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Formulation and Evaluation of Herbal Tooth Powder for Oral Care

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ABSTRACT:

Tooth powder is used in combination with tooth to maintain the oral hygiene such as freshness of mouth and to avoid decay. The tooth powder was prepared by using a various herbal ingredient which possess the Anti-bacteria, Anti-septic and cooling properties. Tulsi, Neem, clove, cinnamon, Ginger, Amla, Trifala, Mint, Blacksalt, Sodium laurel sulfate, calcium carbonate. Are the herbal ingredient were use 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.

Oral hygiene is a very important for health. Tooth powder is work such as breath is freshening and teeth whitening. It can aid in the elimination and masking. Oral hygiene is an important key to maintain the good appearance, impression of an individual and gives confidence.

KEYWORDS: Herbal Ingredients, Tooth powder, Evaluation, Oral Hygiene

INTRODUCTION:

Value of herbal product in increasing day by day. Herbal tooth powder are available Market in market in a wide range, consisting various ingredient oral hygiene is very important for the health. One of the most commonly used in herb in most of the herbal tooth powder available in market, due to its bitterness smell, antimicrobial activity. The tooth powder applied on the tooth rub against the tooth which helps to deposited food junk and minerals from tooth. Tooth powder is work such as breath freshness and teeth whitening. Herbal tooth powder is a tooth cleaning agent that is almost entirely made from all natural ingredients. It is easy to use cleans the teeth well, and supports good dental health. Tooth powder is different from tooth paste. Tooth powder that found in 10 billion of microbes are present in oral cavity; some they are dangerous to hygiene of buccal cavity.

Classical herbal tooth powder are used as tooth cleaning agent, and also used in various oral disease like gum disease, tooth erosion, tooth sensitivity, tooth aches. The main aim of this work is to prepare, evaluate and compare lab herbal preparation by different method organoleptic, physicochemical, physical and phytochemical analysis. Oral hygiene is very important for health. ^[1,2]

Ideal Properties of Tooth Powder:

1. Good abrasive effect.
2. Nonirritant and non-toxic.
3. Prolonged effect.
4. Keep the mouth fresh and clean.
5. Impart no stain in tooth.

Materials and Methods:

All drugs were collected from the local market. For the preparation of herbal tooth powder, we have selected ten important ingredients such as Neem, Ginger cinnamon, tulsi, Clove, Amla, Amla, Trifala, and Mint & Black Salt. The powdered herbal materials were sieved through a mesh size 75. Then all the ingredients mix uniformly to prepare a homogenous formulation.

Sr. No	Ingredient Name	Botanical Name	Uses
1	Neem	Azadirachta indica	Anti-microbial, Anti-inflammatory
2.	Clove	Syzygium Aromatacium	Anti-bacterial preservative

3.	cinnamon	Cinnamomum zeylanicum	Anti-microbial activity
4.	Ginger	Ginger officinale	Anti-inflammatory
5.	Amla	Indian gooseberry	Antioxidant
6.	Tulsi	Ocimum tenuiflorum	Bactericidal
7.	Mint	Mentha	Analgesic
8.	Trifala	Emblica Officinalis	Anti-Oxidant
9	Black Salt	Sauvarchala lavana	Relieve stomach pain.

Table.1: Herbal Crude Drugs

Formulation Table:

Sr. No	Ingredient	Quantity		
		Formulation 1 (20gm)	Formulation 2 (20gm)	Formulation 3 (20gm)
1	Neem	1	2	3
2	Clove	2	1	1
3	cinnamon	3	2	2
4	Ginger	2	1	1
5	Amla	3	2	3
6	Tulsi	2	3	2
7	Mint	2	2	3
8	Trifala	2	3	2
9	Black Salt	1	1	1
10	Calcium Carbonate	1	2	1
10	Black salt	1	1	1

Table.2: Formulation of Herbal Crude Drugs

Formulation of Tooth Powder:



Figure 1: Herbal Drugs & Tooth Powder

EVALUATION OF TOOTH POWDER: [3, 4]

- 1. COLOUR** - The prepared tooth powder was evaluate for its color was checked visually under normal lamp.
- 2. ODOUR** - Odors was checked by smelling the product.
- 3. TASTE** - Taste was manually checked by testing the product.
- 4. STABILITY** – the stability study was performed as per guidelines. The product was maintained in different temperature condition to check it stability.
- 5. P^H** – P^H of formulated herbal tooth powder determined by using p^H meter.5gm of tooth powder placed in 100ml beaker. Allow the 10 ml of boiled and then cool water. Stir vigoursly to make a suspension and measured the P^H.
- 6. MOISTURE CONTENT** – 5gm of formulation placed in a porcelain dish containing 6-8cm in a diameter and 2-4 depth in it. Dry the sample in a hot air oven at 100⁰ c for 5min.

Calculation % by mass = $100 \frac{M1}{M} \frac{M1}{M1} = \text{loss of mass[g]}$

M = mass [g] of the material taken for the test.

7. SWELLING INDEX – 2 gm of a prepared formulation was accurately weighed and transfer to a 50ml stoppered measuring cylinder the initial volume occupied by the powder was noted and the volume was made up to 100ml with distilled water . The cylinder was Stoppard, shaken gently, and set aside for 24hrs. The volume occupied by the prepared formulation was noted after 24hrs.

Swelling index (S) is expressed in percentage and was calculated by the following equation.

$$S1 (\%) = [VT-V_0] 100$$

Where V_0 is the initial volume of the powder in a graduated cylinder.

VT denotes the volume occupied the powder after 24hrs.

8. Flow property – A funnel was taken and fixed with a clamp to the stand. A graph paper was kept below the funnel and the height between graph paper and bottom of the funnel was measured .Then 50gm of powder was weighed

9. Bulk Density – 20gm of powder was accurately weighed and carefully introduced into a 100ml graduated (1ml) measuring cylinder. The cylinder was dropped at 2sec interval onto a hard surface three times from a height of a one inch to equalize upper surface of powder.

Then, the volume of powder was noted and the bulk density in gm/ml was calculated as;

$$\text{Bulk density} = \text{Wt. of drug/bulk volume.}$$

10. Tapped Density – 20gm of powder was accurately weighed and carefully introduced into a 100 ml graduated (1ml) measuring cylinder. Measuring cylinder was fitted on the tapped density apparatus. The instrument was switched on. It raised the cylinder on the base from a height of about 4 inches .Number of strokes given until further bulk was changed.

Then volume of powder was noted and the tapped density in gm/ml was calculated as;

$$\text{Tapped density} = \text{Wt. of drug/Tapped volume}$$

11. Abrasiveness: It was evaluated manually by using tooth brush.



Figure.2: P^H meter

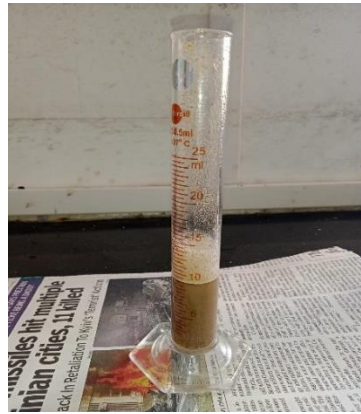


Figure.3: Foamability

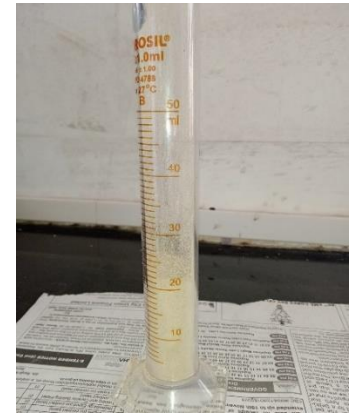


Figure.4: Tapped Density



Figure.5: Swelling Index



Figure.6: Flow Property



Figure.7: Bulk Density

Evaluation Tests of Toothpowder

Evaluation Table: ^[5]**1. Organoleptic Evaluation:**

Sr.No	Test	Observation		
		Formulation F1	Formulation F2	Formulation F13
1	Color	Olive green	Olive green	Olive green
2	Odor	Characteristics & pungent	Characteristics & pungent	Characteristics & pungent
3	Taste	Sweet	Sweet	Sweet
4	Texture	Fine	Fine	Fine
5	Appearance	Powder	Powder	Powder
6	Abrasiveness	Good	Good	Good

Table.3: Organoleptic Evaluation of Herbal toothpowder**2. Physic-chemical Evaluation:**

Sr.No	Test	Observation		
		Formulation F1	Formulation F2	Formulation F13
1	pH	5.6	5	5.9
2	Moisture Content	4%	1.82%	2%

Table.4: Physic-chemical Evaluation of Herbal toothpowder**3. Rheological Evaluation:**

Sr.No	Test	Observation		
		Formulation F1	Formulation F2	Formulation F13
1	Flow Property	Less than 1cm	Less than 1cm	Less than 1cm
2	Bulk Density	0.49 gm/ml	0.50 gm/ml	0.49 gm/ml
3	Tapped Density	0.40 gm/ml	0.39 gm/ml	0.40 gm/ml
4	Formability	Good	Good	Good

Table.5: Rheological Evaluation of Herbal toothpowder**4. Patch test:**

Sr.No	Test	Observation		
		Formulation F1	Formulation F2	Formulation F13
1	Swelling	No	No	No
2	Redness	No	No	No
3	Irritation	No	No	No

Table.6: Patch test of Herbal toothpowder**5. Stability Study:**

Sr.No	Test	Observation		
		Formulation F1	Formulation F2	Formulation F13
1	Stability	Stable after 6 months	Stable after 5 months	Stable after 5 months

Table.7: Stability Study of Herbal Toothpowder**RESULT AND DISCUSSION:**

In the present study formulated and evaluated Herbal tooth powder. The organoleptic property showed an Olive green color characteristics odor with a sweet taste. The powder has 4gm/ml of bulk density. The angle of repose was determined to find out the flow property and it shows good flow property. The pH of the formulation was found to be 5.

Tooth powder is a good to use a very mild abrasive that gently scrubs and beautifully polish our teeth. Any herbal toothpaste is considered safe to use twice can be maintained in a reliable. Safe and inexpensive way by using herbal tooth powder.

CONCLUSION:

In the present work, was observed toothpowder have antibacterial effect and to maintain oral hygiene. Oral hygiene can be maintained in a reliable, safe and inexpensive way by using herbal tooth powder. Usage of herbal tooth powder twice a day is safe and effective.

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