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FORMULATION AND EVALUATION OF HERBAL TOOTHPASTE

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ABSTRACT

The purpose of modern-day studies is to formulate natural toothpaste the use of herbs like clove and kalonji oil. This mixture has in no way been used earlier than in any studies. These extracts have antibacterial and anti-inflammatory properties. Herbal toothpaste with herbal elements is extra suitable in public opinion than chemical primarily based totally artificial formulations with inside the contemporary oral dental care state of affairs because of their protection and efficacy in decreasing dental caries and stopping different disorders. Clove oil incorporates eugenol as an antibacterial. The organized toothpaste became evaluated for one of a kind parameters like pH=7.4, spread ability, moisture content, foamability, antimicrobial test for our respective f3 formula become performed and region of inhibition became located to be 15mm with a view to expand a extra powerful and solid product. This studies proves that our natural primarily based totally toothpaste method with herbal components is as first-rate because it receives in phrases of performance.

KEYWORDS

Herbal toothpaste, Antimicrobial, Anti-inflammatory, Gingivitis and Dentifrice.

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INTRODUCTION

Herbal and natural primarily based totally toothpaste has been utilized in historic existence for decades and is one of the maximum enormous factors for oral fitness care. India has a protracted records of the use of neighbourhood treatments for loads of illness. People are actually much more likely to apply non alcoholic toothpaste and natural formulations after mastering approximately the negative aspects of business toothpaste. Natural toothpastes does not consist of fluorides or synthetic flavours or colours¹. The manufacture and improvement of toothpaste formulations dates lower

back to 300-500B in China and India. Modern toothpaste formulations had been evolved in nineteenth century.

After the improvement with inside the subject of medicines, chalk and cleaning soap had been included to the ones formulations². Three toothpaste is a dentifrice this is used to maintain enamel clean, hold their fitness and enhance their appearance. Toothpaste is normally used to hold oral hygiene, however it additionally capabilities as abrasive doing away with dental plaque and meals debris from the tooth, helping with inside the elimination and or veiling of halitosis and freeing lively chemical substances like fluoride to assist save you teeth and gum disease.(eg. Gingivitis)³.

The polyherbal and natural formulations are very powerful as they comprise lively chemical elements along with polyphenols, gums, alkaloids, glycosides etc. Those formulations have additionally been established to have exclusive organic activities⁴. Artificial toothpaste which crafted from diverse chemical components harms the touchy a part of enamel like enamel, crown, dentin, roots of enamel and blood supplying nerves of enamel. Herbal toothpaste which made from herbs that received from natural plants like Babul, Aloe Vera extract, Clove oil, peppermint oil, Eucalyptus oil etc⁵.

MATERIAL AND METHODS

Procurement of herb oils: Clove and Kalonji oil purchased from local market.

Chemical reagents: All these chemicals are used in this study are sodium lauryl sulphate, calcium carbonate, sodium benzoate, sodium saccharin, glycerine and peppermint oil.

Preparation of herbal toothpaste

The solid ingredients calcium carbonate, sodium lauryl sulphate, glycerine, sodium benzoate, sodium saccharine were weighed accurately as mentioned in the formula and sieved with sieve No.80 so as to maintain the particle size.

These ingredients were also mixed in a mortar and pestle, then triturated with precisely weighed glycerine until a semi solid substance was created.

Addition of herbal ingredients

Accurately weighed herbal extract in form of clove oil and kalonji oil were added to the base

At the end, peppermint oil was added as a flavour.

Quality control tests

Physical Examination (Colour, odour, taste, smoothness, relative density) Formulated toothpaste turned into evaluated for its coloration. The visually color turned into checked. Odour turned into determined via way of means of smelling the product. Taste became checked manually through tasting the formula. The Smoothness changed into examined via way of means of rubbing the paste system among the fingers⁶⁻¹⁴.

pH

pH of formulated natural toothpaste changed into decided through the use of pH meter. 10g of toothpaste located in 150ml of beaker. Allow the 10ml of boiled after which cooled water. Stir vigorously to make a suspension.

Homogeneity

The toothpaste shall extrude a homogenous mass from the collapsible tube or any appropriate box through making use of regular pressure at 27±20C. Further bulk of contents shall extrude from the crimp of box after which rolled it gradually.

Determination of sharp and edge abrasive particles

Extrude the content material 15-20cm lengthy at the butter paper, repeat the identical method for as a minimum ten collapsible tubes. Press with the contents of the complete duration with finger tip for the presence of sharp and difficult edged abrasive particles. Toothpaste shall now no longer include such particles

Foamability

The foamability of formulated toothpaste evaluated through taking small quantity of formula with water in measuring cylinder preliminary quantity changed into stated after which shaken for 10 times. Final extent of froth turned into cited.

Determination of moisture and volatile matter

Five g of components positioned in a porcelain dish containing 6-eight cm in diameter and 2-four cm intensity in it. Dry the pattern in an oven at 1050C. Calculation % with the aid of using mass =

100MI/M MI-Loss of mass (g) on drying M- Mass (g) of the cloth taken for the check.

Spreadability

In this approach slip and drag feature of paste involve. Formulated paste (2g) located at the floor slide beneathneath study. The formulated paste located like sandwich among this slide and some other glass slides for 5min to expel air and to offer a uniform movie of the paste among slides. Excess of the paste became scrapped off from the edges. The pinnacle plate become then subjected to tug of 80g with the assist of string connected to the hook and time (sec) required through the pinnacle slide to cowl a distance of 7.5cm turned into mentioned. A quick c programming language indicated higher unfold ability.

Anti-bacterial activity

In the disk-diffusion susceptibility take a look at, disks containing recognized quantities of an antimicrobial agent are positioned at the floor of an agar plate containing a nonselective medium that has been inoculated with a suspension of a pressure of *E.coli* to supply a confluent garden of boom. The antimicrobial agent diffuses into the medium, inflicting a quarter of inhibition of increase of the pressure across the disk similar to the susceptibility of the pressure to the agent.

Interpretative inhibition z one diameters were hooked up for susceptibility check effects to allow type of an isolate as being susceptible, intermediate (or showing reduced susceptibility), or immune to an antimicrobial agent (Table No.2). After degree the diameter of ZOI the records became mentioned and deciphering the result. (Table No.2). After measure the diameter of ZOI the data was noted and interpreting the result.

Comparison

Formulated herbal toothpaste with marketed preparation. The formulated herbal toothpaste was compared with marketed preparation follows Anti activity, Spread ability, Foamability, pH determination, % Moisture content.

Table No.1: Formulation of herbal toothpaste

S.No	Ingredients	F0	F1	F2	F3	F4
1	Nigella sativa (ml) (Black seed oil)	–	2	2	4	4
2	Syzygiumaromaticum. (ml) (Clove oil)	–	1.5	1.5	3	3
3	Sodium lauryl (gm) sulphate	0.5	1.5	1.5	1.5	1.5
4	Sodium benzoate (gm)	0.5	0.5	0.5	0.5	0.5
5	Sodium saccharin (gm)	0.75	1	1	1	1
6	Glycerin (ml)	5	10	10	10	10
7	Calcium carbonate (ml)	5	5	5	5	5
8	peppermint oil (ml)	q.s	q.s	q.s	q.s	q.s

Table No.2: Quality control test for F₃ optimized formulation

S.No	Parameters	Results obtained
1	Color	Half white
2	Odor	Pleasant
3	Taste	Better
4	Abrasiveness	Good abrasive
5	Foamability	45
6	Moisture content	15.6%
7	Spread ability	3.5cm/sec
8	Antimicrobial activity	Zone of inhibition (15mm)



Figure No.1: Preparation different batches of herbal toothpaste



Figure No.2: pH of toothpaste



Figure No.3: Foamability

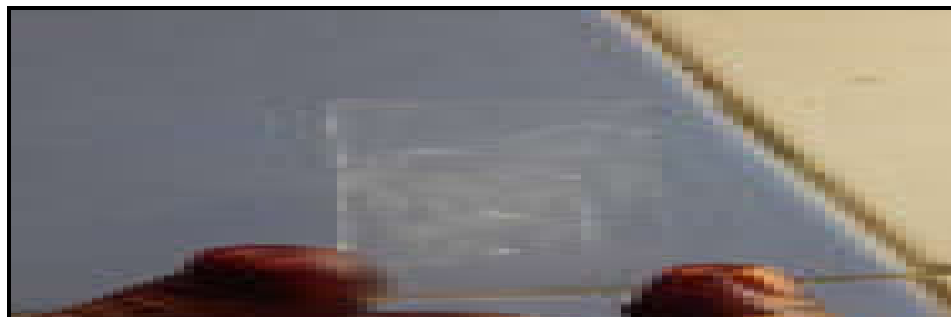


Figure No.4: Spreadability



Figure No.5: Preparation of culture media



A (f_0) = control

F_3 = zone of inhibition 15mm

Figure No.6: Zone of Inhibition for f_3 (15mm)

CONCLUSION

From the above research studies we can conclude that the results obtained in formulation of herbal tooth paste using different ingredients such as combination of clove oil and kalongi oil to inhibit bacterial growth respectively.

During our quality control test for our respective optimized formulation were observed to have pH, good physical properties, good spreadability, foamability, moisture content and antimicrobial activity was found to be 15mm.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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