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Formulation and Evaluation of Herbal Cough Syrup

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Abstract: ***An ancient time people use various plant, roots, and leaves for treatment various disease. Herbal cough syrup is an Ayurveda medicine which is useful in many chronic health problem such as cough, cold, fever, respiratory infection and disorders among human. As a combination of herbs, it is safe, can be made at home, has a low production cost, and can be easily available in any area.***

Herbal syrup including natural herbs, like tulsi, clove, fennel, turmeric and adulation which have various action and effects on reducing acute or chronic cough and cold and act as cough suppressant having expectorant and anti-tussive property . In this research, I conclude about herbal cough syrup that, herbal cough syrup is a safest herbal medicine which is use for treatment of cough and cold. Cough is a common respiratory symptom that can be caused by various factors such as viral infections, allergies, or environmental irritants.

While over-the counter Cough syrups are widely available, there is a growing interest in herbal remedies due to their preceived Safety and efficacy. This abstract outlines the formulation and characteristics of a herbal cough syrup aimed at providing relief from Cough symptoms.

The herbal cough syrup formulation consist of a blend of botanical extract known for their expectorant, soothing, and Anti-microbial properties. Characteristics of the herbal cough syrup includes a pleasant taste and texture, making it suitable for both adults and children. It is free from artificial colors, flavours, and preservaties, catering to consumers seeking natural remedies.

The addition of honey not only sereves as a natural sweetner but also provides additional Anti- microbial properties and helps soothe the throat. Furthermore, the syrup is formulated to be non- drowsy , allowing individuals to take it during the day without experiencing fatigue or sedation.

Keywords: Herbal cough syrup, Herbal formulation, Herbal treatment ,Ingredients.

I. INTRODUCTION

Herbal medicine is also known as phyto-medicine or herbalism it is a medicine that use plants or their crude products for the treatment of diseases. It may include also animal fungi or bacteria product. Since ancient era, herbal or plant based medicines has been used for the prevention , cure and mitigation of diseases and time to time more and more herbal constituents of these natural sources are get enhanced. Herbal medicine has its origins in ancient cultures. It involves the medicinal use of plants to treat disease and enhance general health and well-being.

In fact , many pharmaceutical medications are based on man-made versions of naturally occurring compounds found in plants. Herbal medicine aims to return the body to a state of natal balance so that it can heal itself . Different herbs act on different systems of the body.

A bacterial, viral, or fungal infection can result in inflammation and fluid in t he lungs, which is known as a cough. It can induce fever and make breathing difficult .Your body produces a cough as a reaction to irritation of the throat or airways. An irritant causes your nerves to fire, sending a signal to your brain. In India, the number of people suffering from asthma is rising daily for a variety of man-made or environmental factors. A chronic lung condition that affects people of all ages is asthma.

The another name for “Cough” is “tussiv” , the voluntary or involuntary act which clears the throat and breathing passage of foreign particles, microbes, irritant, fluids and mucus is nothing but cough. It is the rapid expulsion of air from lungs. When we have blockage or irritation in the throat or upper air passage, the brain thinks a foreign elements is there in body and it inform body immediately to cough to expel out foreign elements out of our body. The cough reflex consists of the 3 phases which are an inhalation, a forced exhalation against a closed glottis, and a violent release of air from the lungs following opening of the glottis, and followed by a distinctive sound. It is symptom related to most respiratory problems such as asthma, viral infections, lung cancer, tuberculosis, pulmonary embolus. The repetition of coughing produces inflammation and discomfort, which result in more coughing in individual. Respiratory tract infections are mostly common in children, some of them are self- limiting and the complication may

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II. TYPES OF THE COUGH

Cough is classified depending upon duration, character and type. A] Depending upon time
Cough is classified into two types as dry and wet Cough which is depend upon type. This are identified using signs and symptoms.

A. Dry Cough

1) Productive and effective Cough
2) Signs associated for dry Cough
- Sensitive throat
- Non mucus expelled
- Short, dry and frequent Cough
- Persistent or constant tickle

3) Medicine: Cough suppressant and anti-tussive

B. Wet Cough

1) Non effective and infective Cough
2) Signs associated with wet Cough
- Coughs up phlegm
- Wheezing
- Chest tightness
- Difficulty in breathing

3) Medicine: Expectorant
The main purpose of wet Cough is to remove the foreign matter or mucous from respiratory tract by which inspection is caused

C. Depending upon duration

It may be classified into acute, sub acute and chronic cough depending upon duration

1) Acute Cough

. The Cough lasting for less than 3 weeks are categorized under this type.
. Causes for acute Cough is due to common cold, URTI, COPD, environmental pollution, and infective bronchitis

2) Sub acute Cough

. The Cough lasting for at least the period of 3 to 8 weeks is categorized under this type.
. The respiratory causes are pneumonia, and B.pertussis infection
. Non respiratory causes are GERD and rarely Tourette's syndrome.

3) Chronic cough

. The Cough lasting for more than period of 8 weeks or more are chronic Coughs
. The respiratory causes are COPD, asthma, lung cancer, tuberculosis and pneumonia.

D. Herbal cough syrup

A herbal syrup is prepared by combining a concentrated decoction with either honey or sugar, and sometimes alcohol. Herbal plants and formulations are used for the many types of diseases like cough syrup and many more other diseases.
Types of herbal syrup:

1) Flavored syrup
2) Medicated syrup
3) Artificial syrup

E. Advantages and disadvantages of cough syrup

1) Advantages

- No side effects
- Low cost
- Easily available
- No harmless

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2) *Disadvantages*

- No suitable in emergency and for unconscious patients
- Dose precision cannot be achieved unless suspension is packed in unit dosage forms
- Some microbial contamination take place it preservation not added in accurate proportion
- Fluctuation in storage temperature may cause crystallization of sucrose from saturated syrup

III. LITERATURE REVIEW

1) Author: Diego Francisco Cortes-Rojas= This work is a review documenting the main studies reporting the biological activities of clove (S. aromaticum) and eugenol
2) Author: Lopamudra sethi = We directed a complete writing audit of human examination that gave an account of a clinical result after ingestion of Tulsi. All investigations detailed ideal clinical results without any examinations revealing
3) Author: Saeed Samarghandian , Tahereh Farkhondeh, and Faribarz Samini= Studies reveal that the medicinal effect of honey may be due to of its antibacterial, anti-inflammatory, apoptotic , and antioxidant properties
4) Author: Nguyen hoang Anhg, Sun Jo Kim= Ginger (Zingiber officinale Roscoe), a well known herbaceous plant, has been widely uesd as a flavouring agent and herbal medicine for centuries. Furthermore, the consumption of the ginger rhizome is a typical traditional remedy to relieve common health problems, including pain, nausea, and vomiting

IV. AIM

Formulation of herbal cough syrup

V. OBJECTIVES

1) Efficacy: Evaluate the efficacy of the herbal ingredients in alleviating cough symptoms such as throat irritations, congestion and coughing fits. This involves conducting clinical trials or studies to assess the effectiveness of the syrup compared to standard cough medications.
2) Safety: Ensure that the herbal cough syrup is safe for consumption for conducting toxicity studies and assessing potential side effects. This includes the evaluating the interactions between different herbal components and any known contraindications.
3) Formulation: Develop a formulation that optimizes the synergistic effects of various herbal ingredients. This may involve experimenting with different ratios and combinations to achieve the desired therapeutic effect.
4) Quality control: Established quality control measures to ensure the consistency and purity of the herbal cough syrup. This include sourcing high quality raw materials , implementing standardized manufacturing processes and conducting rigorous testing for contaminants.
5) Test and palatability: Enhance the taste and palatability of the syrup to improve patients compliance, especially for pediatric and elderly populations. This may involve incorporating natural sweetners and flavouring agents while avoiding artificial additives.
6) Stability: Determine the stability of herbal cough syrup under various storage conditions to ensure the reasonable shelf life. This involves conducting stability studies to assess factors such as temperature, humidity and light exposure.
7) Regulatory compliance: Ensure that the herbal cough syrup complies with regulatory standard and guidelines for herbal products. This include adhering to labelling requirements, Safety assesment and documentation of manufacturing processes.

A. *Ideal properties of herbal cough syrup*

1) Safe: Herbal cough syrup is generally considered Safe and effective for most people
2) No side effects: Herbal cough syrup is typically free of side effects
3) Easy to adjust dose: The dose of herbal cough syrup can be easily adjusted based on child's weight
4) No nursing required: Herbal cough syrup is easy to take and doesn't require nursing
5) Sweet taste: The Sweet taste of herbal cough syrup makes it appealing to patients, especially children.
6) Preservative: Herbal cough syrup act as Preservative to prevent the growth of bacteria, fungi, and mold
7) Relieves symptoms: Herbal cough syrup can relieve symptoms like congestion , coughing, and sore throat.
8) Improves respiratory system: Herbal cough syrup can help soothe and improve the respiratory system
9) Boosts immune system: Herbal cough syrup can help boost the immune system and fight infection
10) Reduces inflammation: Herbal cough syrup can help reduce inflammation in the respiratory system

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VI. BENEFITS:

Herbal cough syrup are formulations made from natural ingredients, often plant-based, that are intended to alleviate cough symptoms. Here are some key characteristics and an potential benefits of herbal cough syrup:

1) Natural Ingredients: Herbal cough syrup typically contain natural ingredients such as herbs, roots, flowers, and sometimes honey. These ingredients are often chosen for their traditional uses in treating Coughs and respiratory ailments.
2) Soothing and calming: Many herbal ingredients possess Soothing and calming properties that can help to relieve irritations in the throat and airways.
3) Expectorant Effects: some herbal ingredients have expectorant properties, meaning they can help to thin mucus and promote its expulsion from the respiratory tract. Common expectorant herbs found in cough syrups include thyme, ivy leaf, and eucalyptus.
4) Anti-tussive Action: Certain herbs in cough syrups may have antitussive effect, meaning they can help to suppress coughing.
5) Immune Support: Many herbal ingredients have immune boosting properties which can help the body fight off infection that may be causing the cough in the first place. Herbs such as echinacea, elderberry, and astragalus are commonly used for this purpose.
6) Antioxidant properties: Some herbal ingredients are rich in antioxidants, which can help to reduce inflammation and support overall respiratory health.
7) Reduced Side Effects: Compared to synthetic cough medications, herbal cough syrup may have fewer Side effects and be gentler on the body, making them suitable for children and individuals with sensitivities to conventional medications.
8) Holistic Approach: Herbal cough syrup often take a holistic approach to respiratory health addressing not only the symptoms of cough but also the underlying factors that may be contributing to the condition.

VII. MATERIAL AND METHOD OF PREPARATION

A. *Ingredients*

. Ginger
. Tulsi
. Cinnamon
. Turmeric
. Honey
. Peppermint
. Adulsa
.clove
.Fennel

B. *Glasswears*

. Beaker
.Measuring cylinder
. Funnel
. Round bottom flask
. Filter paper
. Weighing balance
. Heating mantle

VIII. DRUG PROFILE

1) Ginger : Scientific Name: zingiber officinale

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- Biological source: It consist of rhizomes of zingiber officinale and dried in the sun
- Family: Zingibareceae
- Kingdom: Plantae
- Chemical Constituents: Phenolic and terrine compounds
- Uses: It helps to symptoms of cold and sore throat.

2) Clove

Scientific Name: Syzygium Aromaticum

- Biological source: Dried flower buds of Syzygium Aromaticum
- Family: Myrtaceae
- Kingdom:Plantae
- Chemical Constituents: Acetyl eugenol, alpha and beta carbophyllene
- Uses: It is used to treat sore throat and cough

3) Tulsi

- Biological Name: Holy Basil
- Biological source: The fresh and dried leaves of the ocimum sanctum linn
- Family: Lamiaceae
- Kingdom: Plantae
- Chemical Constituents: Eugenol , Carvacrol, linalool, and flavonoids
- Uses: Anti-tussive

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4) Honey

- Scientific Name: Arthropoda
- Biological source: Honey is produced by both honey bees and stingless bees
- Family: Apidae
- Kingdom: Animalia
- Chemical Constituents: Glucose, fructose, and maltose
- Uses: Reduce night time coughing and improve sleep

5) Fennel

Synonym: Sweet Fennel

- Biological source: Fennel is the dried, ripe fruits of Foeniclum vulgare
- Chemical Constituents: Volatile oil, fixed oil
- Uses: Fennel is used as stimulant, aromatic, stomachic, carminative, and expectorant Anethole is used in mouth and dental preparations.
  Fennel is used in the diseases of the Chest , spleen and kidney

6) Turmeric

- Synonym: Curcuma

- Biological source: Turmeric is prepared rhizomes of curcuma longa linn
- Chemical Constituents : Turmerone, b-atlatone, zingiberene
- Uses: It is used as an antioxidants in capsules tablets and flavouring tea. Also used in cough syrup.

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7) Adulsa

- Synonym: Malabar nut

- Biological source: The biological source of vasaka is dried and fresh leaves of this plant.
- Family: Acanthaceae
- Chemical Constituents: Alkalis tannins flavonoids, serpent sugar and glucoside. The leaves of Osaka contain vitamin c in large amount. The roots of these plant contain vasicinolone, basil and peganine.
- Uses: Used as a expectorant.
  It is used to treat leprosy blood disorder thirst and vomiting. It is used to treat infertility it also have anti ulcer activity.

8) Peppermint

- Synonym: Brandy mint
- Biological source: The biological source of Peppermint is the plant mentha piperita a sterile hybrid of spearmint and water mint
- Family: Lamiaceae
- Uses: Used in the treatment of dry Cough

IX. FORMULATION

A. Extraction Process

Decoction of fennel, clove, and turmeric

- 5-7 gram of each herbal ingredients
- Herbs was mixed using water
- Attach reflux condenser and material was boil under carefully by using water bath for 3 hours
- Boil until total volume become one forth part of previous
- Then liquid was cooled and filtered

B. Method Of Preparation Of Final Cough Syrup

- To prepared final cough syrup macerated clove, fennel, and turmeric was mixed with of Adulsa extract and tulsi extract
- Add Peppermint extract and ginger extract as a flavouring agent

X. EVALUATION TEST

A. Colour Examination

- 5ml 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

B. Odour Examination

- 2ml of prepared syrup was taken and smelled by individually
- The time interval between 2 smelling was 2 min. to nullify effect of previous smelling

C. Taste Examination:

A pinch of final syrup was taken and examined on taste buds of the tongue

D. pH determination:

- 10 ml of prepared syrup taken in 100 ml of volumetric flask
- Make up volume to 100 ml with distilled water
- Sonicate for 10 min.
- pH was measured by using digital pH meter

E. Viscosity determination

The Viscosity of each formulation was determined by using Ostwald's U- tube viscometer

XI. CONCLUSION

The aim of this project was to formulate and evaluate herbal cough syrup. The present study helped us to understand what actually cough means, what are different types of cough, factors responsible for causing cough. Herbal treatment for cough were studied briefly. As the study shows that the herbal treatment is more beneficial than that of allopathy treatment which uses standard drugs for treatment as herbal drugs have less or no side effects. Herbal treatments are more preferred widely. Herbal drugs are easy to available than that of prescribed drugs. This study helps us to understand cough and measures to be taken in order to avoid cough. The pre- formulation studies of all three formulations were within specifications. The present study will help us to understand effectiveness of herbal cough syrup compared to chemical based syrups.

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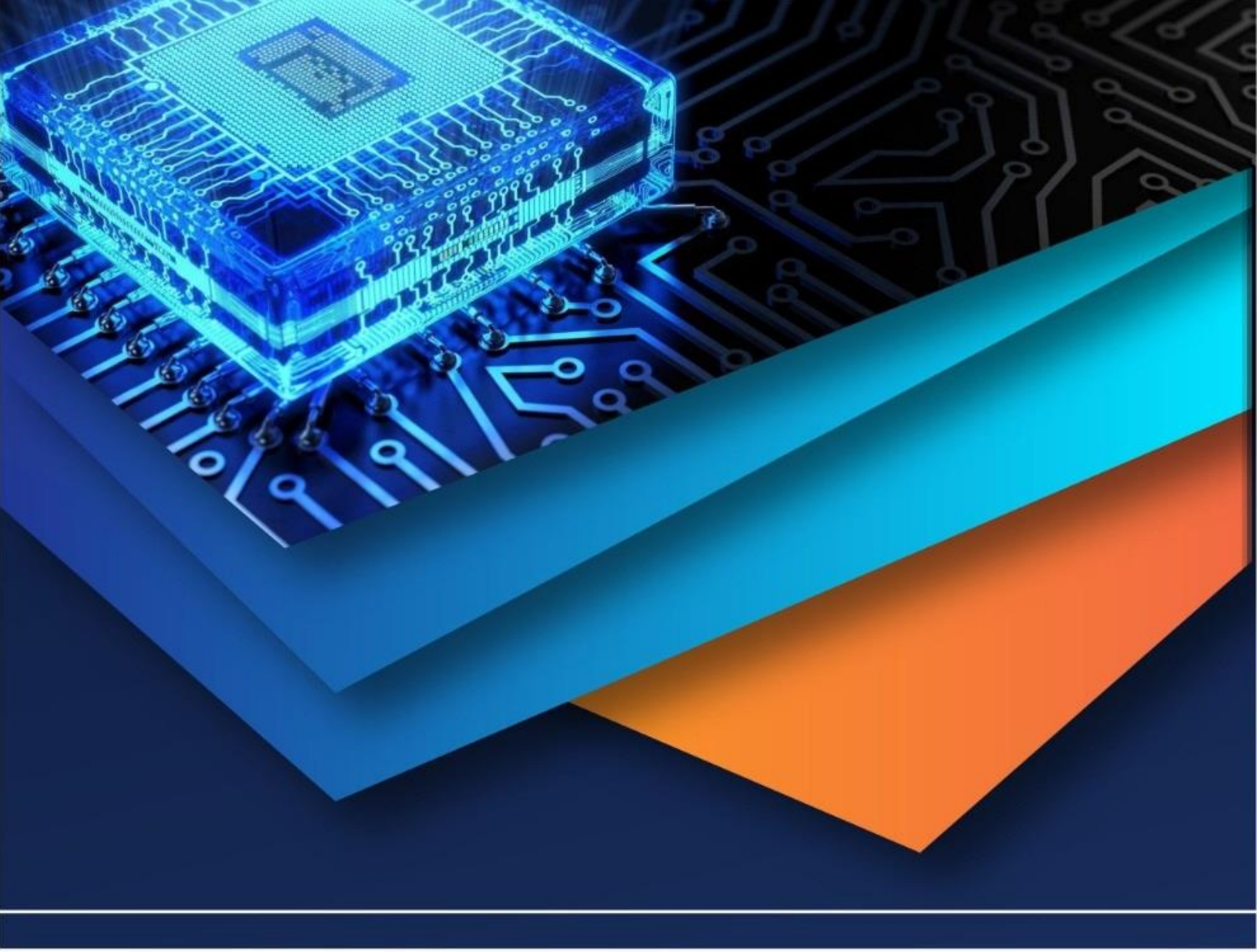

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