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REVIEW ARTICLE **OPEN ACCESS**

FORMULATION AND EVALUATION OF HERBAL COUGH SYRUP

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A B S T R A C T

The cough is one of the most common problem faced all people. There are mainly two type of cough, one is Dry cough and another one wet cough. Dry cough is no mucous secretion while in wet cough there is cough with mucous secretion. Syrup is commonly used and popular dosage form which is used to cure cough and cold, because it having easy to patient compliance. The herbal cough syrup was. Formulated using crude drugs as Marshmallow root (as a anti-irritant), Elderberry (as a anti-bacterial), Pineapple (as a anti-inflammatory) & Ivy (as a anti-viral).
Quality of herbal cough syrup was evaluated for pre-formulation and post formulation like density, viscosity, pH and various organoleptic characteristics.

Keyword:-Herbal cough syrup, Dry& wet cough, Decoction extraction, Evaluation.

INTRODUCTION

Herbal cough syrup is defined as decoction with honey or sugar. Herbal cough syrup is formulated using crude drugs as Vasaka, Marshmallow, Elderberry, Cinnamon & Thyme etc. Herbal cough syrup is used in both dry & wet cough. 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 to have the problem in swallowing of solid dosage form of medication.
Syrup is a concentrated solution contains sugar/honey and purified water. When syrup without a medication but the flavouring agent present are known as flavoured syrup or non medicated syrup. Flavoured syrup are frequently used as a vehicle for unpleasant test of medication results is medicated syrups.
Syrup is very prominent delivery vehicle use for the anti-tussive medication because they give a more soothing to swallow then the table and capsule.

Classification of Cough:-

1. Acute cough Not more than 3 weeks duration.
2. Chronic cough -More than 3 weeks.
3. Dry cough-No mucous secretion
4. Wet cough With mucous secretion.

ADVANTAGES:-

- Provide protection from allergic cough.
- Easily available.
- Lower cost.
- It helps to improve respiratory system.
- No side effects
- No harmless.
- Good patient compliance.
- Herbs grow in common places.
- Not required prescription.

DISAVTAGES:-

- No proper regulations.
- Herbs interact with modern medicines.
- Lack of dosage instruction.
- Delayed onset of action.
- Not suitable in emergency and for unconscious patients.

Figure: 01

INGREDIENTS (MATERIALS) USED IN FORMULATION:-

In formulation of herbal cough syrup, lots of materials (ingredients) used.

1.Marshmallow Root (Resha khatmi) :-

Scientific name:-

Althaea Officinalis .

Family :-

Malvacea

Biological source:-

It is obtain from dried root of Althaea Officinalis.

Chemical Constituents:-

It contains :- starch (25-35%), pectins (11%), saccharose (10%), flavononoids.

Uses:-

- It is used to reduce irritation of mouth.
- It is used in dry cough.
- It is used as anti-inflammatory.

Figure :02

2.Elecampane Root (Puskarmool):-
Indian Name :- Inula Racemosa
Other Name:- Elecampane is also known as Horse Heal..
Biological Source:-
It is obtain from the dried roots of Inula Helenium.
Family :- Asteraceae.
Chemical Constituents:-
It contains phenolic acids (caffeic), terpenes (alantolactone), flavonoids (catechin gallate, o-glucoside) and mucilage.
Uses:-

- It is used to treat whooping cough.
- It is used as a anti-microbial.
- It is used as a expectorant.

Figure :03

3.Ivy leaf (Kundru):-
Scientific Name:-Hedera Helix and Hedera Hibernica.
Other Name:-

- Hedera Hibernica is another species of ivy .
- Hedera Algeriensis is another species of ivy.

Biological Source:-

Biological source is Ivy Genus.

Family :- Araliaceae

Chemical Constituents:-

It contains sterols, tannins, glycosides, phenols, alkaloids, flavonoids, saponins, and carbohydrates.

Uses:-

- It is used in viral infection.
- It is used in cold and cough.
- It is used to loosen mucus thereby helping to cough out easily.
- It is used against chronic inflammatory bronchial conditions.

Figure:04

4.Elderberry (Kanji):-

Elderberries are part of the Adoxaceae.

Scientific name:-

Sambucus nigra.

Biological Source:-

It is obtain from bark of DarkPurple Berry.

Family :-

Moschatel

Chemical Constituents:-

It contains polyphenols, anthocyanins, flavonols, phenolic acids, and proanthocyanidins, as well as terpenes and lectins.

Uses:-

- It is used as anti-bacterial and anti-viral.
- Keepsthe respiratory system healthy.
- Help relieve nasal congestion.
- Treats respiratory illness such as cold and flu.

Figure 05

5.Vasaka (Adulsa):-
Scientific Name:-Malabar Nut.
Indian Name :- Vasa,Arusha,Shwetavasa and Bansa.
Genus :- Justicia
Family :- Acanthaceae
Biological Source:-
It is dried and fresh leaves of Adhatoda Vasica or Malabar Nut.
Chemical constituent:-
It containpyrroloquinazoline alkaloids, adhatonine, vasicinone, vasicinol and vasicine.
Uses:-

- It is used as anti-tussive and anti-inflammatory.
- It is used as expectorant and bronchodilator.
- It is used in treatment of cough and bronchial asthma.
- It relieves chest congestion.
- It is used as anti-oxidant.

It is used to treat chronic fever.

Figure 06

6.Pineapple:-
Scientific Name:-Ananas Comosus.
Biological source:-
It obtain from stem and ripen fruits of pineapple plant Ananas comosus .
Family:-Bromeliaceae.
Chemical Constituents:-
It contains bromelain (which is more effective in cough treatment), alkaloids, saponins, tannins, flavonoids and glycoside.
Uses:-

- It is used to loosen mucous in throat.
- It is used as anti-inflammmatory.
- It prevents cold and cough.
- It is used to reduce nausea.

- It builds immunity.

Figure 07

7.Cinnamon (Daalchini):-
Scientific Name:-True Cinnamon tree.
Family:-Lauraceae
Biological Source:-
Itconsists of the driedinner bark of the shoots of trees of Cinnamomum Zeylanicum.
Chemical Constituents:-
It contains eugenol, cinnamic acid, cinnamic aldehyde, phlobatannins, volatile oil, mucilage, etc.
Uses:-

- It is used to thin the mucus.
- It is used as flavouring agent.
- It is used as anti-bacterial & anti-viral.
- It is used to reduce inflammation.
- It is relief from cold and cough.

Figure 08

8.Thyme:-
Thyme is a Culinary herb.
Scientific Name:-Thymus Vulgaris .
Family:-Lamiaceae.

Biological Source:-
Biological source is Thymus Vulgaris.
Chemical Constituents:-
It contains thymol, p-cymene, alpha carvacrol, terpinene, beta caryophyllene, etc.
Uses:-

- It is used to treat dry & wet cough.
- It is used as inflammatory and anti-microbial.
- It is used as expectorants.
- It is used as anti-viral.

Figure 09

9.Honey:
Scientific Name:-Apis Mellifera.
Family :- Apidae.
Biological source:-

- Honey is a sugary substance deposited in the honey comb by Apis Millifera and of Apis Dorsata.
- Honey is a biological product that comes from flower nectar ,which is collected by honey bees.
- **Chemical Constituents:-**

It contains glucose (30-40%), fructose (40-50%), small quantities of sucrose, dextrin, formic acid and also contains proteins, vitamins, and enzymes.
Uses:-

- It is used as a demulcent and sweetening agent.
- It is common ingredient of several cough mixture and cough drops.
- It is used as a flavouring agent.
- It is used as vehicles.

Figure :10.

Formulation:-

Table 01

1.	Marshmallow Root	2 gm
2.	Elecampane Root	3 gm
3.	Ivy Leaf	1 gm
4.	Elder Berry	2 gm
5.	Vasaka	3 gm
6.	Pineapple	8 gm
7.	Cinnamon	2 gm
8.	Thyme	2 gm
9.	Honey	45%

METHOD OF PREPARATION OF HERBAL COUGH SYRUP

➤ **Preparation of Extract By Decoction method:-**

Weigh accurately each ingredients except honey

↓

Ingredients are mixed using 500ml water in round bottom flask

↓

Flask attach to the reflex condenser and mixed material was boil under carefully by using water bath for 3 hrs.

↓

Boil untill total volume become one forth part of solution

↓

Then liquid extract was cooled and filtered.

Figure: 12 (Preparation of extract)

➤ Preparation final cough syrup:-

To prepared final cough syrup 45% of honey was mixed slowly side by side continous stirring in decoction solution.

Herbal cough syrup was prepared and use for cough.

Figure :13 **Figure :14**

EVALUATION OF HERBAL COUGH SYRUP:-

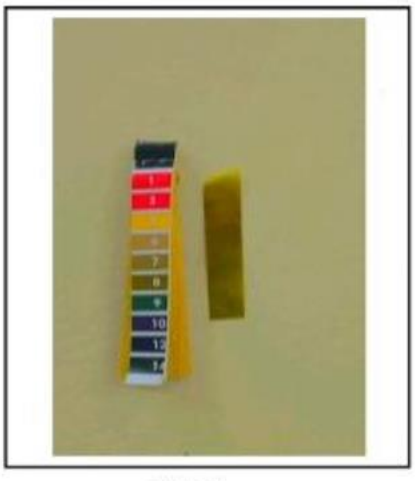
Test	Procedure
Colour	• 5 ml of prepared syrup was taken on a watch glass • Watch glass placed against white background in white tube light. • Colour was observed by naked eyes
Odour	• 2ml of prepared syrup was taken & smelled by individually. • Time interval between 2 smelling was 2 minutes to nullify effect of previous smelling.
Taste	• A pinch of final syrup was taken and examined on taste buds of the tongue.
pH	• 10 ml of prepared syrup taken in 100 ml of volumetric flask. • Make up volume to 100 ml with dist, water. • Sonicated for 10 minutes. • pH was measured by using digital pH meter.
Viscosity	• The viscosity of formulation was determined by using Ostwald's U-tube viscometer.
Density	• Density of formulation was determined by using density bottle.

Table 02Evaluation Table :-

Test	Observed
Colour	Yellowish brown
Odour	Aromatic
Taste	Sweet
pH	7
Viscosity	4.96 cp
Density	1.17 g/ ml

Table :-03

Yellowish-brown



pH= 7

DISCUSSION

Herbs have been an important source to improve the quality of human life for thousands of years. In fact 25% of all medical prescriptions are based on substances derived from plants or plant-derived synthetic analogues. It has been

estimated by World Health Organization (WHO) that approximately 80% of world's population, mainly residing in developing countries, still depends on the complementary and alternative systems of medicine, while about half of the population in industrialized countries use herbal medicines.
This syrup consists of Marshmallow, Elderberry, Elecampane root, Vasaka, Cinnamon, Ivy leaf. Vasaka is commonly used to treat chronic bronchitis, asthma and cough. Pineapple and cinnamon are used to thin the mucus. Marshmallow is used to reduce irritation. Ivy is used as anti-viral.

CONCLUSION

The preformulation studies of all these formulation were within specifications. Also the physiochemical properties of prepared syrup like colour, odour, taste, pH, viscosity, density were satisfactory but among the formulation was within the all specification, it has proper concentration of honey as per IP and also a good preservative.
Herbal product is high demand because of the least possibilities of side effect.
The percent study help to develop effective and safe herbal cough with 45% w/v honey as a base of cough syrup. Elderberry is used as anti-bacterial.

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