

# Formulation, Development and Evaluation of Herbal Cough Syrup.

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## ABSTRACT:

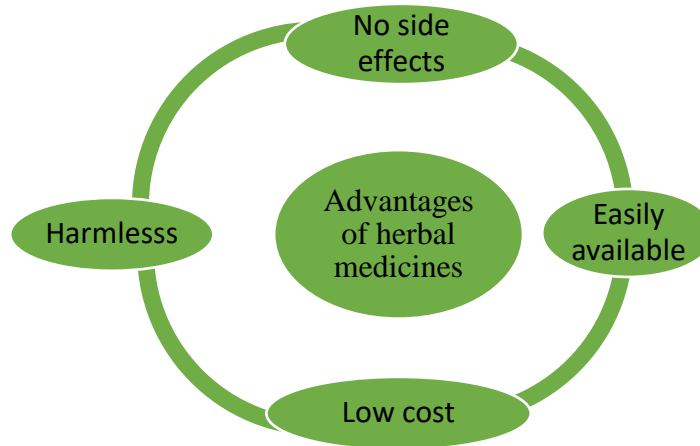
In India number of asthmatics is rising daily for a variety of environmental causes. Asthmatic people are more susceptible to the viral infectious disease in the COVID scenario. All of the issues that have arisen in this ecosystem have solutions in nature. With great aspirations, we took action to find a remedy using only natural ingredients that have been known for ages and developed a significantly safer solution for this problem. In the current research, various natural herbs are employed to create a cough and asthma syrup that is both safe and affordable. In order to create syrup, the aqueous extracts of the chosen herbs were combined in a certain ratio with simple syrup and honey was used as flavoring agent. After that, the prepared syrup underwent physicochemical analysis by in vitro methods. The prepared formulation was found to be effective and safe with respect to initial evaluation parameters.

**Keywords:** Asthama, Cough Syrup, Herbal

## INTRODUCTION:

An unexpected and frequently recurring procedure called a cough aids in clearing the major breathing passages of mucus, irritants, foreign objects, and bacteria. The brain interprets an obstruction or discomfort in the upper airway or throat as the presence of a foreign substance and commands the body to cough and take that component out. Coughing is typically completely natural. Coughing keeps your throat free of phlegm and other irritants with the aid of a good cough. But persistent coughing can also be a sign of a number of diseases such as the common cold, acute bronchitis, pneumonia, pertussis, flu and smoking or health problems such as asthma, tuberculosis and lung cancer. The cough response consists of three phases: intake, forced exhalation against a closed glottis, and a sudden expulsion of air from the lungs after opening of the glottis. [2]

More than 90 percent of cases of chronic cough in adults are due to post nasal drip, eosinophilic bronchitis asthma, and gastroesophageal reflux disease. to suppress the cough many types of drugs are used and are mostly prescribed in combination. Nature of cough, its role in disease and suppression intensity required are important factors to be considered before dealing with any type of drug. [3]

**Figure 1: - Benefits of herbal formulations****Type of cough:**

Dry cough

Wet cough

**Classification of cough:**

1. Acute cough- Not more than 3 weeks duration.
2. Chronic cough- More than 3 weeks.
3. Dry cough- No mucous or secretion.
4. Wet cough- with mucous or secretion.
5. Cough from chest and throat- productive and non-productive.
6. Paroxysmal cough- spasmodic and recurrent.
7. Bovine cough- soundless cough due to paralysis or larynx.
8. Psychogenic cough- self-conscious activity of the patient to draw attention

Herbal medicine is the most useful form of cough therapy. Formulations prepared from herbs are greatly improving the health care industry. Asthma, TB, cough, pneumonia, renal diseases, cancer, diabetes, allergies, lung cancer, and viral infections are only a few of the minor to severe medical conditions that can be treated with herbal remedies [4,5]. As previously indicated, according to a WHO estimate, 80% of the population even uses herbal medications for basic medical needs.

The majority of synthetic medicaments have a variety of unwanted side effects, including addiction, nausea, sedation, allergies, appetite changes, irritability, sleepiness etc. [6]. In recent years, researchers have concentrated mostly on herbal medications and treatments that have fewer or no negative effects during and after use.

**MATERIALS AND METHODS:****Plant materials:**

Required plant materials were purchased from the local market and authenticated in Dravyagun department of Anand Ayurved college. Plant materials were extracted in distilled water and filtered extracts were used in final formulation.

**Figure 2: - Herbal ingredients used in formulation.**

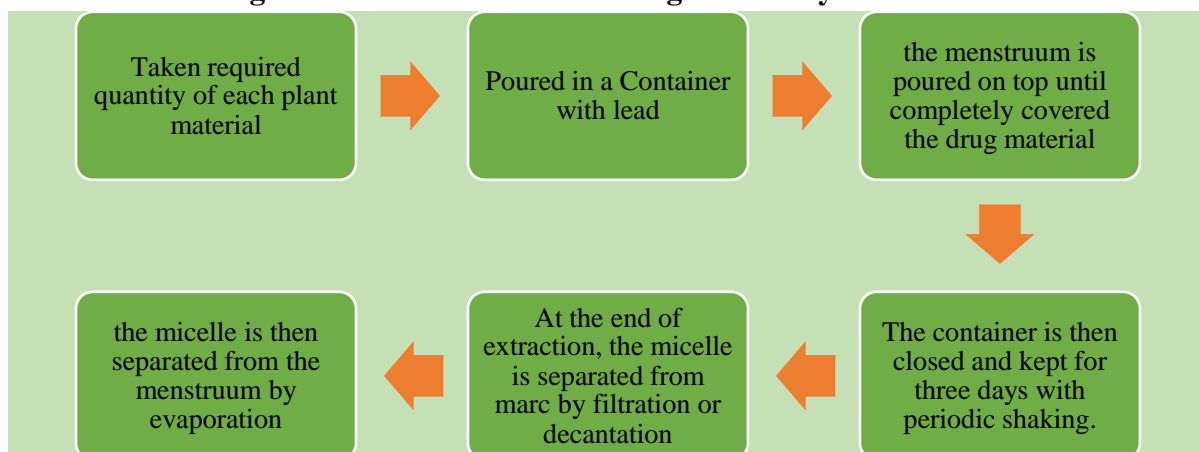


**Table 1: - Formula of herbal cough syrup**

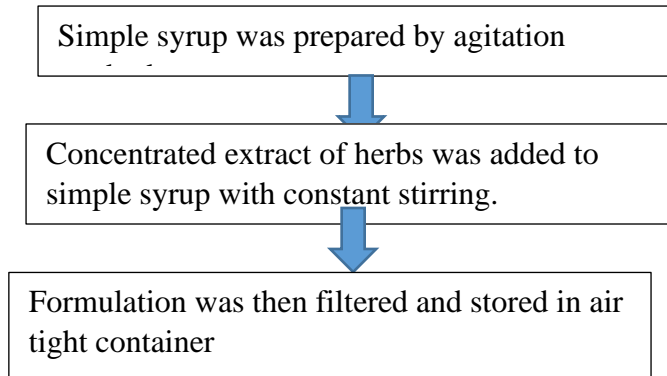
Sr no.	Name of ingredient	Botanical name	Quantity
1	Kantakari	Solanum virginianum	5gm
2	Bharangi	Clerodendrum Serratum	2 gm
3	Lavang	Syzygium aromaticum	2 gm
4	Vasapatra	Adhatoda vasica	10 gm
5	Tulasi	Ocimum sanctum	5 gm
6	Pippali	Piper longum	2 gm
7	Pudina	Mentha spicata	5 gm
8	Honey	Apis Mellifera	20 ml
9	Adrak	Zingibar officinalis	1 gm
10	Citric acid	-	1 gm
11	Simple syrup qs to make	-	100 ml

**METHOD:** Extraction of herbal ingredients by maceration:[7]

**Figure 3: Extraction of herbal ingredients by maceration**



**Preparation of herbal cough syrup:[8]**



**Figure 4: Prepared herbal cough syrup formulation**



**PREFORMULATION OF RAW MATERIALS:[8,9]**

**Table 2: Preformulation studies of herbal cough syrup**

Sr no	test	Procedure
1	<b>Moisture content</b>	2 gm of sample was weighed and taken in petridish. Heated in hot air oven at 100°C for 1 hr, allowed to cool and weighed the sample weight again.
2	<b>Ethanol soluble extractive</b>	5 gm of coarsely powdered and air dried grug was taken with 95% ethanol in closed flask for 24 hrs. Shaken for first 6 hrs and allowed to stand for next 18 hrs. filtered rapidly and evaporated 25 ml filterate in petridish, dried at 105°C and weighed
3	<b>Water soluble extractive</b>	5 gm of coarsely powdered and air dried grug was taken with chloroform water in closed flask for 24 hrs. Shaken for first 6 hrs and allowed to stand for next 18 hrs. filtered rapidly and evaporated 25 ml filterate in petridish, dried at 105°C and weighed

**POST FORMULATION PARAMETERS:[10,11]**

**Table 3: - Formulation studies of herbal cough syrup**

Sr no	Test	Procedure
1	colour	2ml of syrup was taken on a watch glass. Watch glass was placed against white background under white tube light. Color was observed.
2	odour	2ml of prepared syrup was taken and smelled by an individual. The time interval between two smelling was 2min to nullify effect of previous smelling
3	taste	A spoonful of final syrup was taken and was examined on test buds of the tongue
4	pH	10ml of prepared syrup was taken in 100 ml volumetric flask. Makeup volume upto 100ml with distilled water. Sonicate for 10min. pH was measured using digital pH meter
5	Viscosity	<b>Viscosity of each formulation was determined using Ostwald's viscometer</b>
6	Antimicrobial activity	Agar cup plate method was used for screening of antimicrobial activity of herbal cough syrup. The formulations were placed aseptically in cups of agar plate which was previously inoculated with culture. The plates were left at ambient temperature for 30 min. prior to incubation at 37°C for 24 hrs. The antibiotic i.e. Amikacin was used as positive control for obtaining comparative results. Plates were observed after 24-48 hrs. incubation for the appearance of the zone of inhibition. Antimicrobial activity was evaluated by measuring the diameter of zones of inhibition (millimeters) of microbial growth

**RESULT AND DISCUSSION:**

All the tests mentioned were performed for the cough syrup and results were found in acceptable limits.

**Table 4: - Physicochemical constituents of herbal extract**

Sr no	Parameter	Observation (%)
1	Moisture content	1.6
2	Alcohol soluble extractive	13.9
3	Water soluble extractive	12.8

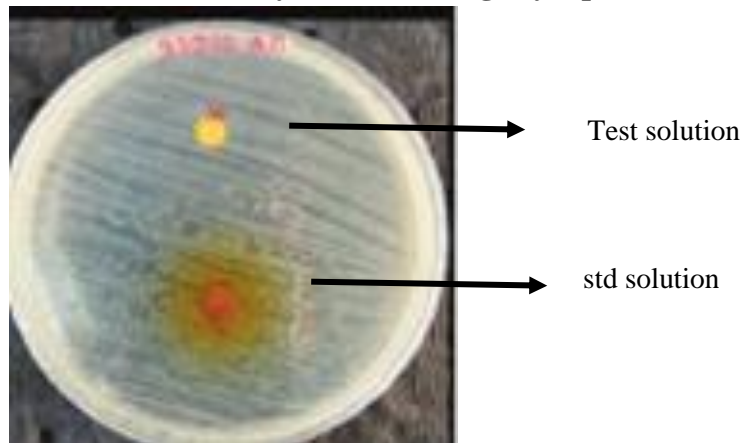
**Table 5: - Formulation parameters of herbal extract**

Sr no	Test	Observation
1	colour	Yellowish Brown
2	odour	Aromatic
3	taste	Pungent
4	pH	6.8
5	Viscosity	1.42 cp

**Antimicrobial activity:**

In vitro antimicrobial activity of given formulation was evaluated using standard amikacin and zone of inhibition was calculated and it was comparable to amikacin, so we can conclude that prepared herbal formulation shows antimicrobial effect.

**Figure 4: Antimicrobial activity of herbal cough syrup**



**Table 6- zone of inhibition of herbal extract**

Sr no	Formulation	Zone of inhibition
1	Standard Amikacin solution	2.1mm
2	Herbal formulation	1.8 mm

**CONCLUSION [12]**

People have used a variety of plants, roots, and leaves to treat a wide range of illnesses since ancient times. An Ayurvedic medication called herbal cough syrup helps treat a variety of chronic illnesses in people, including colds, fevers, respiratory infections, and coughs. It is a safe, readily available herb combination that may be formulated at home at a minimal cost of production. Herbal syrup contains natural herbs with a variety of actions and effects, such as tulsi, clove, vasa patra, bharangi , Pippali and honey, which reduce colds and coughs, both acute and chronic, and function as expectorant and anti-tussive cough suppressants. In this research work, I came to conclusion that the herbal cough syrup might be safe remedy to cure coughs

**ACKNOWLEDGEMENT:**

Authors acknowledge to trustees and principal of Anand Ayurveda college for permitting and providing necessary facility to conduct research work.

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