

PREPARATION, EVALUATION AND COMPARISON STUDY OF HERBAL TOOTH POWDER WITH MARKETED TOOTHPOWDER**Nisha Devi^{1*}, Dr. Bharat Parashar¹ and Mohit Kaushal²**

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ABSTRACT

It is found that 10 billion of microbes are present in oral cavity; some of them are dangerous to hygiene of buccal cavity. Classical herbal toothpowder are used as tooth cleaning agents, and also used in various oral disease like gum disease, tooth erosion, tooth sensitivity, toothaches. The main aim of this work is to prepare, evaluate and compare lab herbal preparation and market herbal preparation by different method organoleptic, physicochemical, physical and phytochemical analysis. Oral hygiene is very important for health. Tooth powder is work such as breath freshening and teeth whitening. It can aid in the elimination and masking. Oral hygiene is an important key to maintain good appearance, impression of an individual and

gives confidence. The tooth consists of two parts, crown and roots. The crown of tooth is covered by outer surface called enamel and it is the hardest tissue in the tooth. Tooth powder are based on its abrasive property, the powder applied on the tooth to rub against the tooth which helps to remove the deposited food junk and mineral for tooth.

KEYWORDS: Oral hygiene, Herbal ingredient, Material & Methods, Result.

INTRODUCTION

Market value of herbal products in increasing day by day. Tooth powder is usually made up of natural ingredients — no chemicals, toxins, water, preservatives, etc. It is easy to use,

cleans the teeth well, and supports good dental health.^[1] tooth powder is different from tooth paste. In versions may be sold with or without fluoride. Tooth powder was historic used the romans to clean and whiten teeth, to fixthem when loose, to strengthen the gums and to use toothache. Oral hygiene is an important key to maintain good appearance, impression of individual and gives confidence.^[2] tooth powders are based on its abrasive property, the powder applied on the tooth rub against the tooth which helps to remove the deposited food junk and minerals from tooth.^[3] Oral hygiene is very important for the health. Due to variant of phytoconstituents, substituting and adulterants in crude drugs their formulation for purity and quality.^[6,7] one of the most commonly used in herb in most of herbal tooth powder available in market, due to its bitterness, smell, antimicrobial property.^[8] It is found that 10 billion of microbes are present in oral cavity; some of them are dangerous to hygiene of buccal cavity. Classical herbal toothpowder are used as tooth cleaning agents, and also used in various oral disease like gum disease, tooth erosion, tooth sensitivity, toothaches. The main aim of this work is to prepare, evaluate and compare lab herbal preparation and market herbal preparation by different method organoleptic, physicochemical, physical and phytochemical analysis. Oral hygiene is very important for health. Tooth powder is work such as breath freshens and teeth whitening. It can aid in the elimination and masking.

MATERIAL AND METHOD

A tooth powder mainly composed by acacia Arabica, azadirachta indica, zanthoxylum alatum, menthe spicata, quercus infectria, sodii chloridum, piper longum, anacyclus pyrethrum, syzygium aromaticum, piper nigrum, curcuma longa, cinnamomum camphora, mentha piperita, sepia officinalis, potash alum, charcoal and a market sample, All these ingredient purchased by local market Bhopal.

Development of Tooth Powder

The powder was prepare according to the method given in ayurvedic formulary of India. All the ingredient were taken in different quantity shown in table1. They were coarsely powdered separately and passed through 80# sieved and in mixed together in equal quantity. And market sample shown in table2.

Table 1: Lab Perpartion.

S. No.	Ingredient	Quantity
1.	Acacia Arabica	12gm
2.	Azadirachta indica	12gm
3.	Mentha spicata	2gm
4.	Quercus infectoria	5gm
5.	Sodii chloridum	14gm
6.	Piper longum	4gm
7.	Sodii chloridum	5gm
8.	Anacycius pyrethrum	9gm
9.	Syzygium aromaticum	5gm
10.	Piper nigrum	5gm
11.	Curcuma longa	5gm
12.	Cinnamomum camphora	2gm
13.	Mentha piperita	2gm
14.	Sepia officinalis	2gm
15.	Potash alum	12gm
16.	charcoal	2gm

Table 2: Market preparation.

S. No.	Ingredient	Quintity (100g)
1)	Acacia Arabica	12.0g
2)	Azadirachta indica	12.0g
3)	Zanthoxylum alatum	6.0g
4)	Mentha spicata	2.0g
5)	Quercus infectoria	5.0g
6)	Sodii chloridum	14.0g
7)	Piper longum	4.0g
8)	Sodii chloridum	5.0g
9)	Anacyclus pyrethrum	9.0g
10)	Syzygium aromaticum	5.0g
11)	Piper nigrum	4.0g
12)	Curcuma longa	5.0g
13)	Cinnamomum camphora	2.0g
14)	Mentha piperita	1.0g
15)	Sepia officinalis	2.0g
16)	Potash alum	12.0g

INGREDIENTS

Acacia Arabica – acacia bark also known as wattle bark, is collected form wild or cultivated trees seven year old or more. It is Used to remove toxin and act as pre biotic to promote good “bacteria.”^[16]

Family – Fabaceae

Common name-babool

Genus – Acacia

Species- *Acacia penninervis*

Biological Source- The gum Arabic tree, shown fig.1.1



Fig. 1.

Azadirachta Indica – Neema is fast growing tree. It is evergreen, but in severe drought it may shed most of its leaves. Its fruit and seeds are the source of neem oil. Role as health promoting effect is attributed because it is rich source of oxidant. It is used as antimicrobial activity and freshen the breath.^[9]

Family – Meliaceae

Common name- Neem

Genus- *Azadirachta*

Species- *A. indica*

Biological Source – The fresh and dried leaves and seeds oil of *AZADIRACHTA INDICA* shown fig.1.2,



Fig. 2.

Zanthoxylum Alatum – it is a genus of about 250 species and evergreen trees and shrubs in the citrus, native to warm temperature and subtropical areas worldwide. Historically, the bark used in traditionally medicine. It removes plaque and it is used to remove pain.^[10]

Family – RUTACEAE

Common name- Prickly ash

Genus- Zanthoxylum

Species- Z. alatum

Biological Source – Roots bark and stem of many species shown Fig.1.3,



Fig. 3.

Mentha Spicata – mentha spicata is distributed all over the world and found in many invirement mentha species one of the allest and most popular hurbs, used to refreshing, whitening and remineralising(11)

FAMILY – LAMIACEAE

Common name- Spearmint

Genus- Mentha

Species- M. spicata shown figure 4,



Fig. 4.

Quercus Infectoria – Quercus infectoria is a species of gall oak, bearing galls that have been traditionally used for centuries in asia medicinally. It is treating toothache and gingivitis.^[12]

Family – Fagaceae

Common name-aleppo oak

Genus- Quercus

Species- Q. infectoria

Biological Source – Galls are vegetable outgrowths formed on the twigs of dryer's oak, QUERCUS INFETORIA shown in figure 5,



Fig. 5.

Sodi Chloridum- rock is a chemical sedimentary rock that forms from evaporation of ocean and saline lake waters. It is also known as “halite”. It is used to treat yellowing of teeth and bleeding of gums.

Common name- Sendha namak

Color- Colourless, white pure or brownish shown in figure 6,



Fig. 6.

Piper Longum – The fruit of the pepper consists of many minuscule fruits – each about the size of a poppy seed– embedded in the surface of a flower spike that closely resembles a hazel tree catkin. Like *Piper nigrum*, the fruits contain the alkaloid piperine, which contributes to their pungency. Another species of long pepper, *Piper retrofractum*, is native to Java, Indonesia. Medicinally used in digestive formulation, treatment of respiratory disorder.^[13]

Family – PIPERACEAE

Common name – pipli

Species- p. longum

Genus – piper

Biological Source – Dried spikes and roots. shown in figure 7,



Fig. 7.

Anacyclus Pyrethrum – It is a perennial herb much like chamomile in habitate and appearance. It is in a different family from plants known as pellitory of the wall and spreading pellitory. It is popular as food species. Pungent efficacy in reliving toothache and it is promoting a free Flow of saliva.^[14]

Family – Asteraceae

Common name- Akarkara

Species- A. pyrethrum

Genus- Anacyclus

Biological Source –Roots is main medicinal part of anacyclus pyrethrum. shown in figure 8,



Fig. 8.

Syzygium Aromaticum – Cloves are the dried, flower buds of the evergreen tree, Eugenia aromatic. They are native to the Maluku islands in Indonesia, and it is a every green tree. It used as antiseptic, antifungal, antiviral and antimicrobial.^[15]

FAMILY – Myrtaceae

Common name – clove

Species – *S. aromaticum*

Genus - *Syzygium*

Biological Source – It consists of dried flower buds of *Eugenia caryophyllus*. Shown in figure 9,



Fig. 9.

Piper Nigrum- Black pepper are fruit are the source one of the most widely used spices black, white and green peppercorn all come from piper nigrum. Black pepper is also used in traditional medicine, particularly for digestive ailments.

Family – Piperaceae

Common name- black pepper

Species- *p. Nigrum*

Genus – *piper*

Biological Source – It consists of dried unripe fruits of piper nigrum.(16) Shown in figure 10,



Fig. 10.

Curcuma Longa – Turmeric is a flowering plant, curcuma longa is belong to the family of ginger. The roots of which are used in cooking. It used as analgesic, antibacterial, antiinflammatory and antiseptic.^[17]

FAMILY – Zingiberaceae

Common name- haldi

Family – Zingiberaceae

Species- *C. longa*

Genus- *Curcuma*

Biological Source – Turmeric consists of dried rhizomes of *curcuma longa*. Shown in figure 11,



Fig. 11.

Cinnamomum Camphor – *Cinnamomum camphor* is a species of evergreen tree that is commonly known as camphor tree. Camphor is a transparent solid with a strong, aromatic odor. It is used to relieve pain and reduce itching, used to treat fungal.^[21]

FAMILY – Zingiberaceae

Common name- kaphor

Species- *C. camphor*

Genus- *Cinnamomum* shown in figure 12,



Fig.12.

Sepia Officinilis – *Sepia officinilis* is generally found in the eastern north Atlantic, it is a marine organism, dwelling in sandy or muddy substrate. It commonly spends day time in sand, used to treat mouth and teeth, gum-related problems.^[18]

Family – Sepiidae

Common name- common cuttlefish

Taxonomy – sepia

Habitat region – temperature or marine shown in figure 13,



Fig.13.

Potash Alum – the compound is most important member of the generic class of compound called alum. Alum can easily be produced by precipitation from an aqueous solution. Its crystallization is in cubic structure with space group $P\bar{3}$ and lattice parameter of 12.18 Å. It is commonly used in water purification^[19]

Appearance – White crystals

Odor – Watery metallic

Density- 1.725 g/cm³ shown in figure.14,



Fig.14.

Charcoal- Charcoal is a lightweight black carbon residue produced by removing water and other volatile constituents from animal and plant materials. Charcoal is usually produced by slow pyrolysis- the heating of wood or other organic materials in the absence of oxygen. This process is called charcoal burning. It is used for teeth whitening.^[20]

FAMILY – CANNABACEAE

Common name- coal shown in figure.15,



Fig. 15.

RESULT AND DISCUSSION

Marketed Sample – The marketed sample of tooth powder and preparation designed in the lab, were evaluated in on the basis of their organoleptic, physicochemical, physical and phytochemical.

Physicochemical Study: Physicochemical study of method were carried out, involving the analysis of extractive values, ash values, PH, loss of drying.^[22]

Physical Investigation: Physical investigation of method were carried out, involving the analysis of bulk untapped density, tapped density, angel of repose, compersibility index, hausner ratio.

Organoleptic Characterstics: Organoleptic characterstic studied by different method by, color, odour, taste, texture.

Phytochemical Analysis- The churna is prepared by lab were tested by the presence by chemical constituent by molisch test, Fehling test, foam test, hager test, vol. oil test.^[23]

In lab formulation compared by market sample, was designed strictly according to the directives of ayurvedic formulary of india. This formulations were determined by referencing to the method as mentioned in the WHO guidelines for medicinal plant materials. The organoleptic character shown in table 3. The physicochemical and sensory features as shown in table 4. And physical character shown in table 5. The phytochemical analysis shown in table 6.

Table 3: Organoleptic.

S. No.	Parameter	Observation lab	Observation market
1)	Colour	Greenish	Light yellow
2)	Odour	Pungent	Pungent
3)	Taste	Sweeter	Sweeter
4)	Texture	Soft	Soft

Table 4: Physicochemical.

S. No.	Parameter	Observation Lab	Observation Market
1)	LOD (%)	6.2	6.6
2)	PH (1% W/W)	4	4
3)	Total ash value	0.80	0.86
4)	Water soluble extractive Value (%w/w)	10.66	10.60

Table 5: Physical.

S. No.	Parameters	Observation Lab	Observation Market
1)	Bulk untapped density (gm/ml)	17	20
2)	Tapped density(gm/ml)	12	13
3)	Angle of repose(\square)		
4)	Compressibility index (%)	10.58	11.46
5)	Hausner ratio	70.58	65

Table: 6 Phytochemical.

S. No	Parameter	Observation Lab	Observation Market
1.	Molisch	+ve	+ve
2.	Fehling	-ve	+ve
3.	Foam test	-ve	-ve
4.	Hager	+ve	-ve
5.	Vol . oil test	+ve	+ve

CONCLUSION

Tooth powder both in lab preparation and market was carried out. Both in lab and market formulation were evaluated as per WHO guidelines and as mentioned in Indian herbal pharmacopoeia. The formulation was prepared accordingly and observed for various organoleptic, physico chemical, physical and phytochemical properties in comparison with the market sample. Tooth powder is a good to used a very mild abrasive that gently scrubs and beautifully polishes our teeth. With the effective work on all its parameters, this tooth powder can be explored for all its application and other hidden aspects. It helps to check the batch to batch variations. Raw materials could be employed as quality control standards for evaluating its identify and can be used for routine analysis. Purity and potency of the

materials and formulations following the procedure given could be performed in quality control and assurance of pharmaceuticals.

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