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"Review Article on Study Of evaluation Test and Benifit Of betel Leafinherbal Toothpaste"

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ABSTRACT: Pastes are semisolid dosage forms that contain one or more drug substances intended for topical application. One class is made from a single-phase aqueous gel (e.g., Carboxymethulcellulose Sodium Paste). The other class, the fatty pastes (e.g. Zink Oxide Paste), consists of thick, stiff ointments that do not ordinarily flow at body temperature, and therefore serve as protective coatings over the areas to which they are applied. It contains high percentage of insoluble solid which are finely dispersed into a suitable vehicle.

In herbal toothpaste to use piper betel leaf extract has been proven to decrease bacterial and fungal activity in the oral environment. Betel leaf extract also contain catechol,which contains polyphenols and flavonoids, which are high in antioxidant.

In India many type of leaves are used as traditional herbs, including the betel leaf.As atradition in India, betel leaf are chewed or consumed at religious event are used as antiseptic and antimicrobial agent that can treat many conditions such as toothache, bleeding,,abscesses and gingivitisPiper betle (betel) plant belongs to the Piperaceae family. Piper. betle is widely known for its potent medicinal properties. Various active compounds are present in Piper. betle such as allylpyrocatechol, hydroxychavicol, piperbetol, ethylpiperbetol, piperol A, piperol B, chavibetol, and alkaloids which account for these beneficial medicinal properties.

Keywords- Thothache, Toothpaste, gingivitis,herbal,antioxidant.

I. INTRODUCTION-

IN developing country, the intensity of infection caused by certain pathogenic microorganism that may leads to mortality as well as morbility in immune suppressant patients .[1]Multiple abrasive, scent, green lead was used to remove the stain from teeth untile mid 19TH century.Inthe period 1950AB ,Dr. Washingtone Wentworth Sheffield, a dentist invented a toothpaste.[2]Toothpaste is semisolid form used with an aid of toothbrush to enhance oral hygiene[3]

In recent years, the focus has shifted towards the release of active ingredients during formulation developments to prevent and /or treat oral illness. Toothpaste is a dentifrice used to clean, maintain and improve the health of teeth. Toothpaste is mainly used to promote oral cleanliness and also acts as an abrasive that helps to prevent the dental plaque and food particles from the teeth, aids in the removing and/or veiling of halitosis, and releases active ingredients such as fluoride to aid in preventing tooth and gum disease (eg. Gingivitis).

The majority of the cleaning is performed by the mechanical utilization of the toothbrush with the help of excipients used in toothpaste. The main aim of this investigation is to evaluate the Herbal toothpaste formulations and comparing with three popular commercial toothpastes.

Ideal properties[4]

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

Material and Method

2. Plant Profile: [4, 5]

Taxonomical classification

Kingdom: Plantae
Division: Magnoliphyta
Class: Magnolipsida
Order: Piperales
Family: Piperaceae
Genus: Piper
Species: betle

Vernacular name

Sanskrit: Tambool, Mukhbhushan, Varnalata

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Hindi: Paan
English: Betle, Betle pepper, Betle-vine
Telugu: Nagballi, Tamalapaku
Tamil: Vetrilai
Gujarati: Nagarbael

Chemical constituent –

The leaf contains Essential oil (0.08-0.2%), Tannin (0.1-1.3%), Alkaloid (arakene). It also contains different vitamins like Vitamin-C (0.005-0.01%), Calcium (0.2-0.5%), Phosphorus (0.05-0.6%),Potassium (1.1- 4.6%). An essential oil composing of safrole, allyl pyrocatechol monoacetate, eugenol, terpinen-4-ol, eugenyl acetate, etc.

Evaluation Parameters

• **Abrasiveness**- Extrude 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 and hard edged abrasive particles. Toothpaste shall not contain such particles.

• **Determination of spreadability**

In this method slip and drag characteristic of paste involve. Formulated paste (2g) placed on the ground slide under study. The formulated paste placed like sandwich between this slide and another glass slides for 5min to expel air and to provide a uniform film of the paste between slides. Excess of the paste was scrapped off from the edges. The top plate was then subjected to pull of 80g with the help of string attached to the hook and time (sec) required by the top slide to cover a distance of 7.5cm was noted. A short interval indicated better spreadability.

Formula was used to calculate spreadability:

$S=M\times L /T$

Where,\

S= Spreadability

M= Weight in the pan (tied to the upper slide)

L= Length moved by the glass slide

T=Time (sec) taken to separate the upper slide from the ground slide.

• **pH determination**

P`H of formulated herbal toothpaste was determined by using pH meter. 10g of toothpaste placed in 150ml of beaker. Allow the 10ml of boiled and then cooled water. Stir vigorously to make a suspension

• **Homogeneity**

The toothpaste shall extrude a homogenous mass from the collapsible tube or any suitable container by applying of normal force at 27±20C. in addition bulk of contents shall extrude from the crimp of container and then rolled it gradually.

•**Foaming**

T`he foamability of formulated toothpaste evaluated by taking small amount of formulation with water in measuring cylinder initial volume was noted and then shaken for 10 times. Final volume of foam was noted

Determination of froth power

Foaming power = V1–V2

V1- Volume in ml of foam with water.

V2- Volume in ml of water only.

•**Stability**

The stability study was performed as per ICH guideline. The formulated paste was filled in collapsible tube and stored at different temperature and humidity conditions, 25ºC± 2ºC / 60% ± 5% RH, 30º C ± 2ºC / 65% ± 5% RH, 40ºC ± 2ºC / 75% ±5% RH for the period of three months and studied for appearance, pH and spreadability.

• **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 105ºC.

Calculation

By mass = 100MI/M MI-Loss of mass (g) on drying

M- Mass (g) of the material taken for the test.

PHYTOCHEMICAL TEST

a. SAPONIN

• 2 ml sample was dissolved in 6ml distilled water.
• Shaked well. Froth formation took place.
• Stability of the froth confirms the presence of saponin in the samples.

b. TANNIN

•1 ml sample was dissolved in 1 ml 5% $FeCl_3$.
• Appearance of dark blue or greenish black color confirms presence of tannin the sample.
• I` no color changes then heating mantle is used for changing the color.

C. FLAVANOIDS

• 2µl samples was drop wise added into 20 ml NaOH.

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• Again Conc. HCL was added drop wise, appearance of yellow color
• Co`nfirms the presence of flavonoids in the sample.

D. CARBOHYDRATES
• Fehling's reagent was prepared by mixing Fehling A and Fehling B solution.
• For Fehling A- 0.35g CuSO4 was dissolved into 5 ml distilled water followed by addition of 2-3 drops of Conc. H2SO4.
• For Fehling B- 1.75g NaK tartarate was dissolved in 5 ml distilled water, 1.25g NaOH was added in the solution and mixed well to dissolve it.
• Then Fehling A and Fehling B was mixed well in the ratio of 1:1(FA+FB=10ml).
• Now 1ml Fehling's reagent was dissolved in 2ml sample and heated for over 20 mins.
• Appearance of red ppt. confirms the presence of carbohydrates in the sample.

E. PROTEIN
• 500µl of 1% CuSO4 was prepared and 500µl of 5% NaOH was prepared.
• M`ixed together.
• Sample was added in the solution, occurrence of purple color confirms protein in the sample.

F`. ALKALOIDS
• 500µl extract was centrifuged and 500µl Wagner's reagent was mixed into it.
• Shaked well and left for some time.
• Reddish brown color appears and confirms presence of alkaloids.

G. STARCH SOLUTION
• Add the sample
• Add 2-3 drops of yellow iodine solution
• Stir with glass road
• The iodine solution will turn blue/black colour then starch is Present.

h. FAT TEST.
•` Press the small quantity of extracts between two filter • `Paper the strain on one filter indicated the presence of fixed oils.

I. TERPENOID TEST
• 500µl sample was dissolved in 250µl chloroform.
• 625µl Conc. H2SO4 was added to the solution.
• Reddish brown ppt. of the solution confirms presence of terpenoids

j. PHENOL TEST
• 500µl extract was dissolved in distill water. 2 drops of aq.
• FeCl3was added.
• Appearance of blue color or green color indicates presence of phenols.

H. COUMERIN TEST
• Take a look at 10% NaOH was additional to the extracts and CHCl3 was additional for observation.
• Yellow colour that show the presence of Coumerin.

. QUINONES TEST
• Take a look at dilute 10% NaOH was additional to the 1ml of crude extracts.
• Blue-greenin experienced or red coloration indicated the presence of quinones.

II. DISCUSSION

In the present study the work was attempt to carry out the standardization and extraction of active constituents of piper betel leaf extract, it Also formulate and evaluate herbal toothpaste. plant extract was evaluated for physico-chemical and phyto-chemical analysis by using different organic solvents. Standardization of extract was done with total Ash value, acid insoluble ash values Bulk density Hausner ratio etc. Phyto-chemical analysis was performed on different extracts confirmed the presence of alkaloids, glycosides, triterpenoid, saponins, tannins, flavonoids, etc. formulations were checked for PH, viscosity, homogeneity, foamability, abasivity. formulations were checked for heavy metals From the above study it can be concluded that the prepared herbal toothpaste by using betel leaf shows significant antimicrobial activity

III. CONCLUSION

The medicinal importance of the herb as discussed above evidently prove that betle leaf is one of the most promising commercial botanical with earlier reported to possess a lot of therapeutic values. The leaf has the great potency to act as natural antioxidant. The anti-oxidant property is correlated with different biological activities.The leaf poses the broadspectrum antimicrobial activity against various bacterial strains including Bacillus cereus, Pseudomonas Aeruginosa,Escherichia extract coli, Micrococcus luteus, Staphylococcusaureus, Aeromonas hydrophila, etc. it comes to conclusion that betle leaf place its position in of biological activities and has a

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tremendous strength to come out . it shows better antimicrobial activity in herbal toothpaste.Herbal toothpaste have an emphasized role in maintaining the oral hygienic nature as well as preventing dental carries.

It is a gooed attempt to establish such herbal toothpaste containing piper betel leaf,extracts which helps in reducing bacterial growthin the mouth.

REFERENCES

[1]. Manipal, S., shireen, F., &prabhu, D.(2015), Antifungal activity of aloe vera: In vitro study.SRM Journal of research in dental science, 6(2), 92.https://doi.org/10.4103/0976-433x.155464

[2]. Yigit,N.,Aktas,E.,&Ayyildiz, A. (2008)Antifungal activity of toothpaste against oral candida isolates, journal de medicale, 18(3), 141-146. Htt://doi.org/10.1016/j.mycmed.2008.06.003

[3]. Ersoy, M; Tanalp, J; Ozel, E; Cengizlier, R; Soyman, M; The allergy of toothpaste: a case report. AllergoletImmunopathol,2008, 36(6),368-

[4]. Piperbetel.http://www.home-remediesguide.com/herbs/betel-leaves.html. 4 August, 2014.

[5]. Betel. http://en.wikipedia.org/wiki/Betel. 4 August, 2014.

[6]. Dinesh, M, D., Anjana, J, C., Neethu, G., Nithya, J., Sharannya, M., Meenatchisundaram, S. (2016). Anti-cariogentic activity of piper betel leaf extracts against streptococcus mutans and streptococcus oralis by in vitro. Journal of Medical and Dental Science Research, 3, 50-54.

[7]. Ramya kuber international journal of pharmaceutical and clinical research 2015.

[8]. Rantamen I, et al., Effects of a betaine containing toothpaste on subjective symptoms of dry mouth: A randomized clinical trial. The J.of Cont. Dent. Practice. 2003; 4(2):1-10

[9]. Siddharth Sharma International journal of pharmaceutical Research & Allied Sciences. Volume 3,issue 2 (2014), 30-39.

[10]. Stephen YG, Francis A, Marcel TB, Vivian EA, Kofi A. In vitro antimicrobial study of the efficacy of a toothpaste formulated from Granica Kola stem wood.Int. J. of Pharmacy and Pharm Sci Vol 2, Issue 2, 2010.

[11]. T. Mangilal, International journal of Ayurvedic & herbal medicine 6 (3) May-June 2016 (2266-2273).

[12]. Vaibhav shende, European journal of pharmaceutical and medical research, January 2017.

[13]. Wei Hu, Yan HZ, Wang Q, William D and Margaret P. Effects of fluoride toothpaste on etched enamel of orthodontic patients. Chin. J.of Dent. Research 1999; 2(3):79-