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A Review on Formulation of Herbal Toothpaste Using Peeple Tree (*Ficus religiosa*) and Marigold (*Tagetes Spp*)

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ABSTRACT

Dental products have huge Requests in India. In dental products one important product is toothpaste. Toothpaste forms an important item in the yearly grocery shopping of most of the rural and urban household in current situation, herbal products are mostly used by people and have more demand in market as compared to synthetic toothpaste. The aim behind these is how the antibacterial, anti -carries, tooth decay, gum disease, oral cancer, tooth erosion, and gum infection is treated and cure. In this tooth paste we use multiple herbs such as people leaf, marigold, Red catechu, turmeric to maintain health of our tooth and keep them free from microbes.

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INTRODUCTION

Toothpastes are the most common preventive means in dental health care. The selected tooth paste were effective in controlling the microbial load .It contributing to maintain good oral hygiene. However, practicing appropriate oral hygiene measures, brushing technique is of almost importance in maintaining good oral health than the effectiveness of various ingredients in the toothpastes used. Both people tree and marigold tree shows antibacterial and anti-inflammatory activity for teeth disease. Both plants are Multimedicinal in used and most see in day today lifestyle. [32].

Peeple Tree:-Genus Ficus has 750 species of woody plants. Ficus religiosa is one of the important and medicinal species. Ficus religiosa, commonly known as peepal is one of the oldest trees in Indian literature . It belongs to family Moraceae and genus Ficus. It derived its botanical name from two words 'Ficus' a Latin word for 'fig' and 'Religiosa' refers to 'religion' indicating its importance in Hindu and Buddhist religions. The tree is native to India and is believed to originate mainly in Northern and Eastern India. It is also found in its neighboring countries such as Bangladesh, Pakistan, Nepal, Sri- Lanka and China. F. religious a is known by more 150 . In India, it has various names in different regions according to their languages such as Peepal in Hindi, Ashwatha in Sankrit .Because of its contribution in historical events it has an important place in medicinal, mythological and religious systems of India and hence this tree is mostly seen near religious places . The tree grows very large in size with wide spreading branches and brown colored bark. It has thin shiny leaves and the fruit.It is compressed and circular in shape. New immature leaves are red pinkish in color which turns into deep green at the stage of maturity. Flowering occurs in February, onset of fruits start in summers and ripening is complete before the onset of rainy season. Fruits grow in pairs together to form a single mass. Immature fruits are green in color which changes to blackish purple. All parts of this tree are rich in phytochemicals and are used in various food[2].

(1) 

(3)

Marigold: -Marigold, (genus Tagetes), genus of about 50 species of annual herbs of the aster family (Asteraceae), native to southwestern North America, tropical America, and South America. The name marigold also refers to the pot marigold (genus Calendula). It is unrelated plants of several families.

Physical description:- Members of the genus Tagetes have attractive yellow, orange, or red composite flowers that are solitary on the stems or clustered. The leaves are arranged opposite each other on the stem and are usually finely cut. Characteristic bracts (leaflike structures) form a cup-shaped base below each flower head.[33].

Taxonomical Classification:-

Kingdom- Plantae,

Subkingdom- Tracheobionta,

Division –Magnoliophyta,

Class –Magnoliopsida,

Subclass- Asteridae,

Order –Asterales,

Family –Asteraceae,

Tribe –Calenduleae,

Genus- Calendula,

Species- C. officinalis.[4].

Uses:-

1)Provides relief from toothache.

2)To treat wounds inflammation of the skin and mucous membranes.

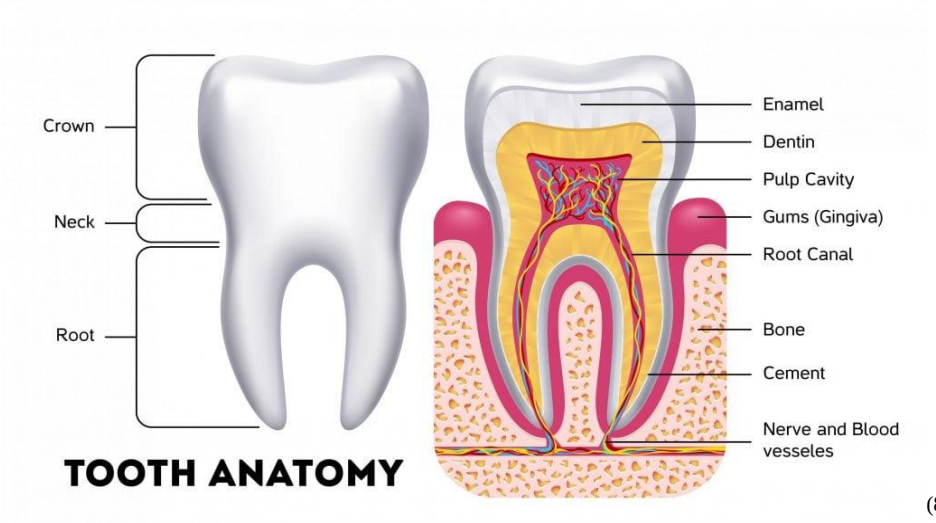
3)Improve visual activity.

4)Bowel disease.

5)Antioxidant.

6)Improve the shine of hair.

Teeth structure: -The intensity of infections caused by certain pathogenic microorganisms that may leads to mortality and morbidity in immune-suppressant patients [5]. In the period 1950 the toothpaste invented by dentist AD. Dr. Washington Wentworth Sheffield[6]. Toothpaste is a semi-soliddosage form used with an addition of toothbrush to enhance oral hygiene [7].



(8)

Anatomy of teeth: -

Enamel:- The hardest tissue covering the surface of the dental crown.

Dentin:-The tissue that forms the tooth from the dental crown to the tooth root, situated inside the Enamel.

Cementum:- The tissue covering the surface of the tooth root.

Dental pulp:- The tissue is called the nerve. Blood vessels and the Lymph vessels, as well as nerve fibers, are located in the teeth.

Periodontal ligament:- Tissue consists mainly of the fibrous tissue that connects the tooth root and the alveolar bone. It prevents force applied to the tooth from being directly imposed on the alveolar bone while chewing food.

Alveolar bone:-The jaw bone supporting the tooth; the tooth is planted into this bone. **Gingiva:-** The soft tissue covering the alveolar bone. It is generally Named as gum. **Gingival sulcus:-** The small space between the tooth and the gums. Even people with healthy teeth usually have a depth of 1 to 2 mm in this space. When this space deepens due to inflammation, it is called the periodontal pocket or gingival pocket [(9)] Many of the problems associated with the teeth are gum disease, caries, and bad breath. Maintenance of health is often accomplished by preserving residual number of microorganisms under regulation of regular balance typically between the periodontal micro flora and the host that results in a stable clinical condition with low periodontium inflammatory alterations in peripheral gingival tissues [4]. The bacteria, food debris, and

saliva get associated in the mouth and results in formation of plaque. The pain can be worsened by the heat, cold or even by drinks and sweet foods [(10)] plaque control is time consuming and some instances may lack motivation for these practices. To prevent these diseases and maintenance of good oral hygiene is possible by use of oral care products such as dentifrices, mouthwashes that contain antimicrobial properties [(11).] As per the World Health Organization [WHO] 80 percent of population relies on medicinal plants for their primary healthcare treatment. Out of 3,50,000 species less than 0.5 percent have been scrutinized for their pharmacological and phytochemical potential. formulation of mouth rinses or toothpastes may obtain adverse effects such as taste alteration, tooth stainingor hypersensitivity reactions Due to use of chemicals. Thus, use of natural ingredients free from artificial sweeteners, odors, preservatives do not harm buccal cavity [(12)]. Neutrophils are white blood cells that propagate in the bloodstream and travel to the site of infection to combat infectious microbes and the amount of white blood cells in the gingival exudate represents its intensity of inflammation. The number of neutrophils in the gingival sulcus rises during gingivitis. Children below 6 years are recommended not to use toothpaste that contain fluorides because that may result in caries and dental fluorosis. All these circumstances are taken into consideration and greater attention being paid to the use of herbal dentifrices with less side effects [(13)].

Ideal Properties of Toothpaste: -

- Nontoxic,
- Less cost
- Non-irritant.
- Good abrasive effect.
- Not expensive.
- Easily available.
- Easy to handle and travel.
- Acceptable taste with less side effects
- Do not impart stain on teeth[(14)]

Types of Toothpaste: -

Anti-carries /cavity Protection toothpaste.	Protection toothpaste Sodium chloride and sodium monofluoride phosphate.	Contain fluoride to stop tooth enamel decalcification and protect teeth from tooth decay and Cavities.	Ex. Colgate cavity protection.
Plaque and Ginger it is prevention teeth.	Sodium Laurel sulphate triclosan zinc and stands iron	Antibacterial and prevent the formation of dental plaque.	Ex. Crest pro health clinical gum protection
Tooth whitening toothpaste.	Papain, Dimethicone	Have either higher abrasion value than normal toothpaste to mechanically remove food, smoking and other stain from Teeth.	Colgate optical white and Colgate pro clinical White.
Sensitivity toothpaste.	Potassium nitrate, Strontium chloride, potassium Citrate	Content De - sensitizing agent to relieve those with tooth sensitivity By closing the denial tubules.	Colgate sensitive, Sensodyne
Tartar control toothpaste	Pyrophosphates.	Reduce the new tartar build up (but they can't remove the existing tartar.)	Ex. Colgate Tartar protection with whitening.
Fresh breath Toothpaste.	Peppermint, spearmint, menthol.	Enhance flavoring agents along with antibacterial to fight halitosis.	Ex. Colgate Max fresh.

Purpose of toothpaste: -

- Cleaning
- Polishing.
- Removal of stain.
- Reduce the incidence of Tooth decay.
- Reduction of oral melodies
- Gives antibacterial. [15]

Some medical plants: -

Sr. No	Herbs	Uses	Chemical constituent
1	People Tree.	Toothache	Phenols, tannins, steroids, alkaloids and Flavonoid.β-sitosterol-D-glucoside, vitamin K, n-octacaine, methyl allenolate, lanosterol, stigmasterol, lupen-3-one.
2	Katta	Mouthwashes and gargles used for gum disease(gingivitis), pain and swelling inside the mouth(stomatitis), sore throat, and mouth ulcers.	Catechu is protocatechuic acid, taxifolin, epicatechin, epigallocatechin, catechin, epicatechin gallate, procyanidin, phloroglucinol, haloboronic acid, gallic acid, Dgalactose, afzelechingum, Larabinose
3	Marigold	Help to repair the soft tissue of the gums whilst actively fighting Plaque.	Terpinolene,(Z)- monoxide, piperidone, peritenon, peritenon oxide and bcaryophyllene .
4)	Piper betel.	Leaves consist of starch, sugar, diastases, volatile oil includes safrole, piper betel, eugenol	Exhibit anti-microbial properties against wide spectrum of microorganisms such as Proteus vulgaris, Pseudomonas aeruginosa, Staphylococcus aureus, Streptococcus Pyrogen.

(16-26)

Literature review: -

Sr No	Name Of ResearchAnd Review Article.	Name Of Author	Journal Published.	Chemical Constituent.	Activity
1)	Formulation Of Toothpaste Gel Containing Mixture of Aloe Vera (Aloebarbadense Mill) And Red Betel (Piper Crocatum) Extract In Prevention Of Dental Caries.	Yoga Windhu Wardhana, Sohadi Warya, Asri Trisnawaty	Journal Of Pharmaceutical Sciences and Research ·	Meanwhile In Red Betel Found Flavonoid, And Some Essential Oil.	Dental Caries, Antibacterial Activity
2)	Evaluation Of Redox Potential Of Herbal Toothpastes:	Lakshmi V1*, Nishmitha Hegde2, Nidarsh D Hegde3, Suchetha Kumari4, Mithra N Hegde5, Nireeksha Shetty6	Journal Of Dental Health and Oral Research	Vitamins, Alkaloid, Tannins	Antibacterial Activity.
3)	Formulation And Evaluation of Herbal Toothpaste (Apidae).	Pavan Deshmukh* Vaibhav Shende Mahendra	Research Gate	Vitamins, Alkaloid, Tannins	Antibacterial Activity.
4)	Effects Of Teeth Whitening Toothpaste On The Surface Roughness And Morphology Of A Nanohybrid Composite Resin.	Fereshteh Naser Alavi[1]*, Niloofar Moein[1] , Mohammad Ali Yousefi[2]	Journal Of Dentomaxillofacial Radiology, Pathology And Surgery.		Antibacterial Activity.
5)	Comparative Evaluation of Remineralisation Potential Of Fluoridated Toothpaste And Toothpaste Containing Blue Covarine - An Invitro Study	Sathya Kumar Esan, Allelopathy, Meigan ArumugamIndian	International Journal of Dentistry And Oral Science (IJDOS)ISSN: 2377-8075	Vitamins, Alkaloid, Tannins	Antibacterial Activity.
6)	Comprehensive ReviewOn HerbalToothpaste Set	Divya S1, Dr. J Suresh1* , Divya S1, Dr. J Suresh1* , Dr. S. Meenakshi.	Annals Of R.S.C.B., ISSN:1583-6258.	Neem, Piper Bettle, Turmeric.	Anti-Microbial Screening, Periodontal Disorder, Gingivitis, Calculus, Dental Caries.

CONCLUSION:-

Toothpaste comprising different herbs is considered to be relatively safe, readily. The toothpaste plays an important role in the treatment of various dental disorders such as Dental plaque, Dental caries, gingivitis. The Peeple tree shows antimicrobial as well as anti caries activity. Hence it is concluded that the bioactive principles responsible for the antimicrobial activity against different microorganism must be isolate deidentified and elucidate it structure to invent a new lead of therapeutic interest to cure human illness. Potential compared tooth. Therefore, it could be used for the prevention of dental caries, periodontitis and gingivitis as well as to maintain the health of oral tissues. A further in-vivo study is required to assess the anti-plaque, anti-bacterial, anti-viral, anti-gingival, anti-cariogenic, and healing of oral lesions capacity of medicated toothpastes.

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