

Research Study on Formulation and Evaluation of Gum Strengthening Massage Powder

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ABSTRACT:

Healthy gums improve oral health. The gum massage powder helps to strengthening of gum. It improve the blood circulation and stimulate the nerves in gums. It improve the appearance and overall health and can be used daily as a part of effective oral health routine. Commercially available gum massage powders Clinsodent and Fixon. There are some herbal gum massage powder available in market including Dantvali, Patanjali, Vithoba, Dant-shakti. Most of the Dentist advice using gum massage strengthening powder once or twice a day. Herbs with medicinal properties are traditionally used as source of treatment for various diseases. The goal of current research is to create the gum powder using plant material such as turmeric, babool, mint, clove, alum for improving health of gums. Turmeric also known as curcuma longa having various medicinal properties such as anti-oxidant, anti-bacterial, anti-inflammatory, anti-septic etc. Babul powder acts as astringent is used for preparation of gum strengthening massage powder. The formulation of gum massage powder was assessed for parameters like colour, odour, taste, pH of powder, and flow properties of powder. Oral hygiene is important step in person's daily existence. Therefore, the gum massage powder is crucial to these process. To counteract some drawbacks of synthetic agent, many natural herbs might be used.

KEY WORDS: Gum massage powder, turmeric, clove, mint, babul, seiving

INTRODUCTION:

Herbal ingredients:

1. Turmeric
2. Babul powder
3. Clove powder
4. Mint leaves

MATERIALS

Table No.1: Materials and their roles

INGREDIENTS	ROLE
Turmeric	Anti-microbial
Babul	Anti-inflammatory
Clove	Analgesic
Mint leaves	Mouth freshener
Alum	Astringent
Calcium Carbonate	Diluent
Mag. Stearate	Glidant

Formulation:

- Turmeric**- Turmeric is used as anti-bacterial, anti-inflammatory agent in the preparation. It is used in various concentrations such as 1 %, 2 %, 3 % and 4 % turmeric in four formulations respectively.
- Clove** - Clove is used as an analgesic and anti-inflammatory agent. The concentration of clove is 10% in each of the four formulations.
- Babul powder** – Babul bark act as strong astringent agent, so powder of babul bark is used in the formulation. The concentration of babul powder used in the formulation is 25%.
- Mint leaves** - Mint is a natural mouth freshener. Dried mint leaves powder is used in the formulation as bad breath remover and mouth freshener. The concentration of mint is 5%.
- Alum** - Alum shows astringent effect in mouth. Therefore Alum is been used. The concentration of alum is 5% in each of the four formulations.
- Calcium carbonate** - Calcium carbonate is a suitable diluent used to make the volume of powder of desired quantity. It is been used in four different concentrations i.e. 54%, 53%, 52%, 51% respectively.

Preparation of powder:

All the materials are collected from the local market. The fixed quantities of materials are weighed and mixed uniformly to get homogenous mixture. The final powder is passed through the sieve no.80. The powder is dried in the hot air oven at temperature 70°C.

Formulation table:

Table No. 2 : Formulation of Gum massaging powder

Ingredients	F1 (Qty in gm.)	F2 (Qty in gm.)	F3 (Qty in gm.)	F4 (Qty in gm.)
Turmeric	0.2 gm.	0.4 gm.	0.6 gm.	0.8 gm.
Clove powder	2.0 gm.	2.0 gm.	2.0 gm.	2.0 gm.
Babul powder	5.0 gm.	5.0 gm.	5.0 gm.	5.0 gm.
Mint leaves	1.0 gm.	1.0 gm.	1.0 gm.	1.0 gm.
Alum	1.0 gm.	1.0 gm.	1.0 gm.	1.0 gm.
Magnesium stearate	10.6 gm.	10.4 gm.	10.2 gm.	10.0 gm.
Calcium carbonate	0.2 gm.	0.2 gm.	0.2 gm.	0.2 gm.

Method of preparation of powder:

All the herbal materials are collected and checked for their quality profile. Turmeric and babul powder are tested for their identification tests. Mint leaves are dried in shade and powdered using mixer. The clove powder, babul powder, mint leaves powder, and alum are mixed with the turmeric. Calcium carbonate is added to the mixture for making volume 20 gm. and the final powder is passed through the sieve no.80. The evaluation tests for powder are done.

RESULTS AND DISCUSSION

Organoleptic and Physico-chemical evaluation of gum massage powder:

The formulations of gum massage powders from F1 to F4 using concentration of turmeric (1%, 2%, 3%, 4%) were prepared successfully and evaluated for the organoleptic properties, physico-chemical properties and anti-microbial activity.

Table No. 3:
Organoleptic and Physico-chemical evaluation of gum massage powder for formulations (F1 to F4)

Parameters	F1	F2	F3	F4
Colour	Brownish	Brownish	Brownish	Brownish
Odour	Characteristic, astringent	Characteristic, astringent	Characteristic, astringent	Characteristic, astringent
Taste	Astringent	Astringent	Astringent	Astringent
Moisture content (%)	2.87%	5.32%	5.49%	3.86%

Flow properties

Formulations F1 to F4 are studied for flow properties, the results of bulk density, tapped density and angle of repose are given in Table no.4

Table No. 4: Results of flow properties for Formulations F1 to F4

Sr.No.	Bulk density	Tapped density	Angle of Repose
F1	0.83	1.25	30.11 ⁰
F2	0.45	1.09	27.47 ⁰
F3	0.4	1.01	26.1 ⁰
F4	0.52	0.9	26.1 ⁰

Anti-microbial test

The formulated gum massage powder exhibited fairly well anti E.coli activity. All F1 to F4 formulations were studied for their anti-microbial activity against E.coli, the results of anti-microbial activity are given in Table no.5

Table No.5: Results of Anti-microbial test with zone of inhibition for Formulations F1 to F4

Sr. No.	Zone of Inhibition
F1	2mm
F2	6mm
F3	12mm
F4	15mm

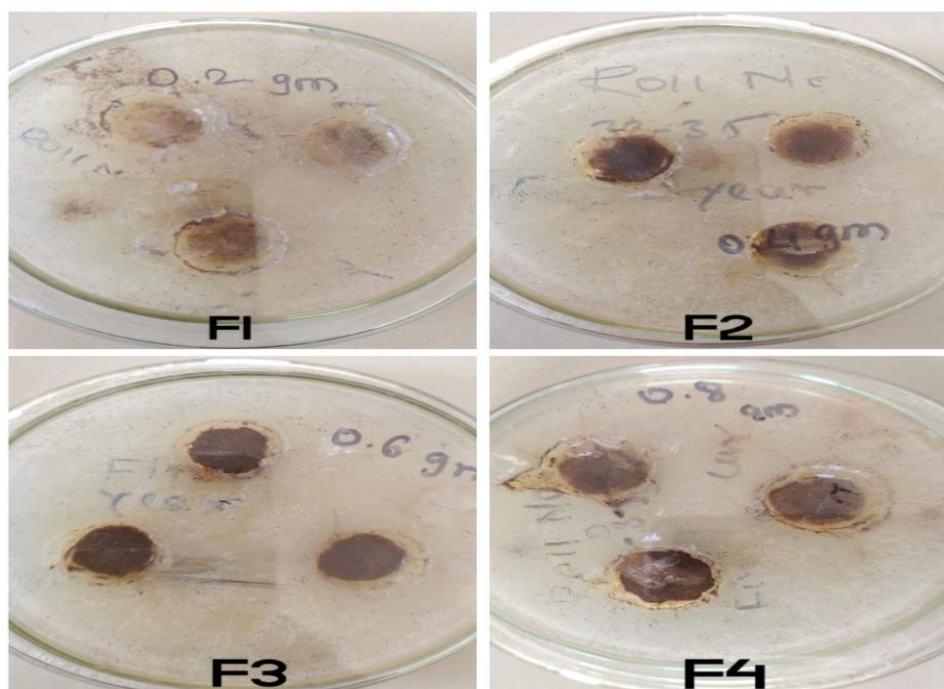


Figure 1: Zone of inhibition for Formulations F1 to F4

Conclusion:

The gum strengthening massage powder is formulated and evaluated successfully. Evaluation tests performed are organoleptic properties colour, odour and taste. Physico-chemical properties performed are pH and moisture content. Rheological characters of powder such as flow properties, Bulk density and tapped density are studied. Anti-microbial activity of the powder is evaluated by performing in vitro test using E coli. It is capable of maintaining gums and oral hygiene and has anti-microbial activity against micro-organism such as E. coli. The four formulations containing different concentrations of turmeric were prepared and evaluated, all four formulation showed good flow properties, moisture content and good anti-microbial activity. The powder containing turmeric, clove, mint, babul and alum was prepared using trituration method.

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