



# Herbal Cough Syrup: A Review

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**ABSTRACT:** Preparations presently used to treat cough are among the world's most widely used over-the-counter drugs. Currently available cough suppressants primarily act on the central cough pathway. The significant side effects of these agents such as constipation, respiratory depression, dependence, drowsiness, and death from this action limit their use in humans and are thus highly unsatisfactory. The survival of Ayurveda medicine is generating a surge of interest. As the risks and shortcomings of modern medicine have become increasingly evident, there has been a shift towards the use of herbal medicine on a global scale. The bulk of Ayurvedic formulations are made from herbs. The syrup is a popular dosage form of cough and cold medications, easing patient compliance.

**Keywords:** Herbal Syrup, antitussive herbs, expectorant herbs, herbal formulations

## INTRODUCTION

Herbal formulations are used for many types of diseases. Herbal formulations mean a dosage form consisting of one or more herbs or processed herbs in specified quantities to provide specific nutritional, and cosmetic benefits meant for use to diagnose, treat, and mitigate diseases of the human being. An herbal syrup is prepared by combining a decoction with either honey or sugar and sometimes alcohol. A potent herbal decoction serves as the syrup's foundation. In cough syrup, many types of herbal plants are used, for example, ginger, Tulsi, honey, and clove. Cough is one of the most common problems faced by all people. A cough is your body's way of responding when something irritates your throat or airway. An irritation activates nerves that cause your brain to receive a message. The brain then tells muscles in your chest and abdomen to push air out of the ilium lungs to force out the irritant. An occasional cough is normal and healthy.

### A. Types of coughs

Mainly there are two types of coughs, which are classified as follows

Wet cough

Dry cough

#### **Wet cough:**

Productive and effective cough.

It expels secretion from mucous or forges in material from the respiratory tract.

The main purpose of a wet cough is to remove the foreign matter of mucous from the respiratory tract by which infection is caused.

### **Dry cough:**

Non-effective and infective cough.

It expels secretion or mucous from the lungs.

Dry cough is chronic, and it is caused by dry irritation, smoke, and dust

### **B. Herbal treatment of cough**

Nowadays, herbal remedies are commonly used for the treatment of cough, also herbal drugs, as well as herbal formulations, are playing important role in various types of cough. Cough is being treated with medicines like cough suppressants. The antitussive agent gives only symptomatic relief. These agents are contraindicated in asthma. Modern medicines may achieve antitussive, mucolytic, and expectorant activity, but at the expense of unpleasant or intolerable side effects. These modern medicines may have unpleasant interactions. Long-term use may result in unpleasant or intolerable side effects. The herbal formulations are safe and effective as it is desirable from natural ingredients prescribed in the ancient herbal system of medicines, found to be giving long-lasting relief from all kinds of cough. Herbal medicine has fewer side effects.

### **C. Advantages of Herbal Medicine**

1. Low cost
2. Harmless
3. Easily Available
4. Not required prescription
5. Herbs grow in common places
6. No side effects
- 7 Herbal medicines are more effective.
8. They are eco-friendly.

### **D. Disadvantages of Herbal Medicine**

1. Herbal medicine can produce adverse effects.
2. Herbal medicine has another disadvantage is the rare risk of self-dosing herbs.

### **LITERATURE REVIEW**

**Ankush Ganpat Patil *et al* (2020);** This review suggested that syrup is used commonly for dosage form, which is used to treat cough and cold for the reason that it has ease patient compliance. The syrup comprises ginger macerated honey base and Tulsi, liquorice, cardamom, fennel, amla, and clove as an antitussive and expectorant.

**Alka Saxena *et al* (2020);** This demonstrated that interest regarding the survival of Ayurvedic forms of medication. In the global, there is a move towards the use of herbal origin as the danger and the shortcoming of modern medicine have started getting more apparent majority of the ayurvedic formulation are prepared from herbs. The syrup is a very popular dosage form of cough and cold medications to ease patient compliance.

**Yasmeen Jahan *et al* (2015);** This review suggested despite a recent survey, medications intended to treat cough remain among the most popular over-the-counter medicines in the world. suggesting that there is little proof that these medications have any significant effectiveness. The central cough pathway is the major target of currently

available cough suppressants. The significant side effects of these agents such as constipation, Respiratory depression, dependence, drowsiness, and death from this action Limit their use in humans and thus highly unsatisfactory. There is a current Huge unmet need for the development of safe, effective antitussive Therapeutic options in the treatment of persistent cough as an alternative to Existing medications. Medicinal plants are an important source for the Discovery of novel bioactive compounds, which have served and continue to Serve as lead molecules for the development of new drugs.

**Ashutosh Meher (2012);** This review demonstrated that Coughing is a protective reaction of the respiratory system that helps to open up the upper airways and shouldn't be stopped without cause. A cough is thought to be caused by a reflex. It occurs due to stimulation of mechano-or Chemoreceptors in the throat, respiratory passage, or stretch Receptor in the lungs. The sensitive receptors are in the bronchial tree, particularly in the junction of the Trachea. These receptors can be stimulated mechanically or chemically e.g., by inhalation of various irritants then nerve Impulses activate the cough center in the brain. Traditionally cough is classified as either productive, i.e., Producing mucus usually with expectoration, or Non-productive (dry). Thus, it seems prudent to utilise an efficient antitussive such as dextromethorphan or codeine to suppress the crippling cough experienced by such patients. Non-Narcotic antitussive agents Anesthetize the stretch receptor located in respiratory Passages, lungs, and pleura by dampening their activity and thereby reducing the cough reflex at its source.

**Luisa Wagner et al (2015);** Acute cough symptoms commonly Result from infection (upper respiratory tract infection (URTI) or Common cold) or environmental exposure to smoke and/or allergens. Whilst most people experience a cough at least once in their lives, its frequency is linked to factors such as gender and allergen Sensitivity. There is no evidence that any classic mucolytic, Including N-acetyl cysteine (NAC), eases patients' symptoms by Helping them to expectorate mucus. Trials of over-the-counter Remedies, such as cough syrups and cough suppressants, have also failed to produce consistent, objective benefits. Herbal medicines are part of a wide range of treatments such as physiotherapies, Hydrotherapies, and Traditional Chinese Medicine (TCM), a few of Which are applied in conventional medicine. Whilst herbal treatments have a long history of use in varied cultures, randomized controlled trial (RCT) data on their effects is generally lacking. Herbal cough treatments with proven clinical efficacy include Ivy/primrose/thyme-based preparations which are recommended as expectorants in current European guidelines. This review and meta-analysis were conducted to summarize and evaluate existing high-quality data on the use of herbal medicines in the treatment of cough in adults and children.

**Vaijayanti Gaikwad et al (2016);** This review states that acute cough represents the most common illness evaluated in outpatient settings. Available remedies for its management are generally allopathic combinations of antihistamines and decongestants that achieve antitussive activity, but often with unpleasant side effects prompting the need to explore safer and more effective options. Honitus is an Ayurvedic proprietary herbal cough syrup with the benefits of honey, intended to provide relief in acute non-productive cough and throat irritation without causing drowsiness. This study investigated the safety and efficacy of onions in reducing acute non-productive cough and throat irritation in comparison to a standard marketed allopathic cough syrup intended for use in similar conditions.

**Mohamed A. Farag *et al* (2020);** Liquid cough preparations containing essential oils pose a challenge for isolating and quantifying their volatile components from such a complex matrix enriched with non-volatile constituents and excipients. Cough preparations were subjected to headspace solid-phase microextraction for determination of their essential oil composition mediating for their actions and to assess volatile differences among them. HSSPME is a suitable technique for sample preparation that allows for extraction and enrichment of volatiles from complex non-volatile matrices and their direct desorption into the gas chromatography analytical system.

**Shahnaz Sultana *et al* (2016);** Cough occurs suddenly and often repetitively which helps to clear the large breathing passages from secretions, irritants, foreign particles, and microorganisms. Coughing can be due to a respiratory tract infection such as the common cold, acute bronchitis, pneumonia, pertussis, flu, and smoking or health problems Such as asthma, tuberculosis, and lung cancer. Substantial uses of folk remedies for different medical conditions Have been documented. The remedies included cinnamon, ginger, clove, cardamom, honey, lemon, garlic, onion, Turmeric and licorice.

**Anu Kaushik (2020);** From the global perspective, there is a shift towards the use of medicine of herbal origin, as the dangers and the shortcoming of modern medicine have started getting more apparent, majority of Ayurvedic formulations are prepared from herbs. The syrup is a very popular dosage form of cough and cold medications, easing patient compliance. The objective of this study is to develop a polyherbal cough syrup and evaluate the physicochemical parameter along with turbidity/ homogeneity compared with the changes in the accelerated stability test.

## HERBS USED IN FORMULATION

SR. NO.	INGREDIENT	USES
1	Tulsi	Antitussive
2	Ginger	Antitussive
3	Liquorice	Expectorant
4	Fennel	Flavouring agent
5	Cardamon	Aromatic
6	Peppermint	Cough
7	Clove	Expectorant
8	Honey	Viscosity modifies

**Table1: Herbs Used in Formulation**

## PREPARATION:

### Method of preparation of decoction:

Take 5- 7 gm of each sample of all ingredients



All Herbs mixed by using 500 ml water



Boil until the total volume converts one-fourth part of previous



Then the liquid was cool and filter



Attach reflux condenser and boiled the material carefully by using a water bath for 3 hrs

### Method of preparation of maceration:

Take 35 ml, 40ml, 45ml honey



Mix 1.75 gm, 2 gm, and 2.5 gm of ginger with 35ml, 40ml, 45ml Honey in the 250ml beaker and packed with the help of aluminum foil



Allow beaker to stand at room temperature for 24 hrs



After 24 hrs. The preparation was filtered, and filters are used as final oral form

### Final herbal cough syrup:

The prepared final cough syrup 35ml of macerated ginger with honey add 25 ml of decoction mixed slowly by current stirring



Over, 40ml and 45ml macerated ginger with honey add 15ml and 20ml of decoction was mixed slowly by continues stirring



Herbal cough syrup was prepared, and solubility was checked by Detecting the clarity of solution visually

## EVALUATION OF HERBAL COUGH SYRUP

### Procedure to determine the density

- 1) Clean thoroughly the specific gravity bottle with chromic acid or nitric acid.
- 2) Rinse the bottle twice to three times with distilled water.
- 3) If required, rinse the bottle with an organic solvent like acetone and dry.
- 4) Take the weight of the empty dry bottle with a capillary tube stopper.
- 5) Fill the bottle with an unknown liquid and place the stopper, wipe out excess liquid from outside the tube using tissue paper.
- 6) Weight bottle with unknown liquid on the analytical balance.
- 7) Calculate the weight in grams of unknown liquid.

## 2. Procedure to determine Specific gravity

- 1) Clean thoroughly the specific gravity bottle with chromic or nitric acid.
- 2) Rinse the bottle twice to three times with purified water.
- 3) If required, rinse the bottle with an organic solvent like acetone and dry.
- 5) Fill the bottle with distilled water and place stopper; wipe out excess liquid from the side tube using tissue paper .
- 6) Weight bottle with stopper and water on an analytical balance.
- 7) Repeat the procedure for liquid under test by replacing the water after emptying and drying as mentioned in steps 4 to 6.
- 8) Weight bottle with stopper and liquid under test on an analytical balance .

## 3. Procedure to determine Viscosity

- 1) Thoroughly clean the Ostwald viscometer with warm chromic acid and if necessary, used an organic solvent such as acetone.
- 2) Mount the viscometer in the vertical position on a suitable stand.
- 3) Fill water in a dry viscometer up to mark G.
- 4) Count time required, in seconds for the water to flow from mark A to mark B.
- 5) Repeat step 3 at least 3 times to obtain an accurate reading.
- 6) Rinse the viscometer with the test liquid and then fill it up to mark A, and find out the time required for the liquid to flow to mark B.
- 7) Determination of densities of liquid as mentioned in the density determination experiment.

## CONCLUSION

Cough suppressant and expectorant activities have been claimed for many medicinal plants, in the literature. Based on this knowledge, different workers have evaluated many herbs for Antitussives & expectorant activities which have been compiled and reported in this study. This review finally concludes by giving a comprehensive view of herbal drugs for the treatment of cough as crude drugs, as well as polyherbal formulations, are good alternatives to modern cough drugs which are having a lot of side effects.

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## REFERENCES

- [1]. Anu Kaushik Vivek, Chauhan and Dr. Sudha, Formulation and Evaluation of Herbal Cough Syrup. European Journal of Pharmaceutical & medical Research, 2016; 3(5): 517-522.
- [2]. Motuma A dimasu Abeshu and Bekesho Geleta, "A Review "Medicinal Uses of Honey", Biology and Medicine, (Aligarh) 2016, 8:2.
- [3]. Ashutosh *et al* "Antitussive Evaluation of Formulated Polyherbal Cough Syrup" Journal of Drug Delivery & Therapeutics; 2012, 2(5), 61-64 61

- [4]. Yasmeeen Jahan, "prospects of cough treatment; herbal medicines v/s modern drugs", IJPSR, 2015; Vol. 6(9): 1000-09.
- [5]. Ashutosh et al "Antitussive Evaluation of Formulated Polyherbal Cough Syrup" Journal of Drug Delivery & Therapeutics; 2012, 2(5), 61-64 61
- [6]. Luise Wagnera, "herbal medicine for cough: a systematic review and meta-analysis" Published online: December 14, 2015
- [7]. Shahnaz Sultana, "Cough Suppressant Herbal Drugs: A Review", International Journal of Pharmaceutical Science, www.ijpsi.org Volume 5 Issue 5 | August 2016 | PP. 15-28
- [8]. Anu Kaushik, Formulation and Evaluation of Herbal Cough Syrup. European Journal of Pharmaceutical & medical Research, 2016; 3(5): 517-522.
- [9]. Meenakshi Parihar, Ankit Chouhan, M.S. Harsoliya, K. Pathan, S. Banerjee, N.Khan, V.M.Patel, "A Review-Cough & Treatments", International Journal of Natural Products Research, May 2011.
- [10]. Farhat Pirjade Mujawar, Manojkumar Patil, JyotiramSawale." Formulation and Evaluation of Herbal Cough Syrup of Echinops Echinatus Roxb Roots", International Journal of Pharmacy & Technology, 09-06-2016, ISSN: 0975-766X
- [11]. G. Sandhyarani and K. Praveen Kumar, Development Of herbal syrup. Asian Journal of Pharmaceutical Science & Technology, 2014; 4(2): 101-103
- [12]. Azwanida NN," A Review on the Extraction Methods Use in Medicinal Plants, Principle, Strength, and Limitation", Azwanida, Med Aromat Plants 2015, 4:3
- [13]. Handa SS, Khanuja SPS, Longo G, Rakesh DD (2008) Extraction Technologies for Medicinal and Aromatic Plants, (1stedn), no. 66. Italy: United Nations Industrial Development Organization and the International Centre for Science and High Technology.
- [14]. Swain Pramod Kumar, Nayak Durga Prasan," Design, Development & Evaluation of a Poly
- [15]. Herbal Syrup From some herbs used as Energy booster, "International Journal of Ayurvedic Medicine", 2013, 4(4), 374-378.
- [16]. Hawraa Mehdi Farhan, Hana, a Kadhem Egzar and Eman Hassen Sahap," Physical and cchemicProperties of homemade Dates syrup (molasses) from Middle Iraq cities", International Journal of Scientific and Research Publications, Volume 7, Issue 1, January 2017, ISSN 22503153.
- [17]. Akula Nikhil Prashant, Dr. K. V. Subramanyam, Dr. Manoranjan Sahu P. Sai Karthik, T. Madhavi, G. Mounika and FasihaTamkanat, "Development and Evaluation of herbal cough syrup from the root Extracts of withaniasomnifera and glycyrrhiza Glabra", world journal of pharmacy and pharmaceutical sciences, 14 Sept. 2017, DOI: 10.20959/wjpps201710-10104.
- [18]. Patel Divyakant A, Patel Yogesh K, Shah Paresh B, "Development and evaluation of herbal syrup from Neolamarckia Cadamba (Roxb.) Bosser Leaves", The international research journal of pharmacy, 2012, 3(9).
- [19]. Priyanka Kantivan Goswami, and Rashmi S Srivastava, "Development and evaluation of herbal Syrup from the root extract of nothosaervabrachiata& Gomphrena colostomies", international journal of Research in pharmacy and chemistry, 2016, 6(3), 473-475

- [20]. Sagar Bhanu PS, Zafar R, Panwar R. Herbal drug Standardization. *The Indian Pharmacist* 2005; 4(35):19-22.
- [21]. *Quality Control Methods for Medicinal Plant Materials*, WHO, Geneva, 1996.
- [22]. Devesh Tewari and Manoj Kumar. Formulation and Comparative evaluation of different Sitopaladi Herbal syrups. *Der Pharmacia Lettre*, 2014, 6 (2):178-183.
- [23]. Sarah Spiteri Staines. Herbal medicines, adverse Effects, and drug-herb interactions. *Journal of the Malta College of Pharmacy Practice*. 2011: 17; 38-42.
- [24]. J.B. Calixto. Efficacy, safety, quality control, Marketing, and regulatory guidelines for herbal Medicines (physiotherapeutic agents). *Braz J Med Biol Res* (2000) 33: 179-189.
- [25]. Karlsson, J.A. (1996) The role of capsaicin-sensitive fiber afferent nerves in the cough reflex. *Pulm.Pharmacol.* 9, 315–321.
- [26]. Mazzone, S.B. (2003) Sensory pathways for the cough Reflex. In *Cough: Causes, Mechanisms, and Therapy* (Chung, K.F. ed.), pp. 161–171

