzygium Aromaticum*) have many medicinal uses and have been most famously applied to toothache, and for mouth and throat inflammation. The clove has been used in India and China, for over 2,000 years, as a spice to check both tooth decay and counter halitosis. The German Commission E Monographs lists cloves as having antiseptic, antibacterial, antifungal and antiviral properties. One of the main constituents of clove oil (eugenol) exhibits broad antimicrobial activities against gram-positive, gram-negative and acid-fact bacteria, as well as fungi Cloves are well known also for their antiemetic and carminative properties. The volatile oil of cloves (about 85 - 92% eugenol) was highly active against a range of test microorganisms, being classified as bactericidal in nature. They concluded that topical uses of clove include application directly to the gum or skin to alleviate dental pain and to reduce inflammation of the mouth and throat areas.

Piper nigrum

Commonly called as Pepper/kali mirch. Often referred to as king of spices [23].
Black pepper (*Piper nigrum*) is a flowering vine in the family Piperaceae [24].

Figure 3: *Peppermint Plant.*

The Word “pepper” is derived from the Old English Word - pipor

Botanical Name- *Piper nigrum* [24]

Common Name in English - Black Pepper

Common Name in Hindi - Kaali Mirch [25]

Chemical Composition [26]:

Peppercorns are composed of

Essential oil – Piperine mainly, an amine alkaloid- gives strong spicy pungent character to it.

Monoterpenes hydrocarbons as – Sabinen, Limonene, Terpenene, Mercene, Pinene,

Peppermint Oil- Peppermint oil is obtained from the leaves of the perennial herb, Mentha piperita L. and M. arvensis var. piperascens a member of the Labiatae family.

Therapeutic Properties of Peppermint [27]	
Therapeutic Property	**Definition**
Analgesic	Relieves pain
Anti-inflammatory	Relieves inflammation
Antibacterial	Inhibits bacterial growth
Antihalitosis	Freshens breath
Antifungal	Inhibits fungal growth
Antimicrobial	Inhibits microbial growth
Antioxidant	Inhibits oxidation

Table 1: *Therapeutic Properties of Peppermint.*

Medicinal Uses

1. Peppers have been in use since ancient times for its anti-inflammatory, carminative, anti-flatulent properties [28].
2. The active components in the pepper may increase the motility of the gastro-intestinal tract as well as increase the digestion power by increasing gastro-intestinal enzyme secretions [29].
3. Piperine can increase absorption of selenium, B-complex vitamins, beta-carotene as well as other nutrients in the food [29].
4. Black pepper corns contain good amount of minerals like potassium, calcium, zinc, manganese, iron, and magnesium. Potassium is in an important component of cell and body fluids that helps in controlling heart rate and blood pressure. Manganese is used by the body as a co-factor for the antioxidant enzyme superoxide dismutase. Iron is essential for cellular respiration and blood cell production [30].
5. They are also an excellent source of many vital B-complex groups of vitamins such as Pyridoxine, riboflavin, thiamin and niacin [31].
6. Pepper corns are rich source of many anti-oxidant vitamins such as vitamin-C and vitamin-A. They are also rich in flavonoid polyphenolic anti-oxidants like carotenes, cryptoxanthin, zea-xanthin and lycopene. These compounds help body remove harmful free radicals and help protect from cancers and other diseases [32].

Uses in Dentistry

- A pinch of pepper powder mixed with clove oil can be put in the caries to alleviate toothache [33]. Fresh crushed leaves can be applied locally to relieve pain. The principal constituent of peppermint oil is Menthol ($C_{10}H_{19}OH$) which is white crystalline substance, has the peppermint odor and produces a sensation of cold in the mouth. Dr. David Julius's lab at the University of California, San Francisco, discovered that Menthol activates cold receptors in our tissues called CMR1 receptors. They have the same structure and way of working like VR1 receptors for sensation of cold and heat (menthol and capsaicin). The function of VRI Receptors is detection and regulation of body temperature.
- Its daily use prevents dental caries, foul breath, bleeding from gums, painful gums. Cayenne pepper (powdered or tincture) Dr. Richard Schulze had 9mm periodontal pockets which he reduced to 2 and 3 mm by using cayenne tincture applied via dental irrigator. Others report brushing their teeth with cayenne powder to good effect e.g. with inflamed and receding gums. The increased blood flow stimulated by the cayenne pepper can firm up and strengthen the gums and turn them a healthy pink instead of a dark red. If the burning sensation is too strong for you, try "diluting" the cayenne with xylitol or soothing herbs. Alternatively, you can follow up the cayenne brushing e.g. with oil pulling which reportedly quickly eases any pain [34].
- Shrivastava Alankar in 2009 [35] reviewed the uses of peppermint. He reviewed that the external usage of peppermint oil gives relief from pain. The existence of calcium antagonism in peppermint oil helps in removing the pain. A mouthwash with peppermint oil included can help with bad breath and gum infections. He concluded that it is a well-known and important medicinal plant widely used in several indigenous systems of medicine for various therapeutic benefits viz. analgesic, anesthetic, antiseptic, astringent, carminative, decongestant, expectorant, nerve stimulant, stomachic, inflammatory diseases, ulcer and stomach problems.
- Bryan Raudenbush in 2004 [36] observed a significant analgesic effect and a reduction in sensitivity was produced by a combination of Peppermint oil and Ethanol. He found that the external application of peppermint extract raised the pain threshold in humans.

Curcuma longa

Botanical Name: *Curcuma longa* [37]
Common Name in Hindi: Haldi
Common Name in English: Turmeric

Figure 4: *Turmeric Plant.*

Curcuma longa is a perennial herb that has been revered as food and medicine for thousands of years. Having a long history of use for its anti-inflammatory effects, it has been used extensively in India and Chinese systems of medicine. Turmeric is also the most commonly used herb in Indian cooking [38].

The genus name *Curcuma* is from an Arabic word "kurkum," meaning "saffron," in reference to the color of turmeric. The actual word "turmeric" is from Medieval Latin, terra merita, meaning "deserving earth" [39].

Its Botanical Name is *Curcuma longa*. It belongs to family Zingiberacae (Ginger).

Its common name in English is Turmeric and in Hindi it is known as Haldi [37].

The plant originates from Asia and is widely grown and used in India. South Asians have used turmeric for its medicinal purposes for centuries and it has become integrated into spiritual life as a symbol of protection and purity. Turmeric acts as a powerful healing tool because of the phytochemicals it contains. The main phytochemical in turmeric is curcumin [40].

Useful part- Rhizomes, always used in dried powdered form.

Chemical Composition [41]

The active constituent of Turmeric is Curcumin for its pharmacological activities. Chemically curcumin is diferuloylmethane.

Figure 5: *Ginger and Haldi Powder.*

Medicinal Uses

- **Anti-Oxidant Action**s: It has strong anti-oxidant action and protects the body against the free radical damage [42].
- **Anti-Inflammatory Action:** It reduces inflammation by lowering histamine levels and by increasing the production of natural cortisone by the adrenal glands. Curcumin is also useful for reducing inflammation and symptoms such as pain and stiffness in the joints. Turmeric in diet may prevent pain from arthritis, bursitis and tendonitis. A separate double blind clinical trial found that curcumin was superior to placebo or phenylbutazone (NSAID) for allieviating post-surgical inflammation [5]. Oral curcumin supplementation for chronic anterior uveitis (inflammation of the iris and middle coat of the eyeball) [43].
- **Anti-Atherosclerotic Action:** It protects the platelets from clumping together, which in turn improves circulation and may help protect against atherosclerosis [44].

- **Antimutagenic Action:** It prevents new cancers that are caused by chemotherapy or radiation used to treat existing cancers. It effectively inhibits metastasis (uncontrolled spread) of melanoma (skin cancer cells) and may be especially useful in deactivating the carcinogens in cigarette smoke and chewing tobacco [45].
- **In otorrhoea:** In the ear that has chronic discharge of otorrhoea, Turmeric powder is mixed with alum powder in a proportion of 1 to 20 and is blown into it, gives relief [46].
- Curcumin inhibits HIV in test tubes, though human trials are needed to determine if it has any usefulness for treating humans with this condition [47].
- **For Indigestion:** Turmeric in diet increases the production of enzymes that digest fats and sugars and stop cholesterol from forming gallstones, Therefore it is also helpful for people with indigestion [48].
- **For Topical Application:** When applied to the skin and exposed to sunlight, turmeric is strongly antibacterial. It can be used for parasitic infections. Fresh juice from rhizome or a paste prepared from turmeric or decoction can also be used as a local application. It can also be used internally in the treatment of leprosy, snakebite. In case of smallpox and chickenpox turmeric is applied as a powder or as a paste to facilitate the process of scabbing [49].

Mechanism

The anti-inflammatory effects of curcumin are thought to be due to its ability as an antioxidant to quench free radicals, hindering tissue degeneration and its ability to inhibit the Arachidonic acid (AA) cascade. Curcumin has been shown to be a dual inhibitor of AA metabolism since it inhibits both the enzymes lipo-oxygenase and cyclooxygenase-2. Laboratory studies have identified a number of different molecules involved in inflammation which are inhibited by curcumin, including phospholipase, leukotrienes, thromboxane, prostaglandins, nitric oxide, collagenase, elastase, hyaluronidase, monocyte chemotactic protein–1(MCP-1), interferon–inducible protein, tumour necrosis factor (TNF), and interleukin-12 (IL-12). Thus, it may exert its anti- inflammatory activity by inhibition of a number of different molecules that play a role in inflammation. It has been shown that curcumin suppresses the expression and activation of nuclear factor kappa B (NF-KB), and thus cause down regulation of MMP-9 activity [50].

Dental Applications of Turmeric

- Massaging the aching teeth with roasted, ground turmeric eliminates pain and swelling [51,52].
- Rinsing the mouth with turmeric water (boil 5g of turmeric powder, 2 cloves and 2 dried leaves of guava in 200g water) gives instant relief from pain [53]. The curcumin in the turmeric inhibits the activity and the creation of two enzymes that cause inflammation, COX2, cyclooxygenase and 5-LOX, 5-lipooxygenase. The reduction of the inflammation helps bring about relief from pain.
- Applying the powder of burnt turmeric pieces and bishop's weed seed on teeth and cleaning them makes the gums and teeth strong [54]. Curcumin's potent antioxidant powers repair the oxidative damage caused by inflammation. Antioxidants scavenge molecules in the body known as free radicals, which damage cell membranes, tamper with DNA, and even cause cell death. Antioxidants can fight free radicals and may reduce or even help prevent some of the damage they cause.
- Applying the paste made from 1tsp turmeric and ½ tsp salt and ½ tsp of mustard oil provides relief from gingivitis and periodontitis. Rub the teeth and gums with this paste twice daily [55].
- It has been found that tinted pit and fissure sealant is useful for applying to tooth surfaces for the prevention or reduction of dental caries. This sealant can be produced from a composition comprising a polymerizable resin system containing acrylic monomer and at least one colorant selected from the group consisting of Annatto extract, turmeric extract, and β-Apo-8'-Carotenal [56].

Dental Plaque Detection System

Caries or periodontal diseases are thought to be infectious diseases caused by bacteria present in dental plaques and it is known that the removal of dental plaques is highly important for the health of oral cavities. However, dental plaques are not easy to identify by the naked eye and it is difficult to confirm their attachment site and extent precisely. Accordingly, dental plaques are generally stained with dental-plaque staining agents, which contain dyes, to reveal their locations. The dental-plaque detection system includes a dental-plaque staining agent, which contains at least one selected from the yellow pigment of beni-koji, turmeric extracts, and curcumin; and a light-emitting apparatus, which outputs light having a wavelength within a range of 250 to 500 nm to an object in the oral cavity where the dental-plaque staining agent is attached [57].

Savory

It belongs to Family- Lamiaceae (mints) [58].
Botanical Name: *Satureja hortensis*
Common Name in English: Summer Savory, Winter Savory.
Parts used – Stem, Leaves, Seeds

Figure 6: *Savory Plant.*

A hardy annual, Summer Savory grows to eight or nine inches in height and has small stringy roots, "hairy" branches, and white flowers tinged with pink or lilac. Commonly used as an aromatic herb in cooking, summer savory has therapeutic properties, particularly for the stomach and bowels. The dried tops are used to treat colic, flatulence, diarrhea, poor digestion, and frayed nerves [59].

Botanical History: The genus Satureja L. contains over 30 species. S. montana contains numerous subspecies, and there is much variability in morphologic characteristics with the species S. Montana L. Summer savory is an annual herb with oblong leaves that grow to about 0.7m in height. Winter savory is a perennial shrub that grows to about the same height; the leaves of winter savory share some common characteristics with summer savory. Flowers of both species are pink to blue-white and flower from June to September [60].

Distribution

The various species within the genus *Satureja hortensis* L. are primarily located in the eastern part of the Mediterranean region but can be found throughout many parts of the world [61].

Chemistry

Dried summer savory contains approximately 1% of a volatile oil composed primarily of carvacrol, thymol, and monoterpene hydrocarbons such as beta-pinene, p-cymene, limonene, and camphene. The leaves contain a variety of minor components including minerals and vitamins. Winter savory contains about 1.6% of a volatile oil. Twenty-one compounds, which represent 97.4% of the total oil, have been identified.

The major compound was phenolic monoterpene thymol followed by monoterpenic hydrocarbons p-cymene, gamma-terpinene, oxygen-containing compounds carvacrol methyl ether, thymol methyl ether, carvacrol, geraniol, and borneol. It also contains triterpenic acids including ursolic and oleanolic acids. The relative composition of the volatile oil varies with location of cultivation, the species, and the strain [62].

Medicinal Uses

S. hortensis has *in vitro* antispasmodic, antidiarrheal, antioxidant, anti-inflammatory, and antimicrobial properties.

Chemotherapeutic activity

The proposed mechanism of action is related to the high content of phenolic components in the essential oil, particularly carvacrol and thymol. It is also suggested that the chemotherapeutic activity is associated with these chemicals acting synergistically [63].

Antifungal Activity

The antifungal activity of the essential oil was studied and inhibition of growth was found *against Alternaria alternate, Aspergillus flavus, Aspergillus variecolor, Fusarium culmorum, Fusarium oxysporum, Penicillium* spp.*, Rhizopus* spp.*, Rhizoctonia solani, Monilinia fructicola, Trichophyton rubrum, Trichophyton mentagrophytes, Microsporum canis, Sclerotinia sclerotiorum,* and *Sclerotinia minor*. The authors of this study suggest that the antifungal activity of *S. hortensis* essential oil is higher than that of amphotericin [64].

Antispasmodic and antidiarrheal activity

S. hortensis essential oil inhibits acetylcholine concentration by activating mucosa rinic receptors, which reduces ileum contraction and mediates the response of acetylcholine. *S. hortensis* L. has a spasmolytic effect on isolated smooth muscle and may have an antidiarrheal effect due to the phenolic compounds in the oil and the tannins contained in the plant. The effects were qualitatively similar to dicyclomine [65].

Anti-inflammatory activity

The anti-inflammatory activity *of S. hortensis* L. is due to the reduction of the concentration of nitric oxide metabolites and reduction of the activity of nitric oxide synthesis in mucosal specimens by topical administration of *S. hortensis L.* extract [66].

Miscellaneous

The oil has been reported to possess an Antidiuretic Effect due to Carvacrol. Teas made with savory have been used traditionally in Europe to treat excessive thirst in diabetic patients, a use that may have some pharmacologic basis [66].

Dental Uses [67]

- Saturating a cotton ball in an essential oil such as cayenne, clove, peppermint, summer savory, wintergreen, or tincture of hops, and placing it directly on the tooth will also ease toothaches in an emergency.
- Soak a cotton ball with summer savvy oil and place it on a sore tooth or rub it on inflamed gums for temporary relief.
- Summer Savory tea promotes relaxation.
- A mouthwash of chickweed, violet, sommer savory or rockrose soothes pain from mouth sores.

Gursoy in 2009 [68] conducted a study to investigate the bacterial growth inhibiting and anti-biofilm effects of *Satureja hortensis* L. (summer savory), *Salvia fruticosa* M. (sage), *Lavandula stoechas* L. (lavender), *Myrtus communis* L. and *Juniperus communis* L. (juniper) essential oils. Chemical compositions of the essential oils were analyzed by gas chromatography–mass spectrometry, minimum inhibitory concentrations (MICs) with the agar dilution method, and anti-biofilm effects by the microplate biofilm assay. The results suggested that *S. hortensis* L. essential oil inhibited the growth of periodontal bacteria in the concentration that was safe on keratinocytes however, in subinhibitory concentration its anti-biofilm effect was limited.

Conclusion

The focus of the current studies should be more in investigating unexplored herbal drugs and other natural products, as well as their therapeutic application, side effects and possible drug interactions as there are only few studies to support their rational use in dentistry. Since there is an increasing use of phytotherapeutic agents in dentistry, further studies are needed to evaluate their safety and effectiveness for clinical use.

In conclusion, Herbal Dentistry has a vast scope in the dental field. Some dedicated research should be directed in this area so that in the course of years, it can become a common practice in the dental field.

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