

PROPOLIS AND ITS USES IN DENTISTRY-A REVIEW

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ABSTRACT:

The honeybees, saliva and beeswax with exudates gathered from tree buds or other botanical sources produce a resinous mixture known as propolis. The colour of the propolis may vary due to the phenolics and other various aromatic compounds which are present. The propolis can be used due to its biocompatibility activity. Propolis has various properties like anti-microbial, anti-inflammatory, immunomodulating capacity, anti-tumour, anti-fungal, anti-oxidative and biocompatibility, which make it more beneficial for dentistry. This article reviews the use of propolis as a natural medicine in dentistry.

KEYWORDS: Caries, Pulpotomy, Dentistry, Hazards, Oral Health.

INTRODUCTION:

Many diseases are cured using the natural resources one such is propolis which is used in various aspects of dentistry.[1] The honey bees from flowers and leaf bud and different amounts of beeswax and its saliva produce propolis. [2] The new cell growth and healing capacity is increased by propolis.

[3,4] Propolis is derived from different amounts of beeswax and its saliva. It is derived from Greek, meaning "in front of the city". This word absolutely suits for its action which is to seal openings and cracks of the beehive by cementing. [5] In cold propolis becomes

rigid and brittle but it becomes soft, sticky and adhesive when there is a rise in temperature.[6] Propolis is used to heal wounds and ulcers by the founder of modern medicine [1]. It promotes phagocytic responses and stimulates cellular immunity [7]. Propolis is also used to prevent the entry of microorganisms, fungi and bacteria into the hive [8]

COMPOSITION:

The composition of raw propolis may vary due to climate or the tree or plant from which it is extracted [7]. Propolis contains 50% of plant resins, 30% of beeswax, 10% essential oils, 5% pollen, 5% debris, and other constituents are amino acids, minerals, vitamins phenols and aromatic compounds. [9,10] Green Propolis extract enhances in Apoptosis and cell proliferation. [11]. Epstein-Barr virus suppression is carried out by Moronic acid [12]. Caffeic acid phenethyl ester cardanol, cardol play their role as antitumoral /anticancer.[13]. Green, red and brown propolis extracts has antiinflammatory; Artepillin C; Crysin [14]

THERAPEUTIC PROPERTIES OF PROPOLIS:

ANTI-INFLAMMATORY ACTIVITY:

- Inhibits the prostaglandin synthesis[15]
- Activate the thymus gland[15]
- Help the immune system by promoting the phagocytic activity[16]
- Stimulating cellular immunity[15]
- Increasing healing effects on epithelial tissue.[16]
- Elements such as iron and zinc which are present in propolis are important for the synthesis of collagen [16]

ANTIMICROBIAL ACTIVITY:

- Fungistatic and fungicidal activity[17]
- Synergistic action, which may constitute an alternative therapy for microbial resistance, but dependent on its composition[18]
- Topical therapy in recurrent herpetic infection.[19]

ANTIOXIDATIVE ACTIVITY:

- Inhibiting superoxide anion formation.[20]

ANTITUMORAL ACTIVITY:

- Antiproliferative activity in tumor cells.[21]
- Treatment of prostate and breast cancers.[22]

POTENTIAL USES OF PROPOLIS:

Propolis has been used in various aspects of dentistry because of its biocompatibility, anti-inflammatory, anti-microbial and immuno-modulatory functions. [23]

INTRACANAL MEDICAMENT:

Propolis has been used as an intracanal medicament in endodontics because of its antibacterial, antiviral and antifungal properties, it also destroys E.faecalis which leads to failure of root canal treatment.[24]

BIOACTIVE MATERIAL:

Propolis has an advantage over calcium hydroxide as vital pulp capping agent which induces the induction of tubular dentin along with no pulpal inflammation, infection [25]

PERIODONTOLOGY- AS A MOUTHWASH:

Propolis has been found to be used as mouthwash more commonly due to its analgesic and anti-inflammatory property.[26] When mixed with zinc gluconate propolis decreases halitosis 60%.[27]

IN DENTINAL HYPERSENSITIVITY:

A study using propolis was conducted by Mahmoud et al. on dentinal hypersensitivity. Propolis when applied twice daily on the teeth which are hypersensitive. The study concludes that propolis had positive effect in controlling hypersensitivity.[28]

AS A CARIOSTATIC AGENT:

One of the applications for propolis is to help prevent cavities from developing on teeth. Cavities occur when oral bacteria, fueled by sugars and other simple carbohydrates in the mouth, produce acids that attack tooth enamel, the white outer layer of the tooth. Propolis helps prevent this in many ways. First, it kills oral bacteria and prevents them from thriving. Second, it makes it harder for oral bacteria to form plaque, which sticks to the teeth and increases the potency of acid attack on enamel. Finally, propolis impairs the function of the enzymes that bacteria use to break down sugars. The influence of propolis on *S.mutans* viability, glycosyltransferases(GTFs) activity and caries development in rats was evaluated by Hayacibara et al. The result was that propolis is used as an anti caries agent.[29]

PROPOLIS USED AS STORAGE MEDIA:

Martin MP et al conducted a study which concluded that when propolis was used as a storage media, the viability of PDL cells were much higher than that compared with HBSS(Hanks' balanced salt solution) milk, or saline.[23] Ahangari et al also conducted a similar study and found that propolis was used as a biologic storage media for avulsed primary teeth.[30]

ORTHODONTICS:

Altan et al, in his research on rats found propolis helps in bone formation during treatment with the help of a device to expand palatine sutures. There was an increased quantity of osteoblast seen.[31]

ORAL SURGERY:

Lopes-Rocha et al in 2012 found that the bee glue helps in healing of surgical wounds within the oral cavity. Propolis decreases inflammation and increase the formation of granulation tissue.[32]

CONCLUSION:

In this paper, various clinical implication of propolis on oral health has been discussed. Propolis can be used in the management of dental caries, endodontic as well as periodontal infections, vital pulp therapy ,orthodontics and various other treatment. In spite of all its uses , it can cause allergic reaction in some patients. Further extensive studies for propolis should be carried out to know it's various implications .

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