



# FORMULATION AND EVALUATION OF HERBAL COUGH SYRUP

**Gokul Sheshrao Jadhav<sup>1\*</sup>, Avinash Gajanan Wagh<sup>2</sup>, Pradip Ramprasad Bhutekar<sup>3</sup>,  
Arti Kise<sup>3</sup>**

<sup>1</sup>Student of Bachelor in Pharmacy, Faculty of Pharmacy, Dr. Babasaheb Ambedkar Technological University, Raigad, Maharashtra

<sup>2</sup>Department of Pharmaceutics, Faculty of Pharmaceutics, Dr. Babasaheb Ambedkar Technological University, Raigad, Maharashtra

<sup>3</sup>Student of Bachelor in Pharmacy, Faculty of Pharmacy, Dr. Babasaheb Ambedkar Technological University, Raigad, Maharashtra

<sup>4</sup>Student of Bachelor in Pharmacy, Faculty of Pharmacy, Dr. Babasaheb Ambedkar Technological University, Raigad, Maharashtra

## ABSTRACT

One of the most general problems among adults and children are cold, flu and their symptoms such as coughs and sore throaty. In such instances, we find that most people turn to certain medications for temporary relief that sometimes do not meet the prescribed health and safekeeping guidelines. The treatment of these acute infections and their underlying symptoms is one area where the use of certain herbal remedies are still remains common today. Herbal drugs play an important role in the management of it. <sup>(1)</sup> Currently available therapies for cough include cough suppressants which gives temporary fast relief but no longer has effective without any side effect but herbal expectorant and antitussives given better longer relief with minimal side effect. Many plants category known in people medicine of different civilization used for treatment of respiratory complaints such as cough, pneumonia and expectoration as well as in common cold also. Nowadays many pharmaceutical companies investing for research of improved efficacy of herbal medicines while considering the increasing interest of most of the population of world towards the Ayurveda formulations. <sup>(2)</sup>

**KEYWORDS:** Cough, Antitussive, Expectorant, Herbal medicine, Herbal formulations.

## INTRODUCTION

Tulsi leaves are used to treat skin problems like acne, blackheads and premature ageing. Tulsi is used to treat insect bites. Tulsi is also used to treat heart disease and fever. Tulsi is also used to treat respiratory problems. Tulsi is used to cure fever, common cold and sore throat, headaches and kidney stones. Tulsi is rich in Vitamin C and zinc. It thus acts as a natural immunity booster and keeps infections at bay. It has immense anti-bacterial, anti-viral and anti-fungal properties which protect us from a variety of infections. Herb is a plant that is valued for flavour, scent, medicinal or other qualities. Herbs are used in cooking, as medicines, and for spiritual purposes. Herbs have a variety of uses including culinary, medicinal, or in some cases even spiritual usage. General usage differs between culinary herbs and medicinal herbs. Among the plants known for medicinal value, the plants of genus *Ocimum* belonging to family Labiatae are very important for their therapeutic potentials *Ocimum sanctum* L. *Ocimum sanctum* L. known as 'Tulsi' in Hindi and 'Holy Basil' in English, is an erect softy hairy aromatic herb or under shrub found throughout India. Tulsi is commonly cultivated in gardens. Tulsi is used as expectorant and diaphoretic. Boch root is also used as an expectorant. Pudinasar stops irritation of the throat. Madhu acts as a demulcent and gives soothing effects to the irritated throat. <sup>(5)</sup>

## OBJECTIVES

- Various herbal sources are used in treatment of common cold or cough like sore throats, coughs, cold, and bronchitis.
- These acute infections can be treated by using some common herbal medicine, as the continuous use of chemicals may harm our body as well as produces resistance which leads to ineffective treatment in chronic infections.
- The literature survey gives better idea on applications of herbal plants in treatment of common colds is an attempt to collect the information regarding herbal medicines used in the treatment of these cough for benefit of society.
- Along with herbal treatment the science behind its mode of action in particular disease or disorder is discussed. <sup>(4)</sup>
- From the literature we can promote the use of herbal formulations for acute infection like cough and common cold which give better and longer effect without or minimal side effects and also avoid habit formation.



## REVIEW OF LITERATURE

SR.NO	TITLE	AUTHOR	WORKDONE
1)	A review of precious species of clove with multiple use (Cortés-Rojas et al., 2014)(Cortés-Rojas et al., 2014)	Diego Francisco Cortés-Rojas	This work is a review documenting the main studies reporting the biological activities of clove ( <i>S. aromaticum</i> ) and eugenol.
2)	Ginger on Human Health: A Comprehensive Systematic Review of 109 Randomized Controlled Trials	Nguyen hoang Anhg, Sun Jo kim	Ginger ( <i>Zingiber officinale</i> Roscoe), a well-known herbaceous plant, has been widely used 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
3)	A review paper on a Tulsi plant (ocimum sanctum L) 2020	Lopamudra Sethi	We directed a complete writing audit of human examinations that gave an account of a clinical result after ingestion of Tulsi. All investigations detailed ideal clinical results without any examinations revealing.
4)	Honey and Health: A Review of Recent Clinical Research	Saeed Samarghandian, Tahereh Farkhondeh, and Fariborz Samini	Studies revealed that the medicinal effect of honey may be due to of its antibacterial, anti-inflammatory, apoptotic, and antioxidant properties.
5)	A review of Tulsi plant & their chemical constituents 2012	D.J Garkalet.al (2012)	An aggregate of 24 examinations were distinguished that announced restorative consequences for metabolic disarranges, cardiovascular malady, resistance, and neurocognition. All investigations detailed ideal clinical results without any examinations revealing any noteworthy antagonistic occasions. The explored examinations strengthen customary uses and propose Tulsi. Herbs are well known as they are used for the same purpose.
6)	Garlic: a review of potential therapeutic effects	Leyla Bayan,1 Peir Hossain Koulivand,1 and Ali Gorji1,2*	Recently, studies were carried out to known its effect on the cancer cell lines. Many studies have shown its effects not only on carcinomas, but also on the cardiovascular system and immune system <sup>(6)</sup>

## MATERIAL AND METHOD

Sr.no	Materials	Categories
1	Tulsi	Anti-bacterial and antifungal
2	Ginger	Antioxidants
3	Honey	Antibacterial, Antimicrobial
4	Clove	Anti-inflammatory
5	Ethanol	Ethyl alcohol

## GLASSWARES

1. Beaker
2. Measuring Cylinder
3. Buchner funnel
4. Round bottom flask
5. Dropper
6. Filter paper
7. Glass rod
8. Burette stand
9. Condenser
10. Soxhlet Apparatus



## INSTRUMENTS

1. Weighing Balance
2. Heating mantle

### Details information about 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



### Details information about Ginger

**Scientific Name:** *Zingiber Officinale*

**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.



### Details information about Clove

**Scientific Name:** *Syzygium Aromaticum*

**Biological source:** Dried flower buds of *Syzygium aromaticum*.

**Family:** Myrtaceae

**Kingdom:** Plantae

**Chemical constituents:** acetyl eugenol, alpha and beta caryophyllene.

**Uses:** It is used to treat sore throat, and cough.



**Details information about Honey**

**Common Name:** Honey bee

**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.



**Mechanism of Action**

Stimulation of mechanoreceptor



Afferent impulses of cough center (medulla)



Efferent impulses of via parasympathetic and motor nerves lungs



Increased contraction of diaphragmatic abdominal and cough

**Types of Cough**

**1) Productive Cough**

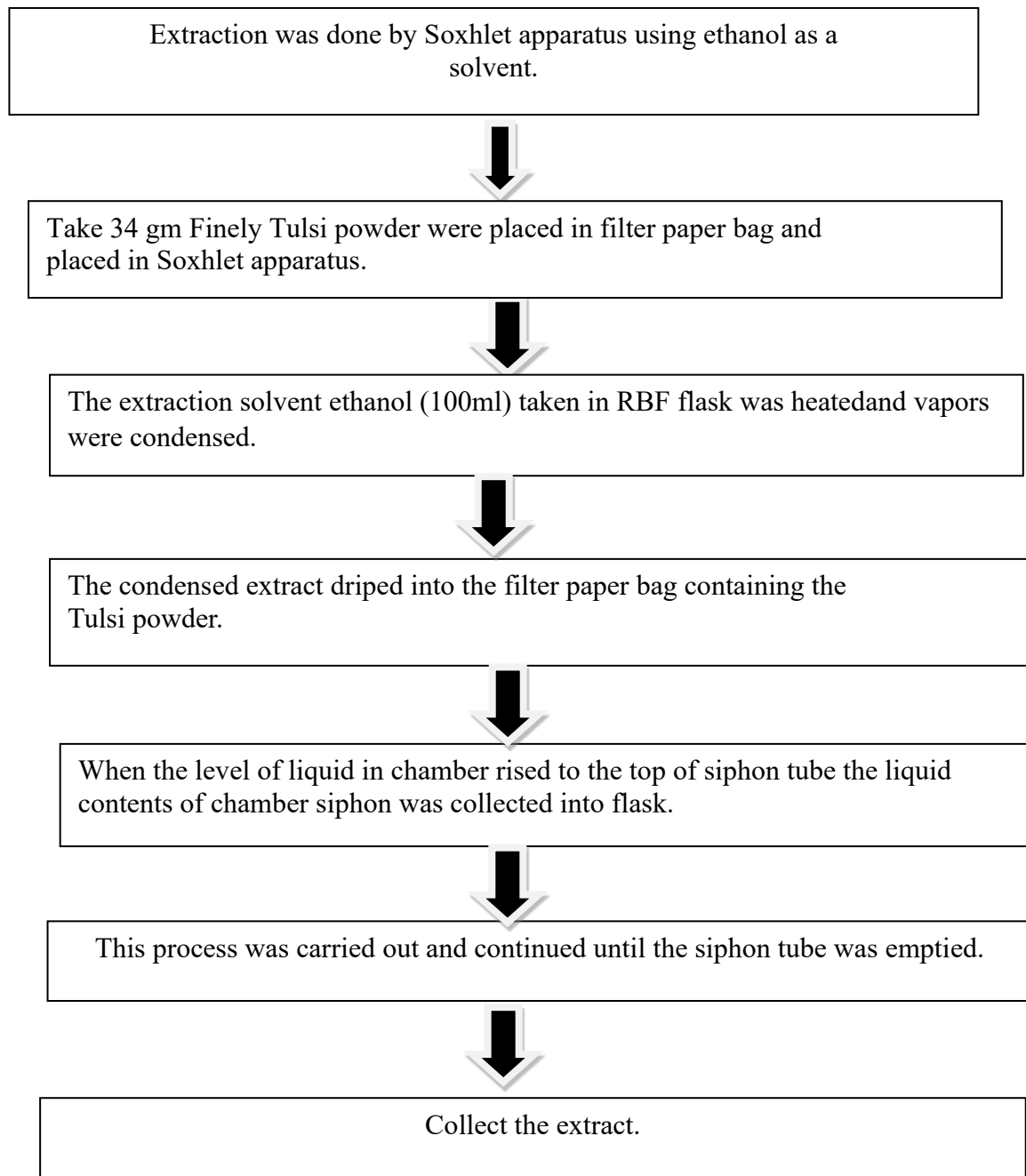
Which is mostly acute in nature and often caused by bacterial or viral or fungal infection. It is also called as an effective cough and wet cough, since its impressive ejection secretions, mucous or alien material from the respiratory tract. This cough not be suppressed, treatment is followed to eliminate mucus. Productive cough is unhealthy in post operative patients, e.g., after eye surgery (Karlsson, J.A.1996).<sup>(10)</sup>



## 2) Non-productive

Cough as name indicates it won't bring any secretions or mucous from the lungs. It is a dry, irritating cough without mucus. , this type of cough is acrid in nature and caused by dry aggravation or dust or smoke or smoke , or due to swelling and mild secretion in the resolving stage of illness it is most common symptom in asthma It may be also due to weakness of the muscles of respiration, thick sticky mucus and in diseases of the eye-lash which helps mucous transportation in the airway. (Bennett and Brown, 2003 <sup>(11)</sup>)

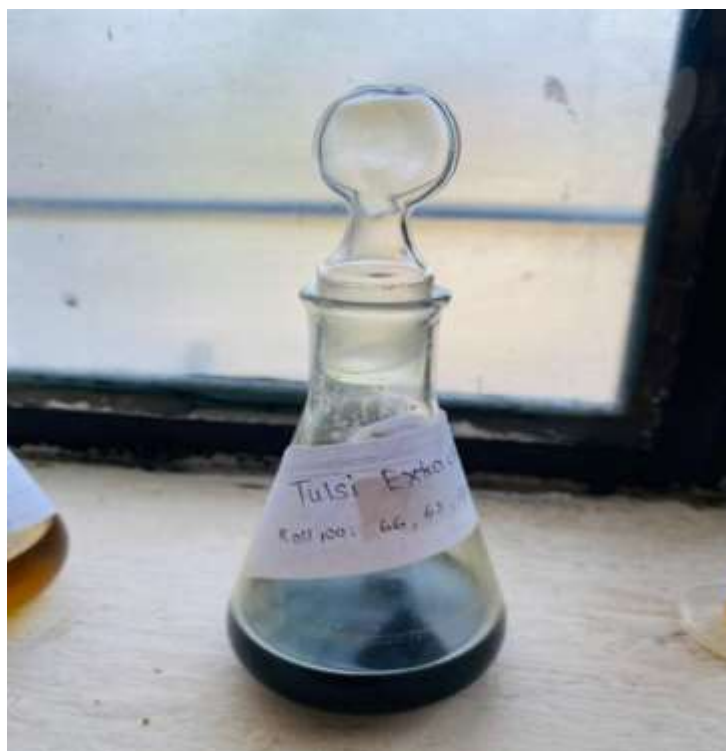
### Procedure



**Fig- Extraction process<sup>(12)</sup>**



**Fig.: Soxhlet Apparatus**



**Fig.: Tulsi Liquid Extraction**

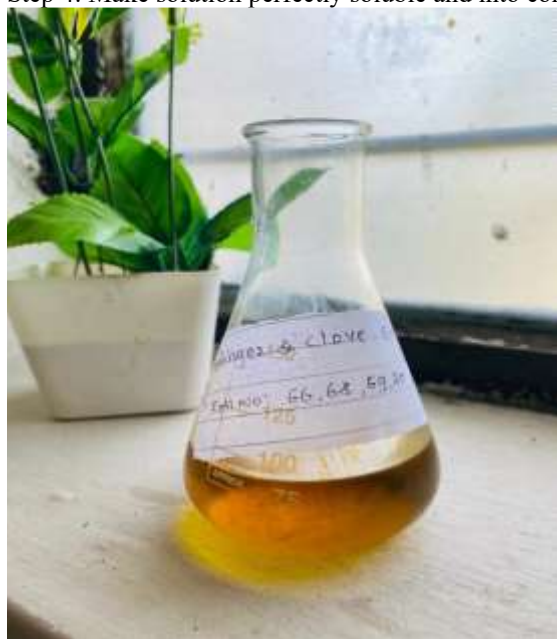


**Formula**

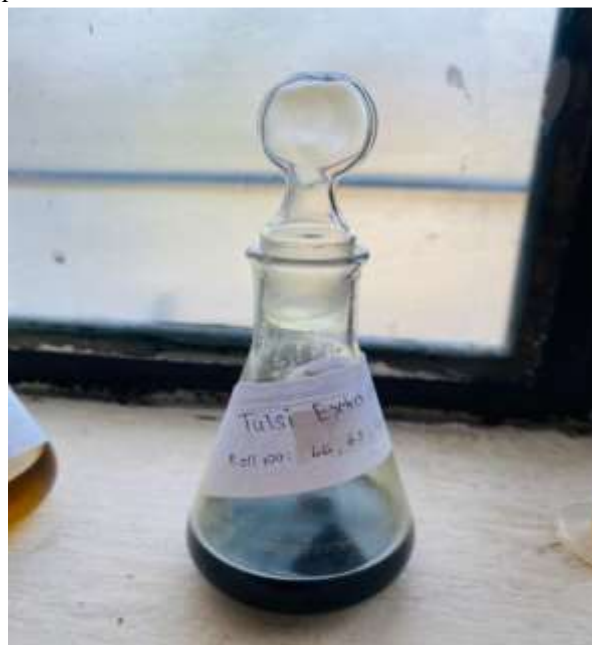
Sr no.	Drugs	Quantity	Uses
1	Tulsi	40%	Anti- tussive
3	Ginger	25%	cold or sore throat.
4	Clove	10%l	Helps to reduce Cold sinusitis
5	Honey	25%	Reduce night time coughing

**PROCEDURE**

- Step 1: Take Round bottom flask add 10 ml Tulsi liquid extract into them
- Step 2: Add 20 ml mixture of Ginger and Clove liquid extract and boil them
- Step 3: Add 10 ml Honey into them
- Step 4: Make solution perfectly soluble and into container



**Fig.: Ginger & Clove Extraction**



**Fig.: Tulsi Extraction**



**Fig.: Honey<sup>(2)</sup>**

### **EVAULATION TEST**

#### **1. pH Meter:**

With the help of pH meter, the pH Tulsi Extraction of Cough Syrup can be detected.

pH=6.62

#### **2. Visual Inspection**

It as an inspection of an asset made using only the naked eye. The green solution is detected in visual inspection. To verify the product is free of any foreign particles.

#### **3. Physical Characteristics**

**Color:** Natural Green

**Odor:** Strong aroma and an astringent.

**Taste:** Bitter Flaver

#### **4. Detection of foreign particles**

Foreign particles were detected with the help of white & black background instrument.

There are no any foreign particles in the syrup.





**Fig : Clarity Test Appratus**

### Result

Extraction of Chemical Constituents from Tulsi & Their Formulation for Cough Syrup was prepared and evaluated. The test methods described in this project are presented as example of suitable formulation of cough syrup. A collection of recommended herbal medicine for assessing the Expectorant Activity & also content of herbal materials, intended to assist national laboratories engaged in pharmaceutical evaluation tests. The publication includes expectorant activities of herbal medicines. It includes the detail description of the preparation & formulation of expectorant by using Tulsi. The mostly herbal expectorant medicine is Tulsi, ginger, clove, honey etc. We also study the evaluation tests of cough syrup. In the evaluation test its physical characteristics, visual inspection, pH of cough syrup was described.

### SUMMARY AND CONCLUSION

As many peoples occur cough, some time the coughing person undergo various other diseases. The various Herbal medicines are there are Tulsi, Ginger, Honey and Clove. The Herbal Cough Syrup show less side effect &fatly recovered the cough. The various evaluation test was examined to Tulsi cough syrup. The World- wide in the world mostly cough is normal disorder. The various Herbal medicines are used in herbal cough syrup. The Herbal medicines are showing the less side effects as compared to synthetic cough syrup. The simple formulation of cough syrup is very effective to treat cough. The various Evaluation of Herbal Cough Syrup also examined and detected.

### 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. MotumaAdimasuAbeshu and BekeshoGeleta, "A Reviow "Medicinal Uses ofHoney", *Biology and Medicine*, (Aligarh) 2016, 8:2.
3. Meenakshi Parihar, Ankit Chouhan, M.S. Harsoliya, J.K.Pathan, S. Banerjee, N.Khan, V.M.Patel, " A Review- Cough & Treatments", *International Journal Of Natural ProductsResearch*, May 2011.



4. Farhat PirjadeMujawar, Manojkumar Patil, JyotiramSawale." Formulation and Evaluation of Herbal Cough Syrup of EchinopsEchinatusRoxb Roots", *International Journal Of Pharmacy & Technology*.
5. G.Sandhyarani and K. Praveen kumar, *Development of herbal syrup. AsianJournal of Pharmaceutical Science & Technology*, 2014; 4(2): 101- 103.
6. Azwanida NN," A Review on the Extraction Methods Use in Medicinal Plants, Principle, Strength and Limitation", *Azwanida, Med Aromat Plants* 2015, 4:3.
7. 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.
8. P. Prakash and Neelu Gupta; *Therapeutic uses of Ocimum sanctum Linn (Tulsi) with a note on eugenol and its pharmacological actions: A short review. Indian journal of physiology and pharmacology*. 2005 49 (2): 125- 131.
9. Naveen Srinivas, KetkiSali, Atul A Bajoria; *Therapeutic aspects of tulsiumraveled: A review. Journal of Indian Academy of oral medicine and radiology*. 2016 28(1): 17-23.
10. P Agrawal, V Rai, RB Singh; *Randomized placebo-controlled, single blind trial of holy basil leaves in patients with noninsulin-dependent diabetes mellitus. Internal journal of clinical pharmacology and therapeutics*. 1996 Sep 34(9): 406-409.
11. Negar Jamshidi and Marc M. Cohen; *The clinical efficacy and safety of tulsi in humans: A systematic review of the literature. Evidence-based complementary and alternative medicine*. 2017 *Formulation and Evaluation Of Tulsi Cough Syrup* 25
12. KP Sampath Kumar, Debit Bhowmik, Biswajit, Chiranjib, Pankaj and KK Tripathi Margret Chandira; *Review article traditional indian herbal plants tulsi and its medical importance. Journal of pharmacognosy and phytochemistry*. 2010 2(2): 103-108.
13. *The Clinical Efficacy and Safety of Tulsi in Humans: A Systematic Review of the Literature* Negar Jamshidi and Marc M. Cohen.2017
14. *The Clinical Efficacy and Safety of Tulsi in Humans: A Systematic Review of the Literature* Negar Jamshidi1 and Marc M. CohenShow moreAcademic Editor: Daniela RiganoPublished: 16 Mar 2017ID