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Research Article

## FORMULATION AND EVALUATION OF HERBAL LOZENGES

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### ABSTRACT

Throat infections are most common disease in today's world. However, it is not taken too seriously by people. Long term throat infection can lead to severe throat problems like Pharyngitis and also cancer. Lozenges are solid preparations that contain one or more medicaments, usually in a flavored, sweetened base, that are intended to dissolve or disintegrate slowly in the mouth. They are used for medications designed to be released slowly to yield a constant level of drug in the oral cavity or to bathe the throat tissues in a solution of the drug. Since soft lozenges can be made at home using simple ingredients, this formulation is very helpful in treating throat infection easily using household techniques. Jaggery was melted on a water bath and mixed with the other ingredients to form a homogeneous mixture. Subsequently, the mixture was poured into the stainless steel mold. The monograph analysis was performed according to WHO guidelines. The results were found to match with the standards in monograph. From the above investigation, it can be concluded that the soft lozenges prepared using *Piper longum* and *Glycyrrhiza glabra* can be used to treat minor throat infections.

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### INTRODUCTION:

Throat infections are most common disease in today's world. However, it is not taken too seriously by people. Long term throat infection can lead to severe throat problems like pharyngitis and also cancer. Acute sore throat is a symptom often caused by an inflammatory process in the pharynx, tonsils or nasopharynx. Most of these cases are of viral origin and occur as a part of the common cold. A sore throat is pain, scratchiness or irritation of the throat that often worsens when you swallow. The most common cause of a sore throat (pharyngitis) is a viral infection, such as a cold or the flu. A sore throat caused by a virus resolves on its own. Strep throat (streptococcal infection), a less common type of sore throat caused by bacteria, requires treatment with antibiotics to prevent complications. Sore throats may be caused by viral infections, bacterial infections, irritants and injuries. Signs and symptoms might include pain or a scratchy sensation in the throat, pain that worsens with swallowing or talking, difficulty swallowing, sore, swollen glands in your neck or jaw, swollen, red tonsils, white patches or pus on your tonsils, hoarse or muffled voice. Common infections causing a sore throat might result in other signs and symptoms, including fever, Cough, Runny nose, Sneezing, Body aches, Headache, Nausea or vomiting. Conventional treatment of sore throat Anti-inflammatory drugs, Corticosteroids, Antibiotics, Others.

Lozenges are solid preparations that contain one or more medicaments, usually in a flavored, sweetened base, that are intended to dissolve or disintegrate slowly in the mouth. They can be prepared by molding or by compression of sugar-based tablets. Development of lozenges dates back to 20<sup>th</sup> century and is still in commercial production. Most of the lozenge preparations are available as over the counter medications. Lozenge provides a palatable means of dosage form administration and enjoys its position in pharmaceutical market owing to its several advantages

### Types of Lozenges

Chewable Lozenges, Hard Lozenges, Soft Lozenges, Compressed lozenges.

### METHODOLOGY:

**Formulation** Soft lozenges were prepared by melting and mold technique. Jaggery was melted on a water bath and mixed with the other ingredients (powder) to form a homogeneous mixture. Subsequently, the mixture was poured into the stainless steel mold.

**Table 1:** Formula taken to form herbal lozenges

S. No.	Ingredients	Quantity for one lozenge
1	<i>Piper nigrum</i>	125 mg
2	<i>Glycyrrhiza glabra</i>	200 mg
3	Jaggery q. s.	10 gms

**Macroscopical evaluation** The formulation developed in the laboratory were evaluated for its acceptance based on visual observation for various organoleptic properties.

**Table 2:** Macroscopic evaluation of formulated lozenges

S. No.	Parameter	Observation
1	Colour	Golden Yellow
2	Odour	Pleasant
3	Taste	Sweet
4	Texture	Smooth
5	Shape	Oval

**Determination of ash values** The total ash method is designed to measure the total amount of material remaining after ignition. This includes both “physiological ash”, which is derived from the plant tissue itself, and “non-physiological” ash, which is the residue of the extraneous matter (e.g. sand and soil) adhering to the plant surface.

**Table 3:** Determination of total ash value

S.No.	Drugs	Total ash (% w/w)
1	<i>Pipper longum</i>	1.5
2	<i>Glycerhiza glabra</i>	3
3	<i>Lozenges</i>	6.3

**Determination of swelling index** The swelling index is the volume in ml taken up by the swelling of 1 g of herbal material under specified conditions. Its determination is based on the addition of water or a

swelling agent as specified in the test procedure for each individual herbal material.

**Table 4:** Determination of swelling index

S.No.	Drugs	Swelling index
1	<i>Pipper longum</i>	NIL
2	<i>Glycerhiza glabra</i>	NIL
3	<i>Lozenges</i>	NIL

#### Determination of moisture content

This test is used to determine the water content of a material by drying a sample to constant mass at a specified temperature. To determine the moisture content of the formulation the weighed amount of formulation were processed in hot air oven at 120 degree centigrade till constant weight obtained and the percent moisture content was calculated.

**Table 5:** Determination of moisture content

S.No.	Dosage form	Moisture content
1	Lozenges	4.35%

#### Determination of extractable matter

This method determines the amount of active constituents extracted with solvents from a given amount of herbal material. It is employed for materials for which as yet no suitable chemical or biological assay exists. The extractive values were determined as per procedure given in WHO guideline.

**Table 6:** Determination of extractive values

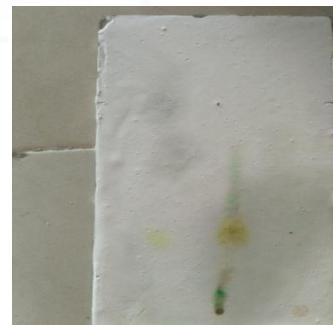
S.No.	Drugs	Water extractive value	Alcohol extractive value
1	<i>Pipper longum</i>	4.458% w/v	0.811% w/v
2	<i>Glycerhiza glabra</i>	4.103% w/v	1.207% w/v
3	<i>Lozenges</i>	0.124% w/v	-

#### Thin-layer chromatography

Thin-layer chromatography is particularly valuable for the qualitative determination of small amounts of impurities. The principles of thin-layer chromatography and application of the technique in pharmaceutical analysis are described in the international pharmacopoeia<sup>5</sup>. As it is effective and easy to perform, and the equipment required is inexpensive, the technique is frequently used for evaluating herbal materials and their preparations.

**Table 7:** Thin Layer Chromatography

S.No.	TLC	Rf value
1	Pure	0.934
2	<i>Lozenges</i>	0.958



**Figure 1:** Thin Layer chromatography

#### UV Spectrophotometry

UV-Vis spectrophotometric analysis provides both qualitative and quantitative standards. But markers are needed for quantitative analysis. An attempt is made to study UV Vis Spectrometric analysis of some herbal raw materials for understanding qualitative and quantitative parameters without markers.

### Preparation of standard solution for calibration curve of piperine

Stock solution of piperine was prepared by dissolving 100 mg of piperine in 100 ml of methanol. Standard solutions of piperine were prepared from stock solution in the concentration range of 1 $\mu$ g/ml to 5 $\mu$ g/ml in 10 ml volumetric flask using methanol as solvent and absorbance were taken at 340 nm.

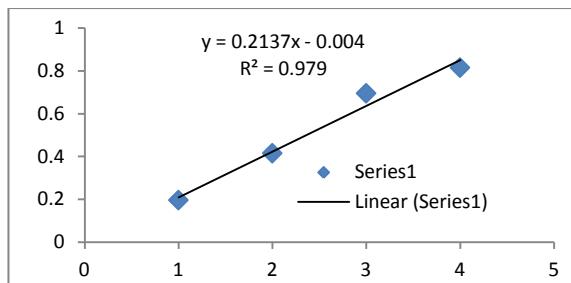


Figure 2: Calibration curve of piperine

### RESULT AND DISCUSSION:

The lozenges were prepared with the combination of piper longum and glcyrrhiza glabra using jaggery as the

base. The monograph analysis was performed according to WHO guidelines. The quality control parameter were ash value test, swelling index, moisture content, water and alcohol extractives, thin layer chromatography and UV analysis. On the above investigation it was found that the formulation passage all the parameters of quality control parameters, in uv and chromatographic analysis piperine were found to be present. During the storage it was found that the formulation were gaining the moisture from atmosphere which indicates that proper packing and storage condition is required when the formulation need to keep for future use.

### CONCLUSION:

Lozenges, especially soft lozenges are marketed for throat infection and other buccal infections. From the above investigation it can be concluded that the soft lozenges can be prepared using house hold ingredients using *Pipper longum*, *Glycyrrhiza glabra* and Jaggery as a base very easily and can be used to treat minor throat infections at initial stage of infection.

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