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Research Article

## Formulation and Evaluation of Herbal Syrup

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### ABSTRACT

The cough it is a most common problem are face by the all people. There are two types of cough one is the Dry cough and second is wet cough. The dry cough is a no mucous and secretion while in wet cough there is cough mucous or secretion. The syrup is most commonly used and popular dosage form there is used in cure the cough and cold because it having ease of patients compliance. The herbal cough syrup was formulated using crude drugs as Pudina&Tulsi or Cinnamon as a main ingredient along with Honey. Today syrup is used for treatment of May ailments and to overcome symptoms of disease. The antioxidant syrup is used to treatment the cancer because of many stress condition and other oxidative reaction in body the free radical are generated by using theses, syrup the condition is overcome. Formulation at laboratory scale was done and evaluate for number of parameters such as PH, viscosity, Density, stability testing during evaluation formulation found to be stable and ready to use in a cough treatment. It is found that Antitussive activity produced by the Herbal formulation in the minimum dose was much better than the standard drug.

**Keywords:** Herbal cough syrup, Dry cough, wet cough, decoction extraction, Evaluation.

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### INTRODUCTION

**H**erbal 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 <sup>1</sup>.

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.

The cough syrup medication is a liquid dosage form use of oral liquid pharmaceutical has been confirm on basic ease of administration to those people who have the problem in the swallowing of solid dosage from medication. Syrup is a concentrated solution contains sugar and purified water. In syrup from the other type of syrup solutions. The syrup may be or may not be containing medication or mixed flavoring agent. When the syrup without a medication but the flavoring agent present are known as flavored or non-medicated syrup<sup>2</sup>. Flavored syrup are frequently used as vehicle for the unpleasant test of medications results (found as) is medicated syrups.

Syrup are present in syrup in high amount predisposes then to the bacteria infection so they often. Use as preservative <sup>3</sup>.

Syrup are very prominent delivery vehicle use for the anti tissue medication because they give a more soothing to

swallow (ingest) then the tablet and capsule. This medication is quickly observed. There are some available synthetic cough preparations they cause several adverse effect. So the present study was show to enlarge and in violet herbal cough syrup carry natural element having no any side effect.<sup>4</sup> in general health professionals having difficulties of accessing effectiveness and safety natural treatment (therapy). Number of instance allopathic medication product has not been studied in large scale and generally they solid without in knowledge of there mechanism of action or side effect. Even so the use of complementary medication is sometime helpful and the confirmation is same time helpful and the confirmation the effectiveness of some this all medication literature is limited, they frequently sold with the drug store<sup>5</sup>. A successful formulation of liquid, as well as other dosage forms, requires a blend of scientific acuity and pharmaceutical "art"<sup>6</sup>. Oral liquid medicines are being superseded gradually by tablets and capsule because of deleterious changes take place more readily in solution<sup>7</sup>. Nevertheless there are still a large number of liquid oral preparations are available in the official books. The fact is that the absorption of medicaments in solution from the GI tract into the systemic circulation may be expected to occur more rapidly than other oral dosage forms of the same medicinal agent<sup>8</sup>. Ayurvedic formulations are preferentially administered by oral route<sup>9</sup>, and most of the orally administered Ayurvedic formulations belong to liquid form of drug or drug combination. However herbal medicinal combination<sup>10</sup>

#### Types of herbal syrup:

1. Flavored syrup
2. Medicated syrup
3. Artificial syrup



Figure:1. Pudina

#### Advantages of herbal syrup:

- No side effects
- No Harmless
- Easily available
- Easy to adjust the dose for child's weight
- No nursing is required, which main and the patient can take it with no help.
- The liquid dosage form is executed for products like cough medicines.
- Herbs Grow in common place.
- Antioxidant by retarding the oxidation as sugar is Hydrolyzed in to cellulose and dextrose
- Good patient compliance especially pediatric patients as syrup are sweet in test
- It is a preservative by retarding the growth of bacteria, fungi and mould as osmotic pressure.

#### Disadvantage of herbal syrup:

Sedimentation of solid occasionally gives foot from of product.

Dose precision cannot be achieved unless suspension suspensions are packed in unit dosage forms.

Same microbial contamination take place it preservation not added in accurate proportion.

Also herbal medicine having another disadvantage is the risk of self dosing of herbs which is very rare.

Fluctuation in storage temperature may cause crystallization of sucrose from saturated syrup.<sup>11,12</sup>

#### Material and method of Preparation:

Following herbal part are used in the formulation of herbal syrup.



Figure: 2 Tulsi



**Figure: 3** Cinnamon

#### **Pudina:**

Synonyms: peppermint, fragrant, Mentha leaves.

Biological source: pudina consists of dried leaves and obtained from flowering tops of mentha spicata; belonging to family labiatae.

Chemical constituents;

The main constituents of menthol (40.7%) and menthone (23.4%) further components were (%+-) menthyl acetate, 1,8-cineole, limonene, beta-pinene and beta-caryophyllene.

#### **Uses:**

Flowering agent

Carminative, digestive, spasmolytic.

Also use in one herbal syrup preparation.<sup>13</sup>

#### **Tulsi:**

Synonyms: Holy basil, sacred basil.

Biological source:

It consists of dried leaves of *ocimum sanctum* Linn. Belonging to family labiatae.

Chemical constituents:

Pleasant volatile oil (0.1 to 0.9%)

Also consist 70% eugenol and carvacrol (3%) eugenol methyl-ether (20%).

#### **Uses:**

Leaf and volatile oil use in various purposes.

The oil is antibacterial and insecticidal used.

Fresh leaves are used in stomachic.<sup>14</sup>

#### **Cinnamon:**

Synonyms: Cortex Cinnamon oil Ceylon cinnamon, Saigon cinnamon, Chinese cassia, Cinnamon oil aromaticum.

Biological source: *cinnamomum zeylanicum* is widely cultivated in Ceylon, Java, Sumatra, West Indies, Mauritius, Brazil, and India.

Belonging to family Lauraceae.

#### **Chemical constituents:**

1. 10% of volatile oil
2. 5 to 10% eugenol
3. 50 to 60% cinnamon aldehyde



**Figure: 4** Honey

#### **Uses:**

Stomachic, carminative, flavoring agent, anti-arrhythmic.<sup>15</sup>

#### **Honey:**

Synonyms:

Madhu, madh.

**Biological source:**

Honey is a viscous and sweet secretion stored in the honeycomb by various species of bees.

I.e. *Apis florea*, *Apis dorsata*, *Apis mellifera*, *Apis indica* belonging to family Apidae.

**Chemical constituents:**

1. Fibers test for artificial invert sugar.
2. Reduction of Fehling's solution.
3. Limit test

#### **Uses:**

1. Laxative, bactericidal.
2. Sedative, alkaline characters.
3. It is used in food cold.
4. It is used in flavoring agent.
5. It is used in medium in preservative of cornea.
6. Sweetening agent.
7. Vehicles.<sup>16</sup>

#### **Method of preparation.**

##### **Preparation of decoction.**

The initial stage in studying medicinal plants is the preparation of plant samples to preserve the biomolecules in the plants prior to extraction. Plant samples such as leaves, barks, roots, fruits, and flowers can be extracted from fresh or dried plant materials such as grinding and drying also influences the preservation of phytochemicals in the final extracts.<sup>17</sup>

The weighed crude drug sample 5g of herbal ingredients.

Then herbal ingredients were mixed with 500ml of water.

Then attach reflux condenser and materials were boiled under carefully by using water bath for 3 hrs.

The mixture was boiled until total volume becomes one-fourth of the volume.

Then the decoction was cooled and filtered.

Filtrate was taken to prepare final syrup.<sup>18</sup>



Figure: 5 Preparation of decoction extraction.<sup>19</sup>

**Method of preparation for final herbal syrup:**

To prepared final herbal syrup 16ml of Pudina decoction and 17ml of Tulsi or 17ml of cinnamon decoction was added ad 50% of honey preservative was mixed slowly by side by side continually stirring . The final herbal syrup was prepared and then subjected for evaluation (fig. 6). Herbal syrup was prepared and solubility was checking by observing clarity of Solution visually.<sup>18</sup>

**Table: 1** Formulation table in syrup

Sr. No.	Ingredients	Quantity	Activity
1.	Pudina	In16ml	Antioxidant
2.	Tulsi	In17ml	Antioxidant
3.	Cinnamon	In17ml	Antitussive
4.	Honey	In 50%	Base viscosity modifier

**Evaluation parameters:**



Figure: 6. Herbal syrup formulation <sup>20</sup>.

**Formulation studies:****Table: 2.** Results of physiochemical parameters of formulated herbal syrup <sup>21</sup>.

Formulations	Colour	Odour	Taste
A	Yellowish brown	Aromatic	Slightly pungent
B	Yellowish brown	Aromatic	Slightly pungent
C	Yellowish brown	Aromatic	Slightly pungent

**Colour:**

Table. 2 shows the results obtained for colour of formulated batches of syrup. The colour of formulation was found to be yellowish brown for the optimized batch. The colour of the formulation ranges from yellowish brown to dark brown for A, B and C batches respectively.

**Odour:**

Table. 2 shows the results obtained from odour of formulated batches of syrup. The odour of formulation was aromatic for A,B and C batches respectively.

**Taste:**

Table. 2 shows the results obtained from test of formulated batches of syrup. The test of formulation was slightly pungent for A,B,C batches respectively.

**Table: 3** Quantitative evaluation of formulated herbal syrup Dosage form.(22)

Sr. No.	Parameter	A	B	C
1.	PH	6	6.2	6.1
2.	Viscosity	0.01323	0.0492	0.03989

**PH:**

The pH determination of syrup by using to techniques.

- A) Glass electrode.                      B) pH paper.

**Procedure for glass electrode:**

1. Prepare 30ml buffer of each pH. The volume of the stock solution to be taken. Prepare the buffer by mixing appropriate volume.
2. Allow the solution for 15minutes to establish equilibrium.
3. Measure the pH of solution using a pH meter.

**Solutions:** Stock solution: Acetic acid 0.2molar: Dissolve 1.2ml of glacial acetic acid in 100ml of distilled water in a volumetric flask. Molecular weight of glacial acetic acid is 60.605; weight per ml is 1.050.

Buffer solution: Dissolve 10.21 gram of potassium hydrogen phthalate in sufficient Carbon dioxide free water to produce 1000ml. <sup>23</sup>

**Figure: 7** PH meter.**Figure: 8** PH paper.

Table: 3 shows the results obtained for pH of formulated batches of syrup. The specific Gravity of formulation was found to be 6.2 for the optimized formulation B. The value was found to be in the range of 6.0-6.2 for all these formulations.

#### Viscosity:

Thoroughly clean the Ostwald viscometer with warm chromic acid and if necessary used

1. An organic solvent such as acetone.
2. Mount viscometer in vertical position on a suitable stand.
3. Fill water in dry viscometer up to mark G.

4. Count time required, in second for water to flow from mark A to mark B.
5. Repeat step 3 at least 3 times to obtained accurate reading.
6. Rinse viscometer with test liquid and then fill it up to mark A, find out the time required for liquid to flow to mark B.
7. Determination of densities of liquid as mentioned in density determination experiment.

#### Formula for viscosity:

$$\text{Density of test liquid} \times \text{Time required to flow test liquid} \\ \text{Viscosity} = \times \text{Viscosity of water} \\ \text{Density of water} \times \text{Time required to flow water (24)}.$$



**Figure: 9.**viscosity modifier (25).

Table 3: show the results obtained for viscosity of formulated batches of syrup. The viscosity of formulation was found to be 0.0492 poise for the range of 0.0492-0.03989 poise for all these formulation.

#### Stability Testing:

Stability Testing of the prepared herbal syrup was performed on keeping the sample at accelerated temperature conditions. Nine portions of the final herbal syrup A,B and C were taken kept at accelerated temperature at 4c .Room temperature and 47 c respectively. The sample

were tested for all the physicochemical parameters , turbidity and homogeneity at the interval of 24hr 48hr and 72hr to observe any change.(26)

#### RESULTS AND DISCUSSION:

The results obtained in this study suggest that the herbal formulations prepared possesses Antitussive activity. The component of the herbal cough formulation was selected due to their reported action that plays a preventative and curative role in prevention of cough. Syrup prepared passes all the physical parameters and shows the significant Antitussive activity.

Table 4: Evaluation parameters for formulation.<sup>27</sup>

Sr. No.	Parameter	Observation/value
1.	Colour	Yellowish brown
2.	Odor	Aromatic
3.	PH	6.2
4.	Viscosity	0.0492

## CONCLUSION:

The formulation studies of all these formulation were within specifications. Also the physiochemical properties of prepared syrup like colour, odour, taste, pH, viscosity were satisfactory but among the formulation it was within the all specification it has proper concentration of honey as per Ip and also a good preservative.

The present study help to develop effective and safe herbal cough with 50% w/v honey as a base of cough syrup.

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