

# Formulation and Evaluation of Herbal Cough Syrup using *Hibiscus Rosa sinensis*

<sup>1</sup>Ms. Tanushree Patidar, <sup>2</sup>Mr. Goutam Solanki, <sup>3</sup>Mr. Aman karma, <sup>4</sup>Mr. B. N. Birla

Charak Institute of Pharmacy  
Choli Road Mandleshwar (M.P.)

**Abstract-** Ayurvedic formulations belong to liquid dosage form of herbal drug or various drug combination. Now a days, Herbal plants and formulations are used for many types of disease. A cough occurs suddenly and often repetitively which helps to clear the large breathing passages from secretions, irritants, foreign particles and microorganisms. The object of the study is to develop a formulation that combines herbs in a way that maximizes their therapeutic potential and minimizes any potential side effects. The herbal cough syrup is formulated by using decoction method. Herbal Syrup is commonly used and popular dosage form which is used to cure cough, cold and fever because it having ease of patient's compliance. These remedies included Hibiscus Rosa sinensis, Tulsi, Ginger, Liquorice, Fennel, Cardamon, Adulsa, Honey clove and etc. These Formulation helps the body to remove excess mucous from the lungs. Quality of formulation was evaluated by many parameters like density, specific gravity, pH and various organoleptic characteristics. The results of the present work support the incorporation and utilization of herbs in the formulations to give better effect for the management of respiratory diseases by polyherbal formulations.

**Key words:** Cough Syrup, Herbal, Hibiscus Rosa sinensis, liquid dosage.

## 1. INTRODUCTION:

Cough is a common respiratory symptom often associated with various respiratory infections, allergies, or irritants. While numerous pharmaceutical cough syrups are available, there is a growing interest in herbal remedies due to their perceived natural and potentially fewer side effects. Hibiscus Rosa Sinensis, commonly known as the hibiscus flower, has been traditionally used in various cultures for its medicinal properties. Rich in antioxidants, vitamins, and minerals, it possesses anti-inflammatory and antimicrobial properties, making it a promising candidate for formulating an effective herbal cough syrup.

### 1.1 Syrup:

Syrup is a concentrated mixture of sugar and purified water. The high sugar content distinguishes syrups from other types of solutions. Syrups may or may not contain medication or added flavoring agents. Syrups without a medication, but with a flavoring agent, are called non-medicated or flavored syrups. Flavored syrups are often used as vehicles for unpleasant tasting medications: the result is medicated syrup. The high amount of sugar present in syrups predisposes them to bacterial contamination, so they often contain a preservative.

### 1.2 Herbal syrup:

Herbal syrup it is a defined as a prepared and combination and concentration decoction with Honey sugar or either some time use alcohol. The base of such syrup is a strong herbal decoction and mixing a decoction with sugar honey help to thicken preserves the decoction. Herbal plant and formulation are used for many types of disease like cough syrup and other disease. The cough syrup many types of herbal plant are used for pudina, Tulsi, Cinnamon, honey in that whole plant are used for making herbal medicine the many years. Herbal formulation a most commonly used a development as well as developing countries as health care.

#### 1.2.1 Types of herbal syrup:

Mainly there are three types of coughs, which are classifies as follow: -

1. Flavoured syrup
2. Medicated syrup
3. Artificial syrup <sup>[10]</sup>

### 1.3 Cough syrup:

Cough syrups are the medicated liquid preparations used for relieve coughing. Cough syrups can be prepared by using traditional drugs. The herbal cough syrups are available in the market and Are ore effective against cough. <sup>[11]</sup> A cough is a sudden and often repetitively occurring process which helps to clear the large breathing passge from secretion, irritants, foreign particle and microorganisms. When there is a blockage or irritation in the throat or upper air passage, the brain thinks a foreign element is present and tells the body to cough to remove that element. Generally coughing is perfectly normal.

**1.3.1 Types of cough:**

Mainly there are two types of cough, which are classified as follows:

**1. Dry Cough:**

- productive and effective cough.
- It expels secretion mucous or foreign material from respiratory tract.
- The main purpose of wet cough is to remove the mucous from respiratory tract.




**2. Wet Cough:**

- Non effective and infective cough.
- It expels secretion or mucous from lungs.
- Dry cough is chronic in nature and it is caused by dry irritation smoke or dust.

**1.4 Advantages of liquid dosages form:**

- Homogenous liquid.
- Drug in solution, immediately available for absorption.
- Oral liquid dosage forms usually are faster acting than solid dosage forms.
- Medication is absorbed into the bloodstream in a dissolved state.
- The medication in a liquid dosage form is already dissolved or is present in small particles so it can readily be

**2. INGREDIENT'S PROFILE:**

| S.no | Plant name                                  | Uses  | Picture   |
|------|---|---|---|
| 1    | China Rose<br>(Hibiscus<br>Sinesis)<br>Rose | <ul style="list-style-type: none"> <li>•China rose can help cure fever and cough.</li> <li>•China rose show antimicrobial activity.</li> <li>•Rich in Vitamin C.</li> </ul> |   |
| 2    | Tulsi<br>(Ocimum sanctum)                   | <p>Tulsi can help cure fever.</p> <p>Tulsi is also used to treat heart disease and fever.</p>   |  |
| 3.   | Ginger<br>(Zingiber officinale)             | <p>It is used in cold.</p> <p>It is used in migraines.</p> <p>It is used in hypertension.</p>   |  |





|    |   |  |   |
|----|---|--|---|
| 4. | Liquorice<br>( <i>Glycyrrhiza glabra</i> )  | It is used in liver.<br>It is used in circulatory.             |    |
| 5  | Cardamon<br>( <i>Elettaria cardamomum</i> ) | Cold.<br>Cough.<br>Bronchitis.                                 |    |
| 6  | Adulsa<br>( <i>Justicia adhatoda</i> )      | It is used in mouth infections<br>It is used in chronic cold.  |   |
| 7  | Honey<br>( <i>Nectar ambrosia</i> )         | It is used as antioxidant<br>It is used as antibacterial agent |  |

Table no. 1: plant profile

### 3. MATERIAL AND METHOD:

**3.1 Material detail's-** All the excipients are used in this formulation have herbal grade. The excipients are collected from different sources. China Rose, Tulsi, Ginger, Adulsa are procured from the medicinal garden of Charak institute of pharmacy. Liquorice purchased from Nature yards pvt. Ltd. And Honey from Dabur. Cardamon was purchased from the general store.

#### 3.2 Method:

- **Preparation of Decoction:** The raw materials were taken in the beaker and add required mount of distilled water in it. The mixture was boiled until total volume become one fourth of the initial volume. After boiling mixture was cooled in room temperature, Then the decoction was filtrate with the help of muslin cloth.
- **Preparation of Simple Syrup IP:** As per IP take 66.7 g of Sucrose and add Sufficient amount of distilled water. Heated the solution until it dissolved with occasional stirring. Sufficient distilled water was added to produce 100 ml.
- **Preparation Herbal Syrup of *Hibiscus rosa sinensis*:** One part of decoction was mixed with five parts of simple syrup (1:5). Required quantity of Honey was added as preservative to the above mixture. All the batches of formulation are given in table no. 03

| Formulations        | F1 (ml) | F2 (ml) | F3 (ml) | F4 (ml) |
|---------------------|---------|---------|---------|---------|
| Decoction (Extract) | 15      | 15      | 15      | 15      |

|                 |      |    |    |    |
|-----------------|------|----|----|----|
| Honey           | 17.5 | 20 | 15 | 10 |
| Simple Syrup IP | 17.5 | 15 | 20 | 25 |

**Table No. 3: Composition herbal cough Syrup**

#### 4. EVALUATION PARAMETERS OF HERBAL SYRUP:

##### 4.1 Physicochemical Parameters:

The herbal syrup was evaluated for various physicochemical parameters such as physical appearance (colour, odour, taste), pH and the given below.

**a) Color examination:** 5 ml final syrup was taken into watch glasses and placed against white back ground in white tube light. It was observed for its color by naked eye.

**b) Odor examination:** 2 ml of final syrup was smelled individually. The time interval among two smelling was kept 2 minutes to nullify the effect of previous smelling.

**c) Taste examination:** A pinch of final syrup was taken and examined for its taste-on-taste buds of the tongue.

**d) Determination of pH:** Placed an accurately measured amount 10 ml of the final syrup in a 100 ml volumetric flask and made up the volume up to 100 ml with distilled water. The solution was sonicated for about 10 minutes. pH was measured with the help of digital pH meter.

**e) Viscosity:** The viscosity of Polyherbal cough syrup was determined by using Ostwald viscometer.

##### 4.2 Phytochemical Screening:

The prepared extract of all the ten plants was used to test various phytoconstituents present in them. Different chemical reagents were prepared and specific test, for specific phytochemicals was done. These various tests were qualitative and hence termed phytochemical screening.

###### (a) Test for flavonoids:

2 ml of extract solution was treated with 1.5 ml of 50% methanol solution. The solution was warmed and metal magnesium was added. To this solution few drops of conc. Hydrochloric acid was added and the red colour was observed for flavonoids and orange colour for flavones.

###### (b) Test for tannins:

About 0.5 gm of plant tuber extract was added was in 10 ml of water in a test tube and filtered. A few drops of 0.1% ferric chloride were added and observed for brownish green or blue-black coloration.

###### (c) Test for saponins:

About 0.5 gm of the plant tuber extract was vigorously shaken with water in a test tube and then heated to boil. Frothing was observed which was taken as preliminary evidence for the presence of the saponins.

###### (d) Test for steroids:

2 ml of acetic anhydride was added to 2 ml of plant tuber extract of each sample along with 2 ml sulphuric acid. The colour changed from violet to blue or green in some samples indicating the presence of steroids.

#### 5. RESULT:

| S. no. | Parameters      | Results  |
|--------|-----------------|----------|
| 1.     | Colour          | Brownish |
| 2.     | Odour           | Aromatic |
| 3.     | Taste           | Sweet    |
| 4.     | pH              | 6.3      |
| 5.     | Viscosity       | 0.72     |
| 6.     | Flavonoids test | +        |
| 7.     | Tannins         | +        |
| 8.     | Saponins        | +        |
| 9.     | Steroids        | -        |

**Table no. 04: Results of herbal Syrup**

#### 6. CONCLUSION-

In conclusion, the use of hibiscus in herbal cough syrup offers several potential benefits. Hibiscus contains compounds with anti-inflammatory, antioxidant, and antimicrobial properties that can help soothe throat irritation, reduce coughing, and support respiratory health. Additionally, hibiscus adds a pleasant flavor and color to the syrup, making it more palatable and appealing. However, it's essential to note that herbal remedies, including hibiscus-based cough syrup, should complement standard medical treatments and not replace them entirely, especially for chronic or severe coughs.

Individuals should consult healthcare professionals before using herbal remedies, especially if they have underlying health conditions or are taking medications.

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