FORMULATION AND EVALUATION OF HERBAL EDIBLE GUMMIES CONTAINING GINGER POWDER TO TREAT ORAL THRUSH.

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ABSTRACT
The present study aimed to develop herbal oral gummies of ginger powder to treat oral thrush. The jellies were prepared by using ginger powder as an API and other excipients. The prepared jellies were evaluated for its various physio-chemical parameters such as pH, appearance and so on. So the objective of this research work is to produce a drug delivery system with better pharmaceutical and therapeutic properties and making the formulation suitable for patients and minimizing drawbacks of commercially available conventional herbal multivitamin jelly by formulating sugar jelly. Thereby improving the patient compliance, convenience in administration and better mouth feel. Also the effectiveness of drug will be improved by the reduction in size that occurs during mastication of drug before swallowing.

INTRODUCTION
The oral cavity can develop oral thrush, a specific kind of thrush. It is a specific kind of yeast infection that is most frequently brought on by Candida albicans, however it can also caused by species such as C. krsei, C. parapsilosi, C. glabrata, C. tropicalalis, and C. dubliniesis that are not albican. Since the Candida species are a normal component of the oral flora, the onset of this disease is caused by a change in the normal oral environment rather than by exposure to or "infection" with the Candida species. Creamy white lesions that generally appear on the tongue or inner cheeks are oral thrush. Sometimes, tonsils, gums, and the back of the throat can become infected with oral thrush. Despite the fact that anyone can have oral thrush, it’s
more severe and difficult to control. There are many different dosage forms available on the market, but there is a need for new dosage forms that work efficiently, locally, and systematically. The advantages of the current study effort include enhanced oral dosage form retention duration, higher bioavailability, and a decrease in stomach irritability by skipping first pass metabolism. Gummies are flavored medication dosage forms that are meant to be sucked and chewed in oral cavity. They often include one or more medications in the sweetened base. The purpose of the medicated gummies is to increase patient acceptance and compliance and to treat oral fungal infections.[1]

**SYMPTOMS**

You might not even first experience oral thrush symptoms. Some warning signs and symptoms include:

- Creamy white lesions on your tongue, inner cheeks, and occasionally on your tonsils, gums, and roof of your mouth.
- Lesions that are slightly elevated and resemble cottage cheese
- Redness, burning, or pain that could be so bad that makes it difficult to swallow or eat.
- A cracking sensation and a ruddy mouth's corners
- Taste loss, redness, irritation, and discomfort beneath dentures.[2]

**CAUSES**

Normally, your immune system fights off dangerous invaders like viruses, bacteria, and fungus while keeping a balance between "good" and "bad" germs that typically live in your body. However, occasionally these defences break down, leading to an increase in candida fungus and the development of an oral thrush infection. Candida albicans is the kind of candida fungus that is most prevalent. Your chance of developing oral thrush might be raised by a number of circumstances, including a lowered immune system.[2]

Fig.1: Oral Thrush.
MATERIALS AND METHODS

The materials required for the present work were procured from The Laboratory of Shri Sai Institute of Pharmacy and Research, Aurangabad. Following drugs, excipients, polymers, and chemicals were used for the formulations and evaluation of herbal gummies.[3,4]

Table 1: Ingredients in Herbal gummies.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>INGREDIENTS</th>
<th>USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WATER</td>
<td>Vehicle</td>
</tr>
<tr>
<td>2</td>
<td>GINGER POWDER</td>
<td>Antifungal agent</td>
</tr>
<tr>
<td>3</td>
<td>AGAR-AGAR</td>
<td>Jelling agent</td>
</tr>
<tr>
<td>4</td>
<td>SUGAR</td>
<td>Sweetener</td>
</tr>
</tbody>
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Fig.2: Materials required for the preparation of Herbal Gummies.

PREPARATION

- Take 500ml of water in a bowl, also take 100gm of agar-agar powder in another bowl
- Boil water at its boiling point.
- After boiling keep it stable for a minute and then add it into agar-agar powder mix well.
- Add 20gm of ginger powder.
- Add sugar as required.
- Pour the mixture in a mould and let it set.
- Then leave the mixture at room temperature for 45min.
- Then the gummies will form.
Table 2: Formulation of Herbal gummies.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>INGREDIENTS</th>
<th>QUANTITY (for 500g.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WATER</td>
<td>500 ML</td>
</tr>
<tr>
<td>2</td>
<td>GINGER POWDER</td>
<td>20 GM</td>
</tr>
<tr>
<td>3</td>
<td>AGAR-AGAR</td>
<td>100 GM</td>
</tr>
<tr>
<td>4</td>
<td>SUGAR</td>
<td>80 GM</td>
</tr>
</tbody>
</table>

Fig.3: Formulated herbal gummies.

EVALUATION

a) Physical evaluation
The medicated jelly can be examined physically for appearance like clarity, texture, transparency, consistency.

b) Stickiness and grittiness
Texture of the medicated jelly in terms of stickiness and grittiness can be determined by mildly rubbing the jelly between fingers.

c) pH
pH of jelly can be measured using digital pH meter. 0.5 g of the weighed formulation was dispersed in 50ml of water and the pH should be noted.

d) Weight variation
The weight variation was conducted by weighing 5 gummies individually and average weight and standard deviation were calculated.
e) Diameter
Diameter and thickness was conducted by using 5 gummies. The diameter and thickness of gummies were measured by using vernier caliper. The average value and standard deviation was calculated.\textsuperscript{[5,6,7]}

**EVALUATION PARAMETER RESULTS**
1. Physical evaluation: Yellow Colored, Opaque.
2. Stickiness and grittiness: Non-Gritty
3. pH: 5 to 5.5.
4. Weight variation: Passes the test.
5. Diameter: 2.8cms.\textsuperscript{[8,9]}

**CONCLUSION**
In the current study, ginger powder herbal gummies were developed and evaluated for their potential to cure oral thrush. The creation of novel herbal dosage forms and the examination of the impact of various herbal medications on oral thrush were the major reasons for the interest in such a dosage form.

**REFERENCES**


