International Journal of Pharmaceutical Research and Applications
Volume 8, Issue 3 May-June 2023, pp: 543-550 www.ijprajournal.com ISSN: 2249-7781

A Review on Herbal Toothpaste

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Submitted: 05-05-2023 Accepted: 15-05-2023

ABSTRACT:
Herbal products for oral and general health care have gained worldwide popularity. People desiring to use herbal products generally consider these products to be relatively safer than products containing synthetic ingredients. In the current context, oral care with the use of herbal toothpastes containing natural ingredients is a more acceptable advertising belief than the use of synthetic based chemicals due to safety. And their effectiveness in reducing toothache and tooth decay and preventing other dental problems to which this generation is sensitive. Based on the increased use of herbal cosmetics, we have attempted to comprehensively evaluate herbal toothpastes that help maintain good oral hygiene and prevent periodontal disorders, reduce stains, gingivitis, calculus and tooth decay. This review provides background information on the antibacterial potential of various herbs, formulations, that can be used in the preparation of toothpaste.

Keyword: Herbal toothpest, Anatomy of teeth, Excipient profile, Material and method, Evalution

I. INTRODUCTION:[1-7]

Herbs and herbal toothpaste have been used in ancient life for many years and are one of the key ingredients. About oral health management. Toothpaste production and development began in China and India 500 BC At this time, crushed bones, powdered eggs, and conch shells were used as abrasives tooth. By the mid-19th century, several abrasives, perfumes, and green lead were used for removal. Dirt from teeth. Medieval Arabs relied heavily on rock salt and fine sand for brushing their teeth. Toothpaste was invented in 1950 by a dentist named Dentist. Developed by Washington Wentworth Sheffield Advertisement.In modern times, the release of active substances in the development and treatment of oral diseases increasing in importance. Toothpaste - powder or paste - is used to clean, care for and improve teeth dental health. In addition to acting as an abrasive, it helps remove and mask bad breath. Toothpaste releases active ingredients such as fluoride that help prevent tooth and gum disease gingivitis and is primarily used to promote oral hygiene. With the help of excipients, toothpaste is a semisolid dosage form that is applied with a toothbrush to improve oral hygiene. herbal medicines are very it is effective because it contains active chemical ingredients such as polyphenols, gums, alkaloids and glycosides. In addition, it is known to have various biological functions. Range of evaluation new more herbal toothpaste, According to the World Health Organization (WHO), medicinal plants are used by 80% of people for primary health care. Tooth staining, taste changes, and hypersensitivity reactions may occur result from the chemical agents used in toothpaste formulation. It comes from the chemicals used in formulating the toothpaste. Therefore, the use of natural ingredients. Free of artificial sweeteners, flavors and preservatives no harm to oral cavity. Toothpaste containing fluoride should not be used on children under the age of 6 due to the risk of tooth decayfluorosis. Use of herbal supplements that take into account all these factors and have fewer side effects more attention is paid to the effect.

Herbal toothpest:

Toothpastes are the most common preventive means in oral health care. Many commercially available dentifrices claim to have antimicrobial properties, but little research has been conducted to investigate these claims. Therefore, this study was conducted to evaluate the efficacy of different toothpaste formulations in reducing the oral microbial load. The selected tooth paste formulations were effective in controlling the microbial load and therefore contributing to maintain good oral hygiene. However, practicing appropriate oral hygiene measures & brushing

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Volume 8, Issue 3 May-June 2023, pp: 543-550 www.ijprajournal.com ISSN: 2249-7781

technique is of utmost importance in maintaining good oral health than the effectiveness of various ingredients in the toothpastes used. Chronic gingivitis is one of the most common oral diseases with high prevalence around the world. Dental plaque is the major etiological and initiating factor for the development of gingivitis However, due to the limitation of mechanical methods, the addition of some safe and effective drugs to prevent gingivitis in toothpaste is also considered to be a good supplementary to the control of mechanical plaque. Studies have shown that certain chemicals, such as chlorhexidine or triclosan, are added to the toothpaste to directly inhibit the formation of plaque 2 Various chemical agents have been used in toothpastes and mouth rinses and a few have been shown to reduce dental plaque formation. Due to an increased awareness of indigenous medical practices in various parts of the world, the use of "herbal" medicine has engendered interest and facilitated the growth of complementary and alternative therapies in health care promotion.3 The main purpose of toothpaste is to reduce oral bacterial flora and deliver fluoride to the teeth. This is because fluoride has been proven to protect teeth against attack from bacteria and can be found naturally in many everyday things including food and drinking water. Toothpaste that efficiently reduces oral bacterial flora should contribute to dental health. Triclosan is usually used in gum. It is a constituent used to avert gum disease because of its antibacterial properties. The active ingredient sodium fluoride is also known to have antibacterial properties. Natural toothpastes are those without triclosan or fluoride. They usually contain natural ingredients such as special mineral salts e.g. Sodium Fluoride and Sodium Chloride, and plant extracts like lemon, eucalyptus, rosemary, chamomile, sage and myrrh.

Toothpaste formulations are semisolid formulations mainly used for cleaning the oral cavity and maintaining oral hygiene. Nowadays toothpaste is considered a basic need of human beings since the day starts with cleaning the oral cavity. There are many marketed toothpaste formulations available that are developed using synthetic excipients but some formulations are developed using herbal extracts. Various herbs are available around our environments which have the potential to treat various discomforts. Among them, some herbs are also used for oral cleansing purposes. They may be used as antibacterial, antiseptic, odor masking, and teeth whitening. The importance of various herbs was mentioned in Ayurveda. Among the number of available herbs, some suitable herbs have been selected for the development of herbal toothpaste. The incorporation of two or more herbal extracts in a single formulation may yield combined therapeutic effects of those individual herbs. So, it has been more important to incorporate plant-based ingredients in day-to-day life to avoid various side effects from synthetic ingredients. The role of toothpaste formulation is to clean and polish the teeth. It keeps oral cavity hygiene clean. Toothpaste has an agreeable taste, and pleasant odor and freshens the breath. Every dentist suggests brushing twice a day for good oral health. Since toothpaste is essential for keeping the oral cavity very hygienic. In herbal toothpaste, various herbs are used and the role of the herbs is to reduce dental plaque, and calculus, freshening the breath. A typical herbal toothpaste should not cause any irritation or pungent feeling during the brushing. Along with herbs some typical toothpaste ingredients also have been essential and those categories are antibacterial agents, fluoride, desensitizing agents, abrasives, and teeth whiteners. Initially, the multiple herbal extracts were well defined for their individual therapeutic uses and selected on the respective categories.

Anaomy and physiology of tooth: [8-9]

There are 16+16 = 32 teeth in the mouth and are embedded in the alveoli or sockets of the alveolar ridges of the upper jaw (maxilla) and lower jaw (mandible). The order of teeth from front to back is Incisors, Canines, Pre-Molars and Molars. A tooth can be divided into three principal portions:

Crown: The crown is the portion of above the level of the gums is covered with enamel, the hardest substance in the body that protect the tooth from wear and acids.

Neck: The neck or cervix is the constricted junction between the crown and root.

Root: The root can consist of one, two or three projections embedded in a socket. Larger teeth like molars will have more than one root .

The tooth is composed of three substances. They are:

Dentine: It forms a major part of the tooth and has bone like structure.

Enamel: It is the outermost covering that covers the crown of the tooth and harder than the bone.

Cementum: It is the neck and it is hard as a bone. The alveolar processes are covered by the gums or gingivae that extend slightly into each socket. In

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the centre of the tooth is the pulp cavity containing blood vessels, Lymph vessels and Nerves which surrounded by dentine(8,9)

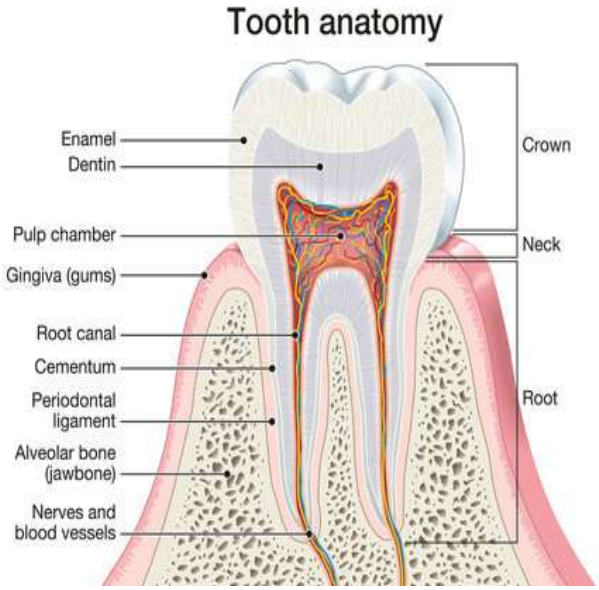

Fig No. 1. Anatomy and physiology of teeth

Material And Method:[10-14]

Formulation excipients used in toothpest:

Sr.no	Excipients	Conecentration	Types	Uses
1.	Abrasives	9-13%	Dicalcium phosphate, Alumina, Calcium carbonate	Remove food debris as well as polishes the tooth surface .
2.	Humectant	37-45 %	Glycerol, xylitol, water, PEG 8[Polyethylene glycol esters]	Provide moisture content and prevent formation of plug-in nozzle tube
3.	Binding agents	0.8-2.5%	Agar, Carrageenan, Gum tragacanth, Isapgol mucilage	Stability and consistency of the toothpaste can be maintained
4.	Preservatives	0.05-0.5%	Formaldehyde, Benzoic acid, Parabens, Phenolics, citric acid.	Prevents growth of microorganisms and provide stability
5.	Foaming agents	1-2%	Sodium lauryl sulphate, Sodium stearyl lactate, Amine fluorides, Dioctyl sodium	Assist in penetration of plaque deposition and enables dispersion

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			sulfosuccinate	
6.	Flavours	1-6%	Clove oil, Peppermint, Eucalyptus, Spearmint, aniseed, Fennel,	aniseed, Fennel,
7.	Sweeteners	18-24%	Saccharine, Aspartame, Sorbitol, xylitol	Mask palatable taste

Table no-2 Formulation excipients used in toothpest:

Herbas used in Dentistry:

1.Neem:

Biological source:

Neem consist of the fresh or dried leaves and seed oil of AzadirachtaIndica, family Meliacae.

Chemical constituents:

Diterpenes (sugiol), nimbiol (bark), triterpenes: betasitosterol, stigasterol (leaf), limonoids, Rutin, Nimbin.

Uses:

Antibacterial, Antiinflammatory, Antiviral, Antisclerotic Toothache reliever.

Fig no-1 Neem

2. Clove oil:

Biological source:

Clove is the dried flower buds of Eugenia Caryophyllus, SzygiumAromaticum, family Myrtaceae.

Chemical constituents:

Eugenol, betacaryophyllene, alphahumulene, eugenyl acetate, gallic acid, oleanolic acid, ellagic acid.

Uses:

Dental analgesic, Antiseptic, Control of gingivitis, halitosis, plaque.

Fig no-2 Clove oil

3. **Cinnamon:**

Biological source:

Cinnamon is the dried inner bark of the coppiced shoots of Cinnamomumzeylanicum, family Lauraceae.

Chemical constituents:

Eugenol, caryophyllene, cinnamaldehyde, linalool, cinnamyl acetate.

Uses:

Antimicrobial, Dental caries, candidiasis, periodontal.

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Fig no -3 Cinnamon

4. Turmeric:
Biological source:
Turmeric consists of fresh or dried rhizome of Curcuma Longa, family Zingiberaceae.

Chemical constituents:
Bisdemethoxycurcumin, Demethoxycurcumin, curcuminoids.

Uses:
Antibacterial, Antiseptic, Antiinflammatory, Analgesic, Antioxidant, Astringent, Carminative.

Fig no-4 Turmeric

5. Triphala:
Biological source:
Triphala consist of dried fruits of the three plant species Emblica officinalis (Family Euphorbiaceae), Terminaliabellerica (Family Combretaceae), and Terminaliachebula (Family Combretaceae).

Chemical constituents:
Triphala consists of thiamin, riboflavin, ascorbic acid, βsitosterol, galloyl glucose, chebulagic acid, chebulinic acid.

Uses:
Antioxidant, Anti-microbial properties, treatment of ulcerated and bleeding gums as well as in dental caries.

Fig no-5 Triphala

BaboolLeaves :
Babool is a flowering tree native to the Indian subcontinent and has been recognised since ancient times due to its benefits for health. One of the major benefits of this tree is for your oral health as it helps to reduce the incidence of dental caries and bad breath. It thus finds traditional use as a toothbrush in some parts of India.

Fig no. 6 Babool leaves

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Guava Leaves:

Leaves of species PsidiumGuajava belonging to familyMyrtaceae(Guava) have many properties like antibacterial, anti-cancer, anti-diabetic, anti-oxidant etc. The leaf extract of guava has traditionally been used for its health benefits. Toothpaste is a dentifrice used clean, maintain and improve the health of teeth. Toothpaste is mainly used to promote strongness and healthy of teeth

Fig no. 7 Guava leaves

Honey:

Honey is known to have various antibacterial properties that help inhibit the growth of bacteria in your mouth. Moreover, it has hydrogen peroxide that acts as an antiseptic for the pain caused by the sensitivity. It also acts as a barrier, contributing to the preventing of infections in the mouth.

Fig no-8 Honey

Method:[15]

One formulation of herbal toothpaste is prepared by using different ingredients like Calcium Carbonate as abrasive, Glycerin as humectant, Sodium Lauryl Sulphate as a detergent and foaming agent, Peppermint Oil as a flavoring ingredient, Sodium Benzoate as a preservative, and Sodium Saccharine as a sweetener. In addition, an anti-inflammatory substance derived from ginger oil is included. A method used for the formulation of herbal toothpaste is homogenization by using mortar and pestle for formation base of toothpaste.

Materials

The weight of each ingredient was determined based on the results of a previous study on the composition of herbal toothpaste. All of the ingredients in this toothpaste have a combined percentage by weight of 100%, which implies that the whole quantity of toothpaste will yield 100gm of tooth paste formulation.

Method of formulation:

There are two types of toothpaste formulation procedures,

1. Dry gum method,
2. Wet gum method,

Sr no	Ingredients	Quntity(gm)
1.	Neem	0.5
2.	Honey	0.5- 2
3.	Cinnamon	5-10
4.	Turmeric	2-5
5.	Triphala	1-2
6.	Babool leaves	0.5
7.	Amroodleaves	0.5

Table. No-1 Formulation

EVALUATION PARAMETERS:[16-17]

1. PHYSICAL EXAMINATION :

- colour– The colour of the toothpaste was visually examined.
- Taste – The taste of the toothpaste was examined orally.
- Odour – The formulation evaluated for its odour by smelling it.
- Smoothness – By rubbing the formulation between the fingers, the paste's smoothness was evaluated.

2. PERFORMANCE EVALUATION:

a. **Moisture Content:**

The weight loss was used to calculate the moisture content by using the formula. % Moisture =Original sample weight – Dry sample weight ×100%

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b. **Cleaning Ability :**

Eggshells are a good source of tooth enamel that is close enough to natural teeth to test toothpaste's cleaning performance. Each toothpaste that was tested has been given one eggshell.

c**. Foaming Ability**

- Take a substance that was weighed into a glass beaker.
- It should be added to distilled water and left to stand for 30 minutes.
- The beaker's contents were mixed before being poured into a calibrated measuring cylinder.
- The cylinder was then shaken with 12 full shakes and let to stand for 5 minutes after being shaken 1 or more to create a uniform suspension.
- The volume of the foam was determined as

Foaming Ability = L1 – L2 L1 =
Volume in ml of foam with water
L2 = Volume in ml of water only

d. **Spread Ability :**

- The following procedure is used to determine the product's spread ability:
- Take a product and place it in the middle of the glass plate.
- Then place second plate over it add 1 kg weight on the highest point of set up cautiously.
- After a period of time, remove the and measure the diameter in cm.

e. Stability :

Each of the three glass test tubes contained a portion of the toothpaste and was sealed.

After being heated at 45°C for 72 hours, the contents were visually examined for signs of homogeneity, fermentation, and other deterioration, and the results were reported as pass or fai.

f. Composition :

The Indian Standards should be followed by all ingredients. Monosaccharides or disaccharides like sucrose or fermentable carbohydrates are not found in toothpaste

g. PH :

The herbal substance was mixed thoroughly with deionized water to create a suspension. Then used a Jenway 3510 pH metre to measure the pH.

II. CONCLUTION:

Teeth are the stronger and hardest part of the human body, maintaining good oral hygiene is crucial. To keep our mouths clean and free of microorganisms, we use toothpaste on a daily basis. Given that herbs have a wide range of medicinal characteristics for a wide range of illnesses, the current review includes a variety of herbs utilised in the manufacture of dentifrices. Herbal toothpaste is thought to be generally safe, easily accessible,and have comparable anti-microbial and good abrasive properties to conventional toothpaste. The use of herbal toothpaste is essential in the management of a number of dental conditions, including gingivitis, caries, and plaque. Therefore, it is determined that it is necessary to identify and elucidate the structure of the bio active components responsible for the antibacterial activity against various microbes.

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