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Formulation and evaluation of polyherbal toothpaste

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ABSTRACT:
Toothpaste is a gel or paste formulation for oral hygiene with the use of toothbrush.The aim of this research is to formulate and evaluate polyherbal toothpaste formulation. But some of these substance show undesirable side effect such as Tooth staining and alter eat test. The Objective of the present research work to this substances show undesirable side natural ingredients. The six plants samples that has employed in this project i.e. Neem leaves, clove, mango peel, honey, glycerin, Guava leaves, Acacia powder. Which were traditionally used for tooth cleaning. Lab made herbal toothpaste was formulated by suitable and natural ingredients to gel formulation which found to be more stable. Hence, by the fact of in vitro studies it is concluded that lab made polyherbal toothpaste formulated was found to be of Good quality as compared to marketed formulation.

I. INTRODUCTION:

[1] Toothpaste have been used since the ancient past and are one of main incomparable components of oral health care. The neem plant have antibacterial activity is has evaluated from the ancient time the aimed of current research to formulate polyherbal toothpaste. Utilizing plant extract like neem leaves, guava leaves, honey, acacia, mango peel, the plant extract ingredient possess the anti-bacterial activity. The herbal toothpaste developed which can satisfy all the required condition to keep the mouth fresh and prevent tooth decay by bacteria. The formulated polyherbal toothpaste compared with market preparation.

[2] This toothpaste can treat various diseases of teeth like gingivitis, tooth decay, cavity, gum bleeding etc. Toothpaste protects, cleans and polishes teeth. It make oral hygiene more streamlined and it has a fresh taste and smell and also freshen the breath.

Toothpaste is dental preparation used in conjunction with a toothbrush as an accessory to clean and maintain the health of teeth polyherbal formulation is the used of more than one herb in medicinal preparation toothpaste is a gel or paste formulation products and is use to pure and keep up oral purification.

II. MATERIAL AND METHOD

Chemicals: Glycerin, Sodium lauryl sulphate [foaming agent] HPMC, sodium saccharine, menthol, methyl paraben.

Collection: Samples were collected from following places:

Neem leaves [Azadirachta indica], clove [Eugenia caryophllus], guava leaves [Psidium guajava],

Mango peel, and other sample were collected by local market.

The sample were stored at room temperature (25^0C) until further use.

Drying: Drying of Neem leaves [Azadirachta indica], clove [Eugenia caryophllus], guava leaves [Psidium guajava], mango peel was done for one week at room temperature.

Crushing: Crushing of leaves was done with the help of pestle and mortar at room temperature the crushed sample was stored at room temperature.

Table 1: Formulation ingredients with its botonical name and Category:

Sr. No.	Common name	Botanical name	Category
1	Neem	Azadirachta indica	Anti-bacterial
2	Mango peel	Mangifera indica	Anti-bacterial
3	Acacia	Acacia arabica	Prevention and treatment of gingivitis
4	Clove	Eugenia caryophyllus	Anti-bacterial
5	Guava leaves	Psidium guajava	for teeth whitening
6	Glycerine	-	Humectant

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7	HPMC	-	Stabilizaer
8	Menthol	-	Cooling agent
9	Honey	Apismelifera	Sweeting agent
10	Methyl paraben	-	Preservative
11	Sodium lauryl sulphate	-	Foaming agrnt
12	Sodium sachharin	-	Sweetening agent

III. EXPERIMENTAL PROCEDURE:-

1. Procedure of preparation in Polyherbal toothpaste

[3] Polyherbal toothpaste was prepared using Neem leaves, honey,acacia,clove,mango peel,guava leave,it is anti-bacterial activity. Neem leaves shows an optimistic activity in case of mouth ulcer.

Neem bark is used as an active ingredient in a number of toothpaste.Honey added as sweetning agent and anti-fungal activity, sodium lauryl sulphate used for giving foaming to the formulation. Methyl paraben is used to preserve the product and acacia to prevent gingivity and also act as gelling agent. And guava leaves reduces gum inflammation, relieves pain.

[4] Polyherbal toothpaste was prepared using clove,honey,mango peel,neem leaves,guava leaves,acacia, sodium lauryl sulphate,HPMC and glycerine.Water and acacia were added in to the above mixture containing herbal ingredients and other remaining ingredienttriturated well until a paste consistency is formed to get final product.

Fig. Trituration of ingredient and packaging of formulation in tube

Table 2: Formulation ingredients with Quantity

Sr. No.	Ingredients	Quantity (g)
1	Neem	01.50
2	Mango peel	01.00
3	Acacia	01.00
4	Clove	01.50
5	Guava leaves	02.00
6	Glycerine	12.50
7	HPMC	00.50
8	Menthol	00.75
9	Honey	01.00
10	Methyl paraben	00.50
11	Sodium lauryl sulphate	00.75
12	Sodium sachharin	00.15

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IV. EVALUATION OF TOOTHPASTE:

[1] A. Physical Evaluation:

1. Colour:

Colour of the prepared toothpaste was estimated and was checked visually.

2. Odour:

Odour was found by smelling the preparedformulation.

3. Taste:

Taste was checked manually by tasting the herbal toothpaste formulation.

4. Determination of pH:

Take 1 gm of the tooth paste in a 150 ml beaker and add 10 ml of freshly boiled and cooled water (at temperature 27ºC). Stir well to make a thorough suspension. Determined the pH of the suspension within 5 minutes, using digital pH meter and noted.

5. Foamability:

The foam ability of the formulation was evaluated by taking small amount of preparation with water in a measuring cylinder.Initial volume was noted and then shaken for 10 times. Final volume of foam was measured.

[2] B. Study of rheological properties:

1. **Spreadability:**

The Spreadability is term express to denote the extent of area to which the paste readily spreads on application area. One of the basic criteria for a paste to meet ideal quality is that it should posses good spreadability. About 1 gm of medicated dental paste was weighed and kept at the center of the glass plate (10 x10 cm) and, another glass plate was placed over it carefully. 1g weight was placed at the center of the plate (avoid sliding of the plate). The diameter of the paste in cms, after 15 min. was measured.

The Spreadability (S) can be calculatedusing the formula

$S = m \times l/t$

Where, S–Spreadability.
m-Weight tied to upper glass slide.
l-Length moved glass slide.
t-Time taken.

2. Tube extrudability:

The formulation under study was filled in a clean, coated aluminum collapsible one-ounce tube with a nasal tip of 5mm opening and applies the pressure on tube by the help of finger. Tube extrudability was then determined by measuring the amount of paste extruded through the tip when a pressure was applied on tube paste.

3. Abrasiveness:

Squeeze out the content 15-20 cm long on the butter paper, repeat the same process for at least ten collapsible tubes. Press with the contents of the entire length with fingertip for the presence of sharp andhard edged abrasive particles. Toothpaste shall not contain such particles.

[5] 4. Determination of moisture and volatile matter:

5 g of formulation placed in a porcelain dish containing 6-8 cm in diameter and 2-4 cm depth in it . Dry the sample in an oven at 105℃. Calculation doneby using formula:

Mass = 100M. I/M MI

Where, -Loss of mass (g) on drying
M- Mass (g) of the material taken for the test.

5. Moisture content:

Toothpaste (10 gm) weighted in a Porcelain dish and dried it in the oven at 105℃. It was cooled in a desiccater. The loss of weight is recorded as percentage moisture content and calculated by the given formula.

% Moisture = Original sample weight – dry sample weight/ Original sample weight

V. RESULT AND CONCLUSION:

Table 3: Comparative data of evaluation with marketed formulation:

Sr. No.		**Lab formulation**	**Meswak**	**Dant kanti**
	A. Physical Evaluation			
1	Colour	Greenish Brown	White	Brown
2	Homogeniety	Good	Good	Good
3	Taste	Characteristics	Pleasant	Characteristics
4	pH	8.5	7.4	8.0
5	Foamability	78	75	77
	B. Rheological parameters			
1	Spreadability (cm)	5.4	5.2	4.8
2	Tube extrudability	90.28	90.45	90.47

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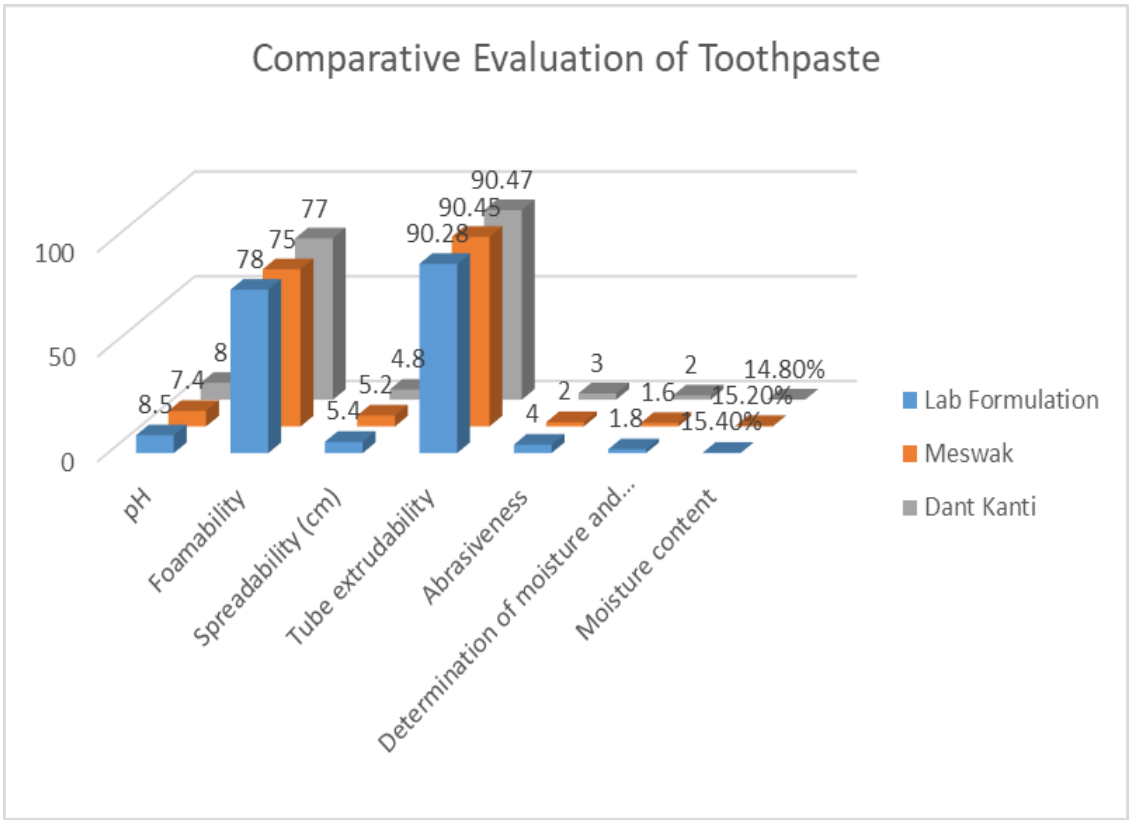
3	Abrasiveness	4	2	3
4	Determination of moisture and volatile matter (% by mass)	1.8	1.6	2.0
5	Moisture content	15.4%	15.2%	14.8%



VI. CONCLUSION:

Now a days toothpaste plays major role on maintaining oral hygeine as well as prevents oral health related problems. Lab made herbal toothpaste formulation was found to be more stable and the result were obtained from preparation can be compared with marketed formulation. The data was obtained it seems like to that of marketed formulation.

REFERENCE:

[1]. Jagtap M. Preparation and Evaluation of Toothpaste. Asian Journal of Pharmaceutical Analysis. 2018(4): 191-194.

[2]. Muñoz CA, Torrado A, Valiente M, Zhang W, Li Y. Remineralization Potential of a New Toothpaste Formulation: An In-Vitro Study.The Journal of Contemporary Dental Practise 2004; 5 (1):18-30.

[3]. Ahmad I :Screening of some Indian medicinal plants for their anti-microbial properties. Journal of ethnopharmacology 1998;62;183-193

[4]. Prashant GM, Chandu GN, Murali Krishna KS,. The effect of mango and neem extract on four organisms causing dental caries streptococcus mutans streptococcussalivavius,streptococcus mitis and streptococcus sanguis; an in vitro study. Indian Journal dental research.2007;18:148-151.

[5]. Gaurav M. Formulation and evaluation of polyherbal toothpaste and comparative study with marketed formulations. International Journal of Creative Research Thoughts. 2020; 8 (5) 3796-3810