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Formulation and Evaluation of Herbal Toothpowder

Miss. Pratiksha N. Uchale[1] and Dr. Subhash T. Kumbhar[2]
Samarth Institute of Pharmacy, Belhe, Pune, India[1]
Principle, Samarth Institute of Pharmacy, Belhe, Pune, India[2]

Abstract: *Denitrifies are the product which is used to maintain the oral hygiene such as freshness of mouth and to avoid tooth decay The oral hygiene can be maintained throughout the day by using various Dentrifices prepared by herbal and synthetic ingredients. This work was carried out to prepare a tooth powder which can be used as a tool for proper oral hygiene and to overcome the side effects of the conventional tooth powder which can be used as a tool for proper oral hygiene and to overcome the side effects of the conventional tooth powder prepared by synthetic ingredients. Tooth powder is used in combination with tooth brush to maintain the oral hygiene such as freshness of mouth and to avoid tooth decay. The work was carried out to prepare a tooth powder which can be used as a tool for proper oral hygiene and to overcome the side effects of the conventional tooth powder prepared by synthetic ingredients. The tooth powder was prepared by using various herbal ingredients which posses the antibacterial, antiseptic and cooling properties. The prepared tooth powder way evaluated for its organoleptic and physical characteristic such as color, odor, taste, stability, pH , moisture content, swelling index flow property, bulk density, tapped density and abrasiveness to ensure that it posses all the desired futures to use against the dental diseases. The result was found to be within the permitted limits.*

Keywords: Herbal Ingredients, synthetic ingredients, oral hygiene, tooth powder, tooth decay

I. INTRODUCTION

Oral hygiene is an important key to maintain good appearances, impression of an individual and gives confidence. Tooth powder promotes oral hygiene, serves as an abrasive that aids in removing the dental plaque and food form the teeth and also helps to prevent tooth and gum diseases like gingivitis, cavities and stained teeth. The plaque, calculus, gum diseases are the major issues related to tooth. It is mainly caused by bacterial action and mineralized deposition leads to plaque, calculus these diseases are mainly due to the negligence in proper caring of Tooth, so it can be prevented and controlled by proper brushing by using effective tooth powder and tooth pastes.

Tooth powder can be used as prophylactic cosmetic for tooth to prevent tooth decay and bad breath. It can prepared by synthetic and herbal ingredients now a days herbal formulations are high in demand due to its efficiency to avoid the side effects when compared with synthetic formulation. Tooth pastes and tooth powder are based on its abrasive property, the paste and powder applied on the tooth to rub against the tooth which helps to remove the deposited food debris and minerals from tooth. Tooth powder is used in combination with tooth brush to maintain the oral hygiene such as freshness of mouth and to avoid tooth decay. This work was carried out to prepare a tooth powder which can be used as a tool for proper oral hygiene and to overcome the side effects of the conventional tooth powder prepared by synthetic ingredients. The tooth powder was prepared by using various herbal ingredients which posses the antibacterial, antiseptic and cooling properties. Amla powder, Neem powder ,cinnamon powder, clove powder, baking soda, pink Himalaya are the herbal ingredients were used in this work to formulate ideal tooth powder which can satisfy all the required properties to keep the mouth fresh and to prevent tooth decay. Tooth powder are based on its abrasive property,the powder applied on the tooth rub against the tooth which helps to remove the deposited food junk and minerals from tooth. Oral hygiene is very important for the health. Due to variant of phytoconsitituents,substituting and adulterants in crude drugs their formulation for purity and quality.one of the most commonly used inn herb in most of herbal tooth powder available in market, due to its bitterness,smell antimicrobial activity. It is found that 10billion of microbes. Are present in oral cavity.some of them are dangerous to hygiene of buccal cavity .classical herbal tooth powder are used as tooth cleaning agents, and also used in various oral diseases like gum diseases, Tooth erosion, Tooth sensitivity,toothache.The main aim of worrk is to prepare evaluate and compare lab herbal preparation and market herbal preparationb by different method organoleptic , Physicochemical, physical and phytochemical Analysis. oral

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hygiene is very important for the health. Tooth powder is work such as breath freshness and teeth whitening. It can aid in the elimination and masking. Herbal toothpowder is rich in herbal antimicrobials as well as trace minerals and calcium. The baking soda alters the pH in mouth reducing the bacteria load that contributes to cavities. The herbs are antimicrobial and stimulate circulation in gums, while the calcium and trace mineral help to rebuild tooth enamel. Herbal Tooth Powder is highly admired for quality and longer shelf life. Herbal tooth powder is a tooth-cleaning agent that is almost entirely made from all-natural ingredients.

1.1 Ideal Properties

- Good abrasive effect
- Non irritant and non toxic
- Prolonged effect
- Keep the mouth fresh and clean
- Impart no stain in tooth
- Cheep and easily ,available.

1.2 Types of Toothpowder

1. Whitening tooth powder
2. Natural tooth powder
3. Herbal tooth powder
4. Homemade toothpowder

Whitening Tooth Powder

It's purpose is to freshen breath, heal gums and reduce the amount of inflammation in the mouth. Tooth powder also can polish and whiten a person's teeth**.**

Natural Tooth Powder

Ingredients like sea salt, which acts as an abrasive, natural chalu and certain essential oils like peppermint eucalyptus, and wintergreen are common ingredients in natural tooth powder.

Herbal Tooth Powder

Sore or bleeding gums also can benefit from herbal tooth powder. Herbal tooth powder can have a of ingredients. Baking soda, powdered chalk and white clay are are common. Herbal tooth powder has been around for centuries.

Homemade Tooth Powder

These powder also can be made at home. Homemade herbal tooth powder can be beneficial because they may cost less and the persons making it will know exactly what ingredients he is putting in his mouth on the mouth on the mouth of his children.

1.3 Benefits Herbal Tooth Powder

- Helps relieve painful, bleeding and spongy gums in gingivitis.
- Maintain oral hygiene and fights bad breath.
- Prevents plaque formation and keeps the teeth strong.

1.4 Neem

The Neemtree (Azadirachta indica) is a tropical evergreen tree native to India and is also found in other southeast countries. In India, neem is known as "the village pharmacy" because of its healing versality and it has been used in Ayurvedic medicine for more than 4,000 years due to its medicinal properties. Neem is also called "arista" in Sanskrit – a word that means Perfect, complete and imperishable. The seeds, bark and leaves contain compounds with proven antiseptic, antiviral, antipyretic, anti- inflammatory, anti-ulcer and antifungal uses.

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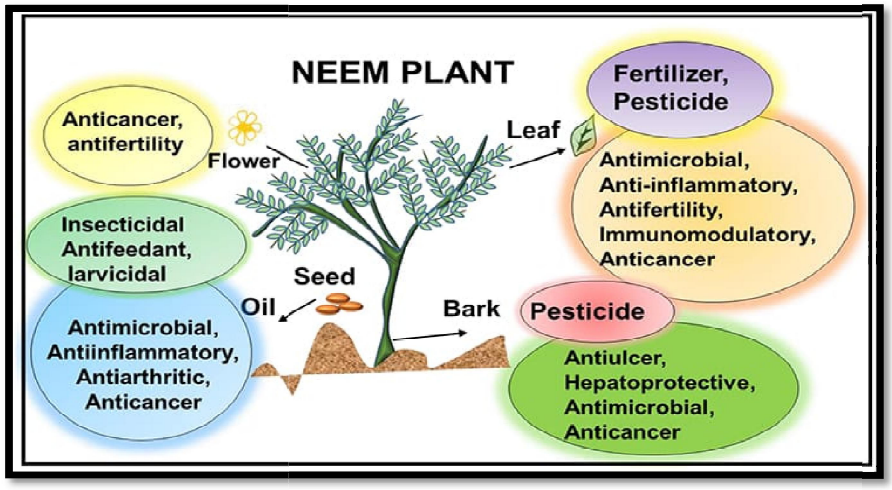

Fig : Bio-activity of the compounds present in Neem leaf

II. MATERIALS and METHOD

Table 1: Materials used for herbal tooth powder

Sr. No	INGREDIENTS	Quantity
1	Neem powder	5gm
2	Clove powder	2gm
3	Cinnamon powder	5gm
4	Baking soda	1gm
5	Pink Himalaya salt	2gm

2.1 Plant Profile

A. Neem

Neem is fast growing tree. It is evergreen, but in severe drought it may shed most of its leaves. It's fruit and seeds are the source of Neem oil role as health promoting effect is attributed because it is rich source of oxidant.it is useMd as antimicrobial activity and freshen the breath.

Fig 1. Neem

- **Synonym** -Melia azadirachta
- **Family** -Meliaceae
- **Common name-** Neem
- **Part used** – dried leaves

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- **Vernacular name**
- **Sanskrit :** Nimba,Arishta,Ravipriya
- **English :** Neem,Margosa margosa
- **Hindi:** Nimb,Mumbai

Plant Taxonomy

- **Kingdom** – Plantae
- **Order-** Fabales
- **Family** -Meliaceae
- **Genus-** Azadirachta
- **Species-** A.indica

Distribution

However, exact origin is uncertain : some say Neem is native to the whole Indian subcontinent;others attributed it to dry forests areas throughout all of south and southeast Asia,including Pakistan, Sri Lanka, Malaysia and Indonesia. It is in India that the tree is most widely used.

How to Prepare Neem Powder

1. • Neem leaf were collected from nearby sources and dried for 2 or 3 days. Then the dried leaf was grained with the help of grinding tool to get fine particles
2. • The powder is activated at at temperature of about 400°C. Then the powder was sieved by the IS standard sieve size of 90 micron. Sieved powders are washed with double distilled water and filtered using the filter paper.
3. • Then washed powder is dried and it is ready to be utilized as a Bio-coagulant. The fine powder was collected and stored in airtight container to keep away from moisture

Fig. 2 Neem Leaf Powder

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B. Amla

Fig. 3 Amla

- **Synonym:** phyllanthus emblica L.
- **Family :** Euphorbiacea
- **Common name:** Amla
- **Parts used:** pericarp of dried matured fruits
- **Vernacular names**
- **Sanskrit :**Amalaka,Dhhatriphala
- **English :**Emblic myrobalan
- **Hindi:** Amhala
- **Tamil:** Nelli,Nelli

Plant Taxanomy

- **Kingdom :** plantae
- **Order :** Malpighiales
- **Family :** Euphorbiacea
- **Genus:** Phyllanthus
- **Species:** phyllanthus emblica
- **Distribution :** Throughout India
- **Description :** Large, deciduous trees, With distichous,linear – oblong leaves. Flowers greenish yellow,in fascicles on leafless branches. Fruits globose, fleshy;seeds bony.

How to prepare Amla Powder

1. Chop the gooseberry into small pieces and put them in the sunlight for a couple of days for drying.A few days in the sunlight and you will notice that the amla pieces will be dried up.
2. Transfer the dried amla pieces into a blender and blend them completely.
3. The Amla powder is ready. The amla powder can be stored in an airtight container.

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Fig. 4 Amla Powder

C. Clove

Fig. 5 Clove

- **Synonym :** caryophyllum,clove buds,lavang
- **Family :** Myrtaceae
- **Common name :**clove,cengkih chengkeh
- **Parts used :** dried flowers buds
- **Vernacular names**
- **Sanskrit :** lavanga,varala,lavangam
- **English :**lavang,laumg

Plant Taxanomy

- **Kingdom :** plantae
- **Order :**Myrtales
- **Family :** Myrtaceae
- **Genus :**syzygium
- **Species :** s.aromaticum
- **Distribution :**clove is also grown in Malaysia, Sri Lanka,Haiti and India, Indonesia,France,USA.

Description

Clove tress are evergreens that grow to some 40feet tall Their bark is smooth and gray and their long,5-inch.leaves look like bay leaves.

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How to Prepare Clove Powder

1. • Bring a cast iron or other non-coated pan to medium high heat.
2. • Place whole cloves into pan and toss for 2 minutes or until fragrant Immediately remove from heat and let cool.
3. • Move cloves to a spice mill, coffee grinder, or mortar and pestleGrind until cloves are a fine power.

Fig. 6 Clove Powder

D. Cinnamon

Fig. 6 Cinnamon

- **Synonym :** Cinnamon bark
- **Family :** lauraceae
- **Common name :** Cinnamon verum
- **Part used :**dried inner bark of the shoots of trees of cinnamanmomum zeylannicum
- **Vernacular names**
- **Sanskrit :** cassia,Chinese cinnamon
- **English :** sthula tvak,Taja

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Plant Taxonomy

- **Kingdom :** plantae
- **Order :**laurels
- **Family :**lauraceae
- **Genus :** Cinnamomum
- **Species :** c.zeylanicum

Description

Cinnamon verum trees are 10-15metres (30-50feet) tall.The leaves are ovate -oblong in shape and 7-18cm long. The flowers which are arranged in panicles,have a greenish color and a distinct odour. The fruit is a purple 1cm druple containing a single seed .

How to Prepare Cinnamon Powder

1. Break the Cinnamon sticks in to small sticks (This helps the sticks to get powdered without much difficulty)
2. Now blend it into a fine powder using a Food processor or blender.Sieve the powdered Cinnamon.
3. Finally Transfer the sieved powder and sugar in to the blender and blend it. This is however optional.

Fig. 7 Cinnamon Powder

2.2 Excipient Profile

A. Sodium Bicarbonate

Sodium bicarbonate, also known as baking soda, is used to relieve heartburn, sour stomach, or acid indigestion by neutralizing excess stomach acid.sodium bicarbonate is mostly used in the food and beverage industry in the preparation of an extensive range of food product such as cakes, muffins, cookies, soda bread, breads, and sports drinks. Many different dentifrices composition are known for cleaning, whitening and preserving the teeth. Sodium bicarbonate gives a clean, fresh feeling to the mouth. Sodium bicarbonate also helps to deodorize the oral cavity by net-realizing acidic doors.

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Properties

- It is non -flammable.
- Powder dust is not as explosive
- It has a melting point of 50dregree
- NaHCO3 is a white crystalline solid which is odourless.
- It is basic in nature.

Uses

- Banking soda is used to make bakery items.
- Used in medicine as an antacid to treat excess of acid formed in the stomach
- Mild cleaning agent
- Prepare aerated water(soda water)

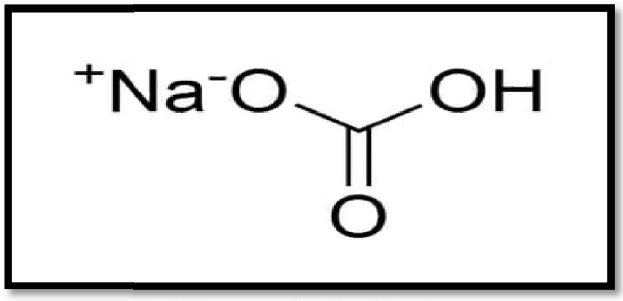

Fig 8. Structure of sodium Bicarbonate

Molecular weight -84.006g/moll

Sources

Baking soda or sodium Bicarbonate comes from soda ash obtained either through the Solvay process or form from anore, ahard, crystalline material.

Pharmaceutical Uses

- Is used to relieve heartburn, sour stomach or acid indigestion by neutralizing excess stomach acid.
- It may be used to treat the symptoms of stomach or duodenal ulcers
- Sodium bicarbonate reduces stomach acid.
- Sodium bicarbonate is also used to make the blood and urine more alkaline in certain conditions.

2.3 Himalayan Pink Salt

Pink Himalayan salt is chemically similar to table salt. It contains up to 98percent sodium chloride. The rest of the salt consists of trace minerals, such as potassium, magnesium and calcium .Himalayan salt is rock salt (halite) mined from the Punjab region of Pakistan. The product is often promoted with groundless claims that it has health benefits.

Properties

- Removes mold, bacteria and allergens form air
- Assists with asthma and allergy
- Promotes quality sleep.
- Produces negative ions which reduce anxiety

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Molecular weight -58.44

Uses

- Winter road treatment
- Food preservation
- Food seasoning
- Medicinal purpose
- Road safety

2.4 Formulations of Tooth Powder

A sample of tooth powder was collected from local market and subjected for physical and chemical analysis. A herbal tooth powder used contains the following ingredients such as clove powder, Neem powder, cinnamon powder , baking soda and pinky Himalaya salt. All this purchased from rural herbal suppliers

All the herbal ingredients were dried and grounded using domestic mixer. The required quantities of the ingredients were weighed and mixed properly and stored in to the air tight container.

Table 2: Formulations of tooth powder

Sr. No	Ingredients	Quantity
1	Neem powder	5gm
2	Clove powder	2gm
3	Cinnamon powder	5gm
4	Baking soda	1gm
5	Pink Himalaya salt	2gm

Procedure for Preparation of Herbal Tooth Powder

1. Take 1 tablespoon of Amla powder, Neem Powder, Cinnamon powder, Baking soda ,Pink himalaya salt mix it well.
2. Add few drops of papermint or tea tree oil or clove essential oil(Optional)
3. Add 1 tablespoon mint leaf powder or pudina. Mix well all powder & Store in well closed container.

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Formula for Herbal Tooth Powder

Table 3: Formula for Herbal tooth powder

Sr. No	Ingredients	Quantity	Role of ingredients
1	Clove powder	2gm	Dental Analgesic
2	Cinnamon powder	5gm	Analgesic
3	Neem powder	5gm	Antiseptic
4	Baking soda	1gm	Leaving agent
5	Himalayan pink salt	2gm	Food Additive

III. EVALUATION OF PREPARED TOOTH POWDER

- **Colour:** The prepared tooth powder was evaluated for its colour.The colour was checked visually.
- **Odour:** Odour was found by smelling the product.
- **Taste:** Taste was checked manually by tasting the product.
- **Stability:** The product was maintained in different temperature conditions to check its stability.
- **Spreadability:** Spreadability was evaluated by the powder manually.
- **Abrasiveness:** It was evaluated manually.
- **Foamability:** The foamability of the product was evaluatd by taking small amount of preparation with water in a measuring cylinder initial volume was noted and then shaken for 10times. Final volume of foam was noted.

IV. RESULT AND DISSCUSSION

Table 4: Observation

Sr. No	Parameter	Observation
1	Colour	Brick red
2	Odour	Characteristics, pungent
3	Taste	Astringent then sweet
4	Stability	Stable
5	Foambility	Good
6	PH	7.93
7	Flow property	Poor
8	Abrasiveness	Good

V. CONCLUSION

The ingredients used in the present work, was screened and selected to possess antibacterial effect and to maintain oral hygiene as it can be claimed by its result as effective toothpastes. Any herbal toothpaste is considered safe to use twice a day and it does not cause any harmful effects, instead imparts good freshness and away from bad odour. Oral hygiene can be maintained in a reliable, safe and inexpensive way by using herbal tooth powder.

The research concluded that herbal tooth powder an emphasizing and more acceptable in dental research and they are safer with minimum 2side effect than synthetic preparation. The formulated tooth powder capable to the tooth and oral hygiene and show the anti-microbial activity against pathogens. The formulated herbal tooth powder has been scope in future in nature of public.

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CONFLICT OF INTEREST

The author declared no conflict of interest.

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