

FORMULATION AND EVALUATION OF HERBAL SYRUP FOR COUGH AND COLD

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ABSTRACT

Coughing is a common problem faced by all people. There are two types of coughs: one is the Dry cough, and the second is a wet cough. The dry cough is a no mucous and secretion while in wet cough there is cough mucous or secretion. The syrup is the most commonly used and popular dosage form. It is used to cure cough and cold because ease of patients' compliance. The herbal cough syrup was formulated using crude drugs as pudina and ginger or thuhar leaves as the main ingredient, along with Honey. Today, syrup is used for the treatment of Many ailments and to alleviate symptoms of disease. The antioxidant syrup is used to treat cancer because of many stress conditions and other oxidative reactions in the body. The free radicals are generated by using these, syrup the condition is overcome. A formulation at a laboratory scale was done and evaluated for several parameters such as PH, viscosity, Density, and stability. During evaluation, formulation was 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 and cold syrup, Dry cough, wet cough, decoction extraction, Evaluation.

INTRODUCTION

Cough and cold are one of the most common health issues affecting people around the world. These conditions are generally mild, but can cause serious symptoms and disorders of daily.^[1] Understanding their causes, symptoms, types,

treatment options, and preventive methods is essential for effective treatment and recovery. It is not considered a serious illness, but it can cause considerable symptoms. Colds spread to respiratory droplets, direct contact, or contaminated surfaces.^[2] Cough is a reflex effect that removes mucus, irritants, or foreign bodies' airways. Occasional coughs are normal and advantageous, but persistent coughs can indicate underlying problems such as infection, allergies, and chronic respiratory symptoms.^[3]

Causes of Cough and Cold

Several factors contribute to the insertion of cough and colds, including viral and bacterial infections, environmental tritants, allergies and underlying diseases.^[4]

1. Viral Infection

- Viral infections are the most common cause of coughs and colds.
- Over 200 viruses can cause cold symptoms.
- Rhinoviruses are the cause of almost 50% of colds.
- Other viruses such as coronaviruses, respiratory endoplasmic virus (RSV), adenoviruses, and parainfluenza Vilene can also cause respiratory infections.
- These infections can be spread by direct contact, air droplets, or contaminated surfaces.

2. Bacterial Infections

Most colds are viral, but bacterial infections can cause similar respiratory symptom Frequent bacterial infections include sore throat, sinusitis and bacterial pneumonia. Bacterial infections often require antibiotics, while viral infections do not.

3. Allergy

- Allergic reactions to pollen, dust, pet dander, mold, or contamination can cause cold-like symptoms.
- In contrast to viral infections, allergies do not cause fever or body pain.
- Seasonal allergies can lead to chronic coughing and sneezing.

4. Environmental Factors

- Pollution, cigarette smoke, strong odors, and chemical vapors can stimulate the respiratory system.
- Dry or cold air can cause throat irritation and cough.
- Atmospheric pollutants can cause symptoms in people with respiratory diseases such as asthma or COPD

Cough Symptoms

Cough can be classified based on its nature and underlying cause.

1. Dry cough

- An unproductive cough that does not produce mucus.
- It is often caused by viral infections, allergies, or throat irritation.
- It can get worse at night and cause dry neck.

2. Wet (productive) cough

- Create mucus or mucus to eliminate the airways.
- Often bacterial infections, bronchitis, pneumonia.
- Helps to remove excess mucus from the airways.

3. Allergy Cough

- Caused by exposure to allergens such as pollen, dust, and pet pups.
- Often accompanied by sneezing, overload of the eyes and nose.
- Usually does not cause fever.

4. Chronic Cough

- It takes more than 8 weeks and can show underlying health issues.
- Often under diseases such as asthma, GERD, COPD, and chronic bronchitis.
- Medical evaluation for proper diagnosis and treatment is required.

Treatment and treatment of cough and colds**1. Home Remedies^[11]**

Natural Remedies Can Relieve Symptoms:

- Tea relieves neck and reduces inflammation.
- Honey and lemon act as a natural cough suppressant.
- Herbal syrup contains ingredients such as tulsi, ginger, licorice and honey to relieve cough.

2. OTC Drugs (OTC)

OTC Drugs can be helpful in severe cases.

- Reducing disorders reduce swelling of the nose and mucus accumulation.
- Antihistamine allergy-related cough and congestion.
- Cough suppression - Reduces dry cough by calming the cough reflex

3. Liquid supply and rest

- To drink plenty of liquid, thin the mucus and moisten the neck.
- The body can restore and promote immune function.

4. Prescription drugs

If symptoms are present or worsen, your doctor can prescribe:

- Antibiotics (bacterial infections only).
- Inhaler (for asthma-related cough).
- Steroids (in the case of severe inflammation and chronic respiratory diseases)

Cough prevention and cold^[14]

- If soap is not available, use hand sanitizer.
- Do not touch your face, especially your nose, mouth, or eyes.

Strengthen the immune system

A balanced diet rich in vitamins and antioxidants.

Get enough sleep and deal with stress.

Regularly train to boost your immunity.

Avoid close contact with infected people

Keep away from people who cough or sneeze.^[17]

Sneezes with tissue or elbows when coughing and sneezing.

Use protective measures in public places

Wear a mask in overcrowded or dirty areas.^[19]

Keep a safe distance from people who show symptoms.

METERIAL AND METHODS

Collection and Authentication of Plant: Fresh copies of *Euphorbia Neriifolia* were collected in January 2025 from Dehradun, Uttarakhand, India. The facility was identified and certified by the Forest Research Institute (FRI) in Dehradun, Uttarakhand.

Plant Material: *Euphorbia neriifolia* Air Parts (Figure No. 1) was harvested from Dehradun, Uttarakhand, India. The plants were cleaned and extracted in the shade. The material is exposed to the production of decoction method to extract drugs.



Figure No. 1: Picture of Plant.

Ingredients**All ingredients**

1. *Euphorbia neriifolia*: fresh juice or extract: 30 mL
2. Pudina (mint) extract 10 mL
3. Ginger extract 10 mL
4. Honey: 50% of total syrup volume (acts as a sweetener and preservative)
5. Water: Adjust to achieve desired consistency.
6. Citric acid (for pH adjustment) or glycerine (for viscosity)



Fig. no. 2: Herbal ingredient.

Steps for Preparation

- 1. Extract Preparation:** - Wash fresh leaves of *Euphorbia neriifolia* and Pudina thoroughly, prepare a decoction by boiling in water for 10-15 minutes.



Fig. No. 3: Preparation of Decoction Extraction.

- 2. Mixing-** Combine 30 mL *Euphorbia* extract + 10 mL Pudina extract + 10 mL Ginger extract. - Gradually add (50% honey). (e.g., if total volume is 100 mL, add 50 mL honey). - Stir continuously on low heat (40-50°C) to homogenize. Avoid boiling to preserve herbal properties.
- 3. Adjust Consistency:** Add purified water to achieve the final desired volume (e.g., 100 mL total syrup). Optional: Add 0.1% citric acid to adjust pH (target: 4.0-5.0 for preservation).
- 4. Filtration:** Filter the mixture through muslin cloth or a fine sieve to ensure 'clarity'.
- 5. Preservation:** Store in sterilized amber glass bottles to protect from light.

Table 1: Formulation table in syrup.

Sr No.	Ingredients	Quantity	Activity
1	Thohar leaves	30 ml	Antioxidant
2	Pudina	10 ml	Antioxidant
3	Ginger	10 ml	Antioxidant
4	Honey	50 ml	Base Viscosity Modifier



Fig. No. 4: Herbal Syrup Formulation.

Evaluation Parameters

1. Physical Tests

Clarity: Visually inspect for transparency; no particulate matter. Colour: Greenish-brown (due to herbs and honey). PH: Use a pH meter and PH Paper (ideal range: 4.0-6.0).



Fig. No.5. pH meter.

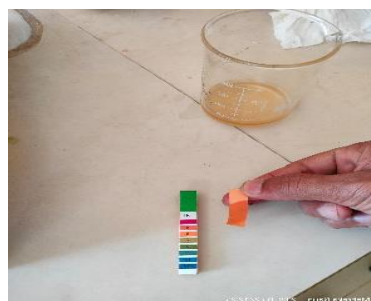


Fig. No. 6. pH paper.

2. Viscosity: Measure using a viscometer; syrup should flow smoothly without being too thick.

Formula for viscosity

Density of test liquid $\times$ Time required to flow test liquid

Viscosity = $\times$ Viscosity of water

Density of water $\times$ Time required to flow water A to B.

Table 2: Quantative Evaluation of Formulation herbal syrup Dosage.

Sr. No.	Parameter	A	B
1	pH	4	6.1
2	Viscosity	0.01321	0.03989

3. Microbial Testing: Perform microbial limit tests (e.g., total bacterial count) to ensure safety.



Fig. No. 9: Microbial Testing.

4. Stability Study: Store at 25°C and 40°C for 1-3 months. Check for phase separation, Mold, or Odour.

RESULT

The results achieved in this study suggest that the herbal formulations produced have anti-antibody activity. The ingredients of herbal coughing agents were selected for reported effects. This plays a preventive and therapeutic role to prevent cough and cold Syrup -Updated Pass Shows all physical parameters and important anti-activity.

DISCUSSION

The formulation and evaluation of the herbal syrup for cough and cold demonstrated promising results. The use of natural ingredients such as pudina (mint), ginger, thuhar leaves, and honey aligns with the growing preference for herbal remedies due to their minimal side effects and holistic benefits. The syrup exhibited significant antitussive activity, outperforming the standard drug at minimal doses, which highlights its potential as an effective alternative for cough treatment. The evaluation parameters, including pH, viscosity, density, and stability, were within acceptable ranges, indicating that the formulation is stable and suitable for use. The antioxidant properties of the syrup further suggest its utility in managing oxidative stress-related conditions, such as cancer, though further research is needed to explore this application.

CONCLUSION

The herbal syrup formulated in this study proved to be a stable and effective remedy for both dry and wet coughs. Its natural composition, coupled with superior antitussive activity compared to standard drugs, makes it a promising option for cough and cold treatment. The positive evaluation results support its potential for further development and commercialization. Future studies should explore its antioxidant benefits and conduct clinical trials to establish its efficacy and safety in diverse populations.

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