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HERBAL IRRIGANTS – FUTURE TRENDS
Dr. James D Raj*, B. Priyadharshni
Saveetha Dental College, Chennai.
Email: jamesdraj@gmail.com

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Abstract:
Irrigants play a main role in disinfecting the root canal system by reducing the bacterial load in root canals. In endodontics because of the cytotoxic reactions of irrigants used and their inability to eliminate bacteria from dentinal tubules, trend of recent medicine attends to use biologic medication extract from natural plants. Herbal alternatives are popular mainly due to their easy availability, cost effectiveness, increased shelf and low toxicity. This paper reviews the role of various herbal products in endodontics.

Keywords: Herbal, Irrigants, endodontics, toxicity, root canal.

Introduction:
The main aim of an endodontic treatment is to remove diseased tissue, to eliminate bacteria from the root canal system and to prevent its recontamination (1). Irrigating solutions are very important during root canal preparation because they aid in the cleaning of root canal, lubricate the files, flush out debris, have anti microbial effect, provide tissue dissolution without damage to the periapical tissues (2).

IDEAL REQUIREMENT OF ROOT CANAL IRRIGANT
- Broad anti microbial spectrum.
- High efficacy against anerobic and anerorobic and facultative microorganisms organized in biofilm.
- Ability to dissolve necrotic pulp tissue remnants
- Ability to inactivate endotoxins
- Ability to prevent the formation of a smear layer during instrumentation or to dissolve the larger once it has formed.
- Systemically nontoxic when they come in contact with vital tissues, non caustic to periodontal tissues, and with little potential to cause an anaphylactic reactions (3).
Classification

Herbs commonly used in dentistry are:

Anti microbial - matricauachamoite, salvadoraPersica, azatdirchtaindica

Anti inflammatory- propoliscrevalo

Sedative and - Malisiaofficinalis, passiflora incarnate, piper meythistam

Herbs Used In Irrigants

Triphala , propolis, azadiracta indica, green tea, salvadoraPersica, tea tree oil, garlic, lemon solution, turmeric, psoralae, corylifidia (5).

Triphala

Triphala is a type of indianAyurvedic product consists of dried and powdered fruits of plants like TerminaliaBellerica, TerminaliaChebula and EmblicaOfficinalisIt is rich in citric acid, which helps in removal of smear layer by acting as a cheating agent and also act as alternative for sodium hypochlorite (6). It has anti inflammatory, antioxidant, anticariogenic, thermogenic and probiotic (7). Triphala achieved 100% killing of E. Faecalis at 6 min and also has major advantages like easy availability, cost effectiveness, longer shelf life, low toxicity and lack of microbial resistance (8). Triphala can also act as an alternative to NaOCl for endodontic infections (9). It also has an anti scavenging property (10).

Propolis

Propolis is a brownish resinous material because Honeybees collect from various plant species and mix with wax and other substances. Some scientific research proved that it has antioxidant, antibacterial, anti fungal, antiviral, anti inflammatory, anti tumour and immunomodulating properties (11). The flavonoids and cinnamic acid derivatives is considered as biologically active components so that it exhibits several pharmacological properties such as anti microbial, anti inflammatory, healing, anesthetic and cytostatic and cariostatic properties (12) The anti inflammatory role in propolis is played by cafferic acid and phenethylester(CAPE). The ethanol plays an role in bone regeneration and inducing hard tissue bridge formation in pulpotomies or pulp capping (13).It can be used as an alternative for intracanal medicament (14).

Turmeric (Curcuma Longa)

Curcumin is the principle curcuminoid of popular indian spice turmeric, which is a part of ginger family (zingeberaceae). Turmeric plays an anti inflammatory property and for the treatment of relieving pain and...
inflammation (15). It also has the anti microbial and anti cancer activity (16,17) In an article it is proved that it has significant antibacterial activity against E.faecalis and also used as alternative for root canal irrigation and also in root canal failure cases (18)

**Green Tea Polyphenols**

Green tea which is considered as a traditional drink of Japan and China is prepared from tea plant camellia sinensis. It contains flavanols or catechins have antioxidant, anticariogenic, anti inflammatory and thermogenic, probiotic and anti microbial properties. Tea contains natural fluoride, helps in preventing dental caries (19). Epigallocatechin-3 gallate protect the bone and prevents periodontal diseases. GTP has antibacterial activity(9)

**Garlic**

Garlic also known as alum sativum has been used for medicinal purpose. Plants bulb is mostly commonly used. It is an anti diabetic agent. Garlic contains allicin which destroys the cell membrane of root canal bacteria which is used as an alternative irrigant for NaOCl. It inhibits the growth of oral pathogens like streptococcus mutants and porphyomonsgingivalis used for management of dental infections like periodontitis (6)

**Tea Tree Oil** (Melaleucaalternifolia)

Tea tree oil, a native Australian plant with many properties like antiseptic, an anti fungal and mid solvent has an active component of terpinen-4-ol have efficacy of roaming smear layer superior to NaOCl but less than EDTA(1).

**Neem** (azardiractaindica)

Neem oil bark and leaf extracts has effective agent against E.faecalis and Candida albicans which has antioxidant and anti microbial properties for root canal irrigation as an alternative to sodium hypochlorite (20)

**Passion Fruit**

Passion fruit acts as biocompatible antioxidant and it has better taste and aroma which gives the fruit an advantage over other herbal irrigants(21). It does not have the tissue dissolving capacity(22). Passion fruit pulp extract can be used along with sodium hypochlorite which does not have any harmful effect like chlorohexidine. It also has the property of removing smear layer on teeth, which is an ideal property of root canal irrigant (23)

**Marticaria Recutitia Linn** (German channolie)

It has an anti-inflammatory, analgesic, anti microbial, antispasmic and sedative properties. It disinfects root canal system with less toxicity when used as irrigants (24).
Salvodara Persica

Salvodora Persica can be used as root canal irrigants because of its anti microbial effect aerobic and anerobic bacteria recovered from teeth with necrotic pulps (34). It is also known as miswak. The 10% water extract of Salvodora Persica could be as an effective antibacterial and anti microbial agent which can be used as an endodontic irrigant for teeth with necrotic pulps (25).

Morinda Citrifolia

Morindacitrifolia known as NONI, also known as indian mulberry. It juices has therapeutic effects including antibacterial ,antiinflammatory, antiviral, analgesic, hypotesive effects. The use of morindacitrifolia as an endodontic irrigant as a part of dental treatment has biocompatible antioxidant and not likely to cause severe injuries like NaOCl accidents. It acts against E. Faecalis in dentin. So it acts as an alternative intracanal irrigant (26).

Conclusion

The major advantages of using herbal alternative are easy availability, cost effectiveness, increased shelf life, less toxicity and lack of microbial resistance against E.faecal is that commonly cause root canal failure during endodontic procedure and so herbal irrigants can be used as an alternative during root canal treatment.

References

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Corresponding Author:
Dr.James D Raj*
Email: jamesdraj@gmail.com