



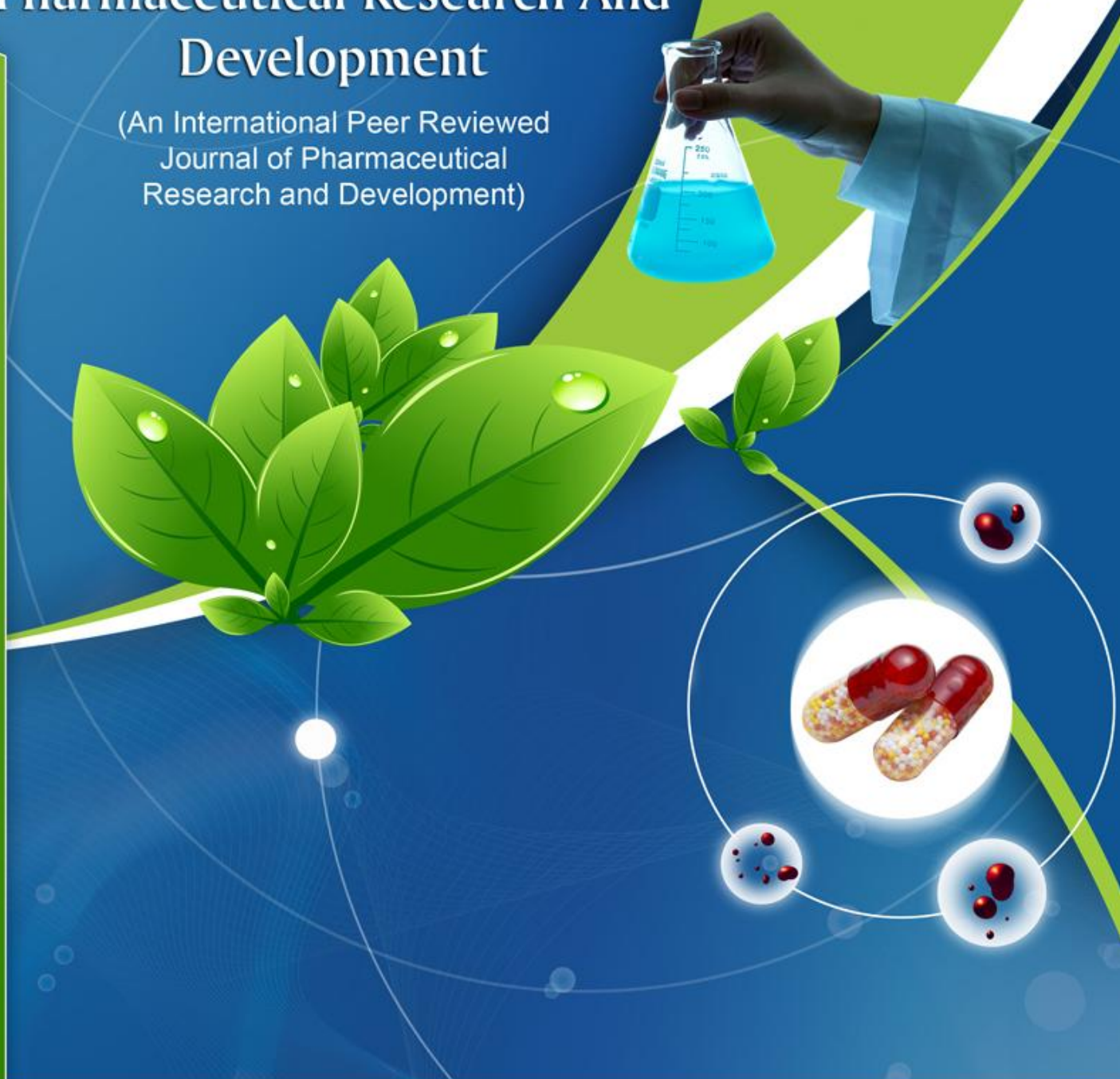
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**Research Article****PREPARATION & EVALUATION OF HERBAL TOOTHPASTE****Sethiya Saloni, Wadhwa Shailedra**

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*Received: December 2015**Revised and Accepted: January 2016***ABSTRACT**

Dentifrices are the products which are used for oral hygiene such as freshness of mouth and to avoid tooth decay. The oral hygiene can be maintained throughout the day by using various dentifrices prepared by herbal and synthetic ingredients. In present study the toothpaste was prepared by using various herbal ingredients which possess antibacterial, antiseptic and cooling properties.

**Keywords:-** Tulsi, Bay, Guava, Mango, tooth paste, dental preparation.

**INTRODUCTION**

The anatomic part of tooth consists of crown, root, enamel, dentine and pulp. Many problems associated with the teeth are bad breath, tooth decay, gum (periodontal) disease, tooth sensitivity, calculus, dental caries and dental plaque. Cleaning of the surface of the teeth is the primary function of a dentifrice when used with a toothbrush. A dentifrice helps in the removal of food particles, reduction of superficial plaque or stain, polishing of tooth surface and refreshing mouth breath. The rationale behind making herbal toothpaste is to fight against the bacteria that cause problems regarding to teeth like gum, dental cavity and gingivitis. Various herbal ingredients are reported to have remarkable beneficial effects on various dental problems mentioned above. They are Clove, neem, sunthi, mentha, tomar, pippali, aloe vera, kapoor, babul, borsali.

They play different role through different mechanisms like by providing protective layer over teeth, providing freshness, Antibacterial effect, reduce dental pain etc. The present work deals with development and evaluation of herbal toothpaste containing leaves of various plant.<sup>1-4</sup>

**MATERIALS & METHOD****Collection of plants:**

Plant materials are collected from nearby Mandsaur and some are purchased from local market of Mandsaur.

**Identification of plants:**

Identification was done by Dr. S. N. Mishra (Principal) from K.N.K. College of Horticulture; Mandsaur (M.P.) Specimens were submitted to Department of Pharmacognosy, MIP. Herbarium no. MIP/cognosy /2015/502

The toothpaste was formulated using following herbal constituents:-

**Tulsi leaf-** It consist of fresh and dried leaves of *Ocimum* species like *Ocimum sanctum* L.

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**Scientific classification<sup>5</sup>**

Kingdom	Plantae
(Unranked)	Asterids
Order	Lamiales
Family	Lamiaceae
Genus	<i>Ocimum</i>
Species	<i>Tenuiflorum</i>

It is an excellent mouth freshener and oral disinfectant and its freshness lasts for a very long time. It destroys more than 99% of the germs and bacteria in the mouth and this effect can last all day. It also cures ulcers in the mouth. Finally, it is also known to help inhibit the growth of oral cancer which can be caused by chewing tobacco. It destroys the bacteria that are responsible for dental cavities, plaque, tartar, and bad breath, while also protecting the teeth. It also has astringent properties which make the gums hold the teeth tighter, thereby keeping them from falling<sup>6,7</sup>.

**Bay leaf-** It consists of dried leaves of *Cinnamomum tamala*

**Scientific classification**

Kingdom	Plantae
Unranked	Angiosperms
Unranked	Magnoliids
Order	Laurales
Family	Lauraceae
Genus	<i>Cinnamomum</i>
Species	<i>tamala</i>

Bay leaves have compounds which help in whitening the teeth naturally. It helps to keep the gums in healthy condition too and also prevents cavities from being accumulated.<sup>8</sup>

**Guava leaf-** It consists of dried leaves of *Psidium guajava*.

**Scientific classification**

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Myrtales
Family	Myrtaceae
Genus	<i>Psidium</i>
Species	<i>guajava</i>

The bark and leaf extracts of guava have shown to have in vitro toxic action against numerous bacteria. The leaves of guava are rich in flavonoids. The flavonoids have demonstrated anti-bacterial activity. This anti-bacterial property of guava leaves is what cause benefit to the teeth and gums. Leaves are chewed to relieve toothache and to cure bleeding gums and bad breath. Guava leaf decoction is gargled to relieve mouth sores and inflamed and bleeding gums<sup>9-10,14</sup>.

**Mango leaf-** It consists of dried leaves of *Mangifera indica*.

**Scientific classification**

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Sapindales
Family	Anacardiaceae
Genus	<i>Mangifera</i>
Species	<i>indica</i>

The ash of these leaves can be applied to the aching tooth to provide relief from pain. These leaves are boiled and strained and the infusion can be used as a rinse or gargled with, to provide comfort from various oral ailments<sup>11-13</sup>.

**Method****Drying:**

The leaves of all the four plants were cleaned, washed in running tap water to remove dirt and they were dried firstly in air and then in hot air oven at 55°C temperature till constant weight were achieved.<sup>14</sup>

**Preparation of the toothpaste:**

The binder was mixed with solid abrasive and other powders and then poured into suitable mixture along with the aqueous solution of preservative, surfactant and sweetener mixing was done. After the homogenous paste was formed, the flavor was added.<sup>14-16</sup>



### Formulation of Toothpaste

S No	Ingredients	Quantity
1	Tragacanth	1.2 gm.
2	Tulsi leaf powder	1 gm.
3	Bay leaf powder	0.5 gm.
4	Mango leaf powder	1 gm.
5	Guava leaf powder	1 gm.
6	Calcium carbonate	46.5 gm.
7	Sodium saccharin	0.05
8	Methyl paraben	0.15
9	Sodium lauryl sulphate	1.3 gm
10	Sorbitol	30 gm.
11	Water	q.s.
12	Peppermint oil	1 ml.

### EVALUATION

- pH:** The net quantity of 5gm of sample was accurately weighed and placed in a 150 ml beaker to this 45 ml of freshly boiled and cooled water was added at 27° c it was stirred well to make through suspension the pH was determined with in 5 min using pH meter.
- Organolaptic properties:** Formulation was characterized on the basis of organolaptic characters like appearance, color, and texture after test and extrudability.
- Volatile matter & moisture content:** Required amount of sample to be taken in dish & drying is to be done till constant weight. Loss of weight will indicate % loss of moisture & volatile matter.
- Foaming power:** 5gm. of sample was taken in 100 ml. glass beaker. To this 10 ml. of water was added. Then beaker was shaken with glass rod & allowed to stand for 30 min. The content of beaker was stirred & transferred to 250 ml. measuring cylinder. The residue left in beaker transferred with further portion of 5-6 ml. of water to cylinder. The content of cylinder adjusted to 50 ml. by sufficient water. Stirred content of cylinder with glass rod. As soon as temperature of content reached 30 min. the cylinder was stopped stirring and 12 complete shakes were given to it. The cylinder was allowed to stand for 5 min. & then the foaming power was calculated.
- Microbial assay:** The antibacterial activities of different formulations were determined by modified agar well diffusion method. In this method, nutrient agar plates were seeded with 0.2 ml of 24 h broth culture of *S. aureus*. The agar plates were allowed to solidify. A sterile 8 mm borer was used to cut wells of equidistance in each of plates. 0.5 ml of formulations or herbal extract was introduced into the well. The plates were incubated at 37°C for 24 hours. The antibacterial activity was evaluated by measuring the zones of inhibition.
- Spreadability test:** About 1 gm of tooth paste is weighed at the center of glass plate (10x10 cm) and another glass plate is placed over it carefully. At the center of the plate a 2 kg weight is placed. After 30 minutes, the diameter of the paste is measured in cm. The experiment is repeated thrice and average diameter is determined.
- Particle size:** 2 gm. of sample is dispersed in 25 ml. water & then passed through 150 & 50 mesh sieve. Not more than 0.5 % particles should pass through sieve no. 150

& not more than 2 % particles should pass through sieve no. 50.<sup>17-19</sup>

## RESULTS

- pH- 7
- Colour- light green
- Volatile matter- 3gm
- Foaming power- 100%
- Microbial assay- zone of inhibition(diameter in mm.): - toothpaste- 13 mm., standard drug (ofloxacin)-24 mm., control-0 mm.
- Spreadability - 8 mm.
- Particle size - % of particles passing sieve no. 150- 0.41%
- % of particles passing sieve no. 50- 1.6%

## CONCLUSION

The present formulation has good organoleptic, spreading, foaming, abrasive property and *in vitro* antimicrobial properties. It also has the advantage of absence of harmful chemicals & presence of herbal powders with wide spectrum of natural compounds beneficial for teeth & oral cavity compared to conventional toothpastes. Therefore the formulation has future prospect of further insight into such formulation & wide usage.

## REFERENCES

1. Tatikonda Aravind, Debnath Surangama, Chauhan Vivek Singh, Vishwajit Rampratap Chaurasia, M Taranath and Sharma Akanksha Manmohan. Effects of herbal and non-herbal toothpastes on plaque and gingivitis: A clinical comparative study. *JISPCD* 2014;4(2):126-29.
2. <http://dentistry.about.com/od/toothmouthconditions/tp/10-Common-Dental-Problems.htm>
3. <http://www.webmd.com/oral-health/guide/change-your-breath-from-bad-to-good>.
4. Chowdhary Banani R, Garai Arnav, Deb Madhuparna, Bhattacharya Souptik. Herbal toothpaste- A possible remedy for oral cancer. *Journal of Natural Products* 2013;6:44-55.
5. Kumar Amit, Rahal Anu, Chakraborty Sandip, Tiwari Ruchi, Latheef Shyma K, Dhama Kuldeep. *Ocimum sanctum* (tulsi): a miracle herb and boon to medical Science: A review. *International Journal of Agronomy and Plant Production* 2013;4(7):1580-89.
6. Shah Megha and Panchal Mayank. Ethnopharmacological properties of *Cinnamomum tamala*- A Review. *International Journal of Pharmaceutical Sciences Review and Research* 2010;5(3):141-44.
7. [https://www.organicfacts.net/health-benefits/herbs-and-spices/health-benefits-of-holy-basil-tulsi.html?\\_e\\_pi\\_=7%2CPAGE\\_ID10%2C6810858178](https://www.organicfacts.net/health-benefits/herbs-and-spices/health-benefits-of-holy-basil-tulsi.html?_e_pi_=7%2CPAGE_ID10%2C6810858178)
8. <http://www.diyhealthremedy.com/15-superb-health-benefits-of-bay-leaf/>
9. <http://www.fruitvs.com/en/scientific-classification-of-guava/model-19-5>
10. <http://www.ideaexplore.net/uses/Chewing-guava-leaf.php>
11. <http://www.fruitvs.com/en/scientific-classification-of-mango/model-5-5>
12. <http://www.diyhealthremedy.com/super-benefits-of-mango-leaves-for-our-body/>
13. Shah KA, Patel MB, Patel RJ and Parmar PK. *Mangifera Indica* (Mango). *Pharmacognosy Review* 2010;4(7):42-48.
14. Fagbohun Temitope Richard, Adekeye Temitope Joshua and Akinbosola Jibayo Philips. Effect of aqueous extract of leaf and bark of guava (*Psidium guajava*) on fungi *Microsporum gypseum* and *Trichophyton mentagrophytes*, *Staphylococcus epidermidis*, *Staphylococcus aureus*. *Advancement in Medicinal Plant Research* 2013;1(2):45-48.
15. P. P. Sharma. *Cosmetic Formulation, Manufacturing and Quality Control*. 7<sup>th</sup> edition, Vandana Publication, New Delhi. 2001:456-87.
16. Pocher WA. *Poucher's Perfumes, Cosmetics and Soaps Vol.III*, Chapman and Hall, London. 1997:143.
17. Bureau of Indian Standards Manak Bhavan, 9 Bahadur Shah Zafar Marg New Delhi. <https://archive.org/details/gov.in.is.6356.2001>.
18. Knowlton J and Rearce S. *Handbook of cosmetic science and technology*, 1<sup>st</sup> edition; Elsevier science publisher; oxford, UK, 1993.
19. Wilkinson JB and Moore RJ. *Harry's Cosmetology* 7<sup>th</sup> edition; Longman science and technical, London 1982:551.

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