Abstract:- Cough is one of the most common problem faced by all people. There are mainly two types of cough one is dry cough and another one is wet cough. dry cough there is no mucous and secretion while in wet cough there is cough with mucous or secretion. Syrup is commonly used and popular dosage form which is used to cure cough and cold, because it having ease of patients compliance. Syrup contain Ginger macerated honey base and also Tulsi, liquorice, cardamom, fennel, adulsa, clove as an antitussive and expectorant. Quality of final herbal syrup was evaluated for pre formulation a post formulation parameter. Here by using honey base three batches were formulated having various concentration such as 35%, 40%, 45% w/v.

Keyword:- Antitussive, Maceration, Herbal Formulation, Quality Control Test.

I. INTRODUCTION

Herbal plants and formulations are used for the many types of diseases like cough syrup and many more other diseases. In cough syrup many types of herbal plants are used, for example ginger, tulsi, honey, clove. In that whole plants are used for making herbal medicine since a many years. Herbal formulations are most commonly used in development as well as developing countries as health care aid.

A. Types of Cough

Mainly there are two types of cough, which are classifies as follows
- Wet cough
- Dry cough

| DRY COUGH | WET COUGH |
|-----------|------------|
| • Productive and effective cough. | • Non effective and infective cough. |
| • It expels secretion mucous or foreign material from respiratory tract. | • It expels secretion or mucous from lungs. |
| • The main purpose of | • Dry cough is chronic in nature and |
D. Advantages of Herbal Medicine:

![Advantages of Herbal Medicine](image1)

- Harmless
- Low Cost
- No side Effect
- Herbs Grow in Common Places
- Easily Available
- Not Required Prescription

Fig 1:- Advantages of Herbal Medicine

E. Disadvantages of Herbal Medicines

- ADR with prescription drugs:
  - Herbal medicine can produce adverse effect if they are mixed with drugs like antidepressants which are taking regular basis.
  - Also herbal medicines having another disadvantage is the risk of self dosing of herbs which is very rare.

- Patients:
  - Herbal medicine are the natural product. The effectiveness of herbal medicines is not optimized in laboratory so it taken time to produce effect.

II. MATERIAL AND METHODS

Following herbal parts are used in the formulation of herbal syrup for treatment of cough.

| SR. NO. | INGREDIENT |
|---------|------------|
| 1.      | Tulsi      |
| 2.      | Ginger     |
| 3.      | Liquorices |
| 4.      | Fennel     |
| 5.      | Cardamom   |
| 6.      | Peppermint |
| 7.      | Adulsa     |
| 8.      | Honey      |
| 9.      | Clove      |

Table 3:- List of materials

![Ingredient](image2)
Pre formulation of raw materials:

| SR.NO | TEST                              | PROCEDURE                                                                                                                                 |
|-------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Moisture content                  | 1. Weigh 2 gm of sample and take in petridish  
2. Heat it in the hot air oven at 100°C for 1 hr  
3. Then allowed to cool. Weigh the sample again |
| 2     | Determination of ethanol extractive value | 1. Take macerated 5 gm of air dried, shaken coarsely powdered drug with 100 ml of 95% ethanol in closed flask for 24 hrs.  
2. Shake it frequently for first 6 hours and then allowed to stand for 18 hrs.  
3. Then filter it rapidly (take care for loss of ethanol)  
4. Evaporated 25 ml filtrate to dryness in a flat bottomed petridish  
5. Dry at 105°C and weighed |
| 3     | Determination of water extractive value | 1. Macerated 5 gm of air dried drug coarsely powdered with 100 ml chloroform water (2.5 ml chloroform in 1000 ml water) in closed flask for 24 hrs.  
2. Shaken frequently for first 6 hrs.  
3. Allowed to stand for 18 hrs.  
4. Evaporate 25 ml of filtrate to dryness in a flat bottomed petridish  
5. Dry at 105°C and weighed |

Table 4:- Preformulation study of raw materials

Preparation of liquid oral:
The liquid oral is prepared by two methods; first is decoction method and maceration method.

A. Method of preparation decoction:

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5-7 gm of each herbal ingredients

Herbs was mixed using 500ml of water

Attach reflux condenser and material was boil under carefully by using water bath for 3 hrs.

Boil until total volume become one forth part of previous

Then liquid was cooled and filtered
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Chart 1:- method of preparation decoction
B. Method of preparation Maceration:

The 35ml, 40ml and 45ml of honey was taken

1.75 gm, 2gm, 2.25gm of ginger mixed with 35ml, 40ml, and 45ml honey in beaker and pack the aluminum foil

Beaker aloc to stand at room temperature for 24 hrs.

After 24 hrs. the preparations are filtered and filter was used as final oral form

Chart 2:- method of preparation maceration

Fig 4:- Maceration of ginger with honey
C. Final herbal cough syrup

To prepared final cough syrup 35ml of macerated ginger with honey add 25 ml of decoction was mixed slowly by continuous stirring

Again 40ml and 45 ml macerated ginger with honey added 15 ml and 20 ml of decoction was mixed slowly by continuous stirring

Herbal cough syrup was prepared and Solubility was checked by observing clarity of solution visually.

Chart 3:- method of preparation of final syrup

Formulation table:

| SR. NO. | INGREDIENT | QUANTITY       | USE                  |
|---------|------------|----------------|----------------------|
| 1.      | Tulsi      | 12-20 leaves   | Antitussive          |
| 2.      | Ginger     | 2-3 gm         | Antitussive          |
| 3.      | Liquorice  | 4 gm           | Expectorant          |
| 4.      | Fennel     | 4 gm           | Aromatic, Flavoring agent |
| 5.      | Cardamon   | 3 gm           | Aromatic             |
| 6.      | Pepermint  | 2 gm           | Cough                |
| 7.      | Adulsa     | 2-4 gm         | Antitussive          |
| 8.      | Clove      | 2 gm           | Expectorant          |
| 9.      | Honey      | 35 %           | Base, Viscosity modifies |

Table 5:- Formulation table for syrup A

| SR. NO. | INGREDIENT | QUANTITY       | USE                  |
|---------|------------|----------------|----------------------|
| 1.      | Tulsi      | 12-20 leaves   | Antitussive          |
| 2.      | Ginger     | 2-3 gm         | Antitussive          |
| 3.      | Liquorice  | 4 gm           | Expectorant          |
| 4.      | Fennel     | 4 gm           | Aromatic, Flavoring agent |
| 5.      | Cardamon   | 3 gm           | Aromatic             |
| 6.      | Pepermint  | 2 gm           | Cough                |
| 7.      | Adulsa     | 2-4 gm         | Antitussive          |
| 8.      | Clove      | 2 gm           | Expectorant          |
| 9.      | Honey      | 40 %           | Base, Viscosity modifies |

Table 6:- Formulation table for syrup B
### Table 7: Formulation table for syrup C

| SR. NO. | INGREDIENT | QUANTITY | USE       |
|--------|------------|----------|-----------|
| 1.     | Tulsi      | 12-20 leaves | Antitussive |
| 2.     | Ginger     | 2-3 gm    | Antitussive |
| 3.     | Liquorice  | 4 gm      | Expectorant |
| 4.     | Fennel     | 4 gm      | Aromatic, Flavoring agent |
| 5.     | Cardamon   | 3 gm      | Aromatic |
| 6.     | Pepermint  | 2 gm      | Cough |
| 7.     | Adulsa     | 2-4 gm    | Antitussive |
| 8.     | Clove      | 2 gm      | Expectorant |
| 9.     | Honey      | 45 %      | Base, Viscosity modifies |

**Post formulation evaluation parameter as follows:**

| SR NO | TEST                  | PROCEDURE                                                                 |
|-------|-----------------------|---------------------------------------------------------------------------|
| 1     | Colour Examination    | 1. 5 ml of prepared syrup was taken on a watch glass                    |
|       |                       | 2. Watch glass placed against white background in white tube light       |
|       |                       | 3. Colour was observed by naked eyes                                    |
| 2     | Odour Examination     | 1. 2 ml of prepared syrup was taken and smelled by individually         |
|       |                       | 2. The time interval between 2 smelling was 2 min. to nullify effect of previous smelling |
| 3     | Taste Examination     | 1. A pinch of final syrup was taken and examined on taste buds of the tongue |
| 4     | pH Determination      | 1. 10 ml of prepared syrup taken in 100 ml of volumetric flask          |
|       |                       | 2. Make up volume to 100 ml with distilled water                         |
|       |                       | 3. Sonicate for 10 min.                                                  |
|       |                       | 4. pH was measured by using digital pH meter                             |
| 5.    | Viscosity Determination | 1. The viscosity of each formulation was determined by using Ostwald’s U-tube viscometer |

**Table 8:** Post formulation evaluation parameter

**III. RESULT**

**Pre formulation studies:**

| SR. NO. | TEST                                  | RESULT |
|---------|---------------------------------------|--------|
| 1       | Moisture content                      | 1.6    |
| 2       | Ethanol soluble extractive            | 11.6   |
| 3       | Water soluble extractive              | 12.8   |

**Table 9:** Physicochemical constituents of crude drug
Post Formulation studies

| Formulation | Colour         | Odour    | Taste            |
|-------------|---------------|----------|------------------|
| A           | Yellowish -Brown | Aromatic | Slightly Pungent |
| B           | Yellowish -Brown | Aromatic | Slightly Pungent |
| C           | Yellowish -Brown | Aromatic | Slightly Pungent |

Table 10:- Result of Physicochemical parameters of formulated poly herbal cough syrup.

- **Colour**: Table 6 shows the results obtained for colour of formulated batches of syrup. The color 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, C batches respectively.

- **Odour**: Table 6 shows the results obtained for odour of formulated batches of syrup. The odour of formulation was Aromatic for the A, B, C batches respectively.

- **Taste**: Table 6 shows the results obtained for taste of formulated batches of syrup. The taste of formulation was Slightly Pungent for A, B, C batches respectively.

| Sr. No. | Parameter       | A   | B    | C   |
|---------|-----------------|-----|------|-----|
| 1.      | pH              | 6   | 6.2  | 6   |
| 2.      | Viscosity (poise) | 0.01323 | 0.0582 | 0.03988 |

Table 11:- Quantitative Evaluation of Formulated Herbal Cough Syrup Dosage Form

- **pH**: Table 7 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 three formulations.

- **Viscosity**: Table 7 shows the results obtained for Viscosity of formulated batches of syrup. The Viscosity of formulation was found to be 0.0582 poise for the optimized formulation B. The value was found to be in the range of 0.0582– 0.03988 poise for all three formulations.

### Fig 5:- Determination of viscosity

**IV. CONCLUSION**

The Pref ormulation studies of all three formulations were within specifications. Also the physicochemical properties of prepared syrup like colour, odour, pH, taste were satisfactory but among the all three formulation is 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 affective and safe herbal cough syrup with 40% W/V honey as a base of cough syrup.
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