

# “Formulation and Evaluation of Ginger Macerated Honey Base Herbal Cough Syrup”

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**Abstract:-** Cough is one of the most common problem faced by all people. There are mainly two types of cough one is dry cough and another one is wet cough. dry cough there is no mucous and secretion while in wet cough there is cough with mucous or secretion. Syrup is commonly used and popular dosage form which is used to cure cough and cold, because it having ease of patients compliance. Syrup contain Ginger macerated honey base and also Tulsi, liquorice, cardamom, fennel, adulsa, clove as an antitussive and expectorant. Quality of final herbal syrup was evaluated for pre formulation a post formulation parameter. Here by using honey base three batches were formulated having various concentration such as 35%, 40%, 45% w/v.

**Keyword:-** Antitussive, Maceration, Herbal Formulation, Quality Control Test.

## I. INTRODUCTION

Herbal plants and formulations are used for the many types of diseases like cough syrup and many more other diseases. In cough syrup many types of herbal plants are used, for example ginger, tulsi, honey, clove. In that whole plants are used for making herbal medicine since a many years. Herbal formulations are most commonly used in development as well as developing countries as health care aid.

### A. Types of Cough

Mainly there are two types of cough, which are classifies as follows

- Wet cough
- Dry cough

DRY COUGH	WET COUGH
<ul style="list-style-type: none"> <li>• Productive and effective cough.</li> <li>• It expels secretion mucous or foreign Material from respiratory tract.</li> <li>• The main purpose of</li> </ul>	<ul style="list-style-type: none"> <li>• Non effective and infective cough.</li> <li>• It expels secretion or mucous from lungs.</li> <li>• Dry cough is chronic in nature and</li> </ul>

wet cough is to Remove the foreign matter or mucous From respiratory tract by which infection is caused.	It is caused by dry irritation, smoke Or dust.
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Table 1:- types of cough

### B. Classification of cough:

SIR NO	TYPES OF COUGH	PROPERTIES
1.	Acute cough	Not more than three week's duration
2	Chronic cough	More than three week's
3	Dry cough	No mucous or secretion
4	Wet cough	With mucous or secretion
5	Cough from chest and throat	Productive or 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

Table 2:- classification of cough

### C. Herbal Treatment for Cough:

Now a days, herbal remedies are commonly used for the treatment of cough. also the herbal drugs as well as herbal formulations are playing important role in various types of cough. In present days, therapies like cough suppressants are used for cough. The antitussive agent gives only symptomatic relief. There agents are contraindicated in asthma.

They also cause different serious adverse effect which includes respiratory depression, vomiting, nausea, sedation and also patients with diminished respiratory reserve. There is recent years, researchers are focusing on the herbal medicine which are having less side effect.

D. Advantages of Herbal Medicine:

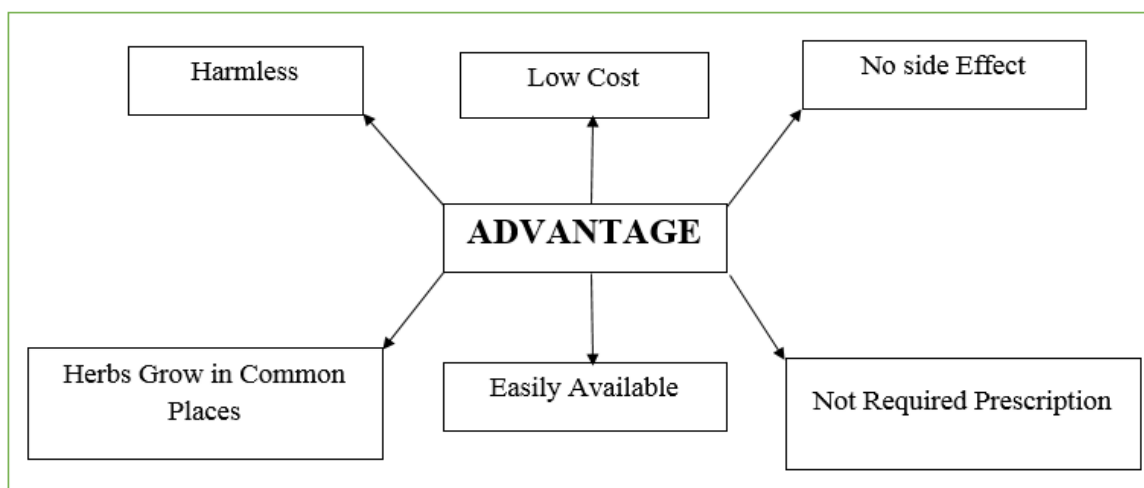


Fig 1:- Advantages of Herbal Medicine

E. Disadvantages of Herbal Medicines

- *ADR with prescription drugs :*
- Herbal medicine can produce adverse effect if they are mixed with drugs like antidepressants which are taken on a regular basis.
- Also herbal medicines having another disadvantage is the risk of self dosing of herbs which is very rare.
- *Patients:*
- Herbal medicine are the natural product. The effectiveness of herbal medicines is not optimized in laboratory so it takes time to produce effect.

II. MATERIAL AND METHODS

Following herbal parts are used in the formulation of herbal syrup for treatment of cough.

SR. NO.	INGREDIENT
1.	Tulsi
2.	Ginger
3.	Liquorices
4.	Fennel
5.	Cardamom
6.	Peppermint
7.	Adulsa
8.	Honey
9.	Clove

Table 3:- List of materials



Fig 2:- Ingredient

➤ *Pre formulation of raw materials:*

SR.NO	TEST	PROCEDURE
1	Moisture content	<ol style="list-style-type: none"> <li>1. Weigh 2 gm of sample and take in petridish</li> <li>2. Heat it in the hot air oven at 100°C for 1 hr</li> <li>3. Then allowed to cool. Weigh the sample again</li> </ol>
2.	Determination of ethanol extractive value	<ol style="list-style-type: none"> <li>1. Take macerated 5 gm of air dried, shaken coarsely powdered drug with 100ml of 95% ethanol in closed flask for 24 hrs.</li> <li>2. Shake it frequently for first 6 hours and then allowed to stand for 18 hrs.</li> <li>3. Then filter it rapidly (take care for loss of ethanol)</li> <li>4. Evaporated 25 ml filtrate to dryness in a flat bottomed petridish</li> <li>5. Dry at 105 °c and weighed</li> </ol>
3	Determination of water extractive value	<ol style="list-style-type: none"> <li>1. Macerated 5 gm of air dried drug coarsely powdered with 100 ml chloroform water (2.5ml chloroform in 1000ml water) in closed flask for 24hrs.</li> <li>2. Shaken frequently for first 6 hrs.</li> <li>3. Allowed to stand for 18hrs.</li> <li>4. Evaporate 25 ml of filtrate to dryness in a flat bottomed petridish</li> <li>5. Dry at 105 °c and weighed</li> </ol>

Table 4:- Preformulation study of raw materials

➤ *Preparation of liquid oral:*

The liquid oral is prepared by two methods; first is decoction method and maceration method.

A. *Method of preparation decoction:*

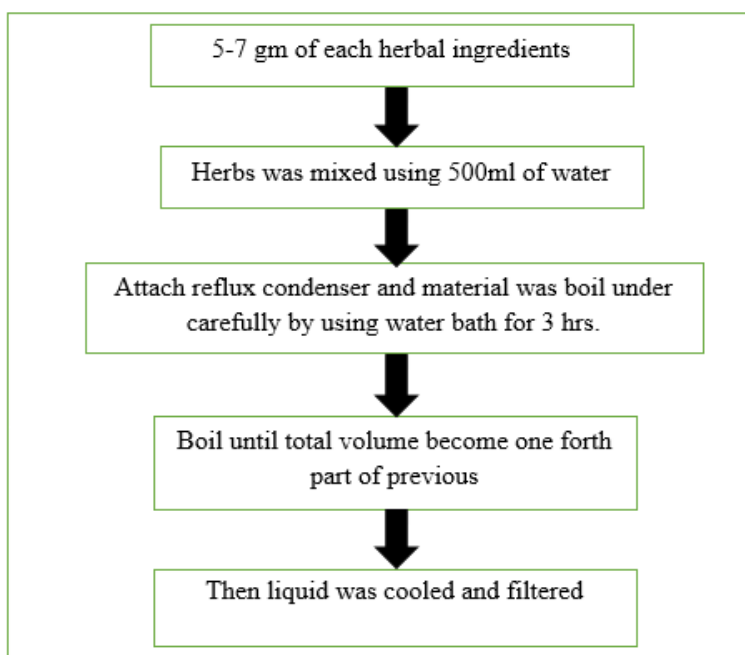


Chart 1:- method of preparation decoction



Fig 3:- Preparation of decoction & extract.

*B. Method of preparation Maceration:*

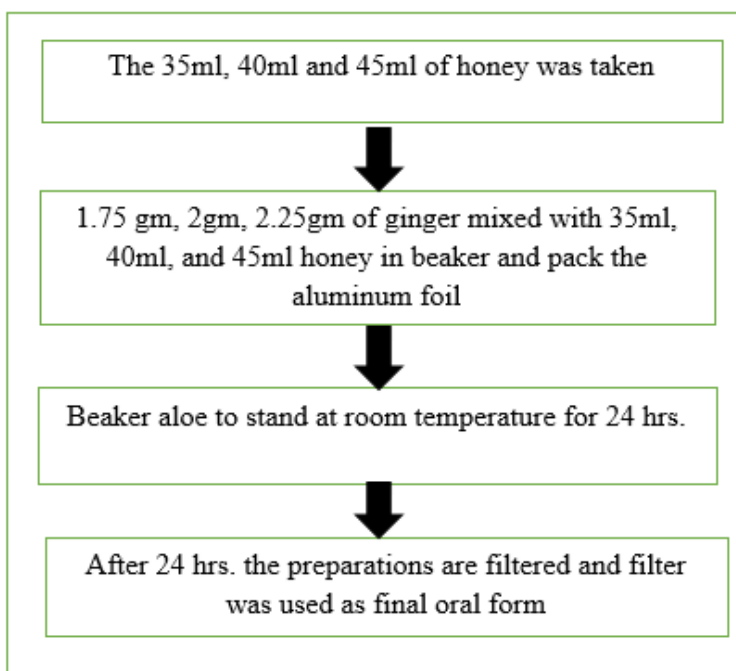


Chart 2:- method of preparation maceration



Fig 4:- Maceration of ginger with honey

## C. Final herbal cough syrup

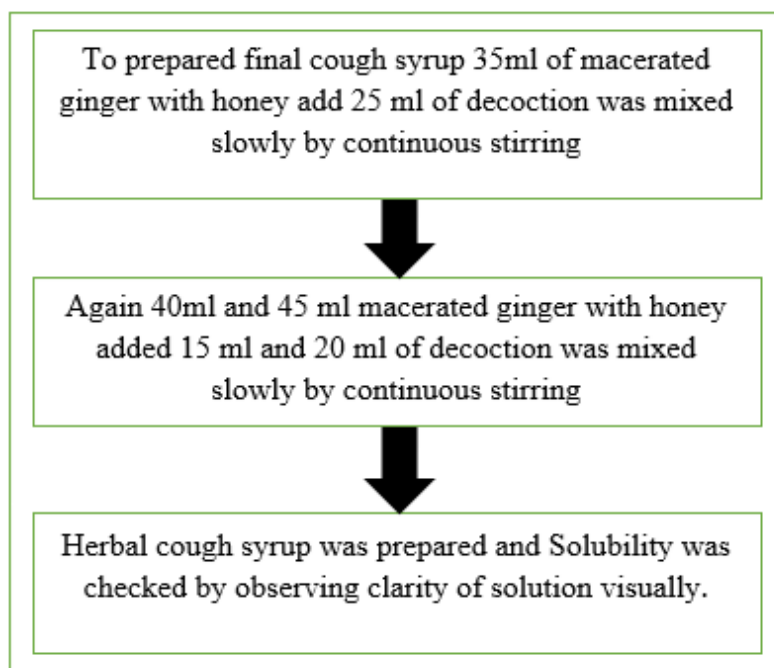


Chart 3:- method of preparation of final syrup

## ➤ Formulation table :

SR. NO.	INGREDIENT	QUANTITY	USE
1.	Tulsi	12-20 leaves	Antitussive
2.	Ginger	2-3 gm	Antitussive
3.	Liquorice	4 gm	Expectorant
4.	Fennel	4 gm	Aromatic, Flavoring agent
5.	Cardamon	3 gm	Aromatic
6.	Pepermint	2 gm	Cough
7.	Adulsa	2-4 gm	Antitussive
8.	Clove	2 gm	Expectorant
9.	Honey	35 %	Base, Viscosity modifies

Table 5:- Formulation table for syrup A

SR. NO.	INGREDIENT	QUANTITY	USE
1.	Tulsi	12-20 leaves	Antitussive
2.	Ginger	2-3 gm	Antitussive
3.	Liquorice	4 gm	Expectorant
4.	Fennel	4 gm	Aromatic, Flavoring agent
5.	Cardamon	3 gm	Aromatic
6.	Pepermint	2 gm	Cough
7.	Adulsa	2-4 gm	Antitussive
8.	Clove	2 gm	Expectorant
9.	Honey	40 %	Base, Viscosity modifies

Table 6:- Formulation table for syrup B

SR. NO.	INGREDIENT	QUANTITY	USE
1.	Tulsi	12-20 leaves	Antitussive
2.	Ginger	2-3 gm	Antitussive
3.	Liquorice	4 gm	Expectorant
4.	Fennel	4 gm	Aromatic, Flavoring agent
5.	Cardamon	3 gm	Aromatic
6.	Peppermint	2 gm	Cough
7.	Adulsa	2-4 gm	Antitussive
8.	Clove	2 gm	Expectorant
9.	Honey	45 %	Base, Viscosity modifies

Table 7:- Formulation table for syrup C

➤ *Post formulation evaluation parameter as follows:*

SR NO	TEST	PROCEDURE
1	Colour Examination	<ol style="list-style-type: none"> <li>5ml of prepared syrup was taken on a watch glass</li> <li>Watch glass placed against white background in white tube light</li> <li>Colour was observed by naked eyes</li> </ol>
2	Odour Examination	<ol style="list-style-type: none"> <li>2 ml of prepared syrup was taken and smelled by individually</li> <li>The time interval between 2 smelling was 2 min. to nullify effect of previous smelling</li> </ol>
3	Taste Examination	<ol style="list-style-type: none"> <li>A pinch of final syrup was taken and examined on taste buds of the tongue</li> </ol>
4	pH Determination	<ol style="list-style-type: none"> <li>10 ml of prepared syrup taken in 100 ml of volumetric flask</li> <li>Make up volume to 100 ml with distilled water</li> <li>Sonicate for 10 min.</li> <li>pH was measured by using digital pH meter</li> </ol>
5.	Viscosity Determination	<ol style="list-style-type: none"> <li>The viscosity of each formulation was determined by using Ostwald's U-tube viscometer</li> </ol>

Table 8:- Post formulation evaluation parameter

### III. RESULT

➤ *Pre formulation studies:*

SR. NO.	TEST	RESULT
1	Moisture content	1.6
2	Ethanol soluble extractive	11.6
3	Water soluble extractive	12.8

Table 9:- Physicochemical constituents of crude drug

➤ *Post Formulation studies*

Formulation	Colour	Odour	Taste
A	Yellowish -Brown	Aromatic	Slightly Pungent
B	Yellowish -Brown	Aromatic	Slightly Pungent
C	Yellowish -Brown	Aromatic	Slightly Pungent

Table 10:- Result of Physicochemical parameters of formulated poly herbal cough syrup.

- **Colour:** Table 6 shows the results obtained for colour of formulated batches of syrup. The color of formulation was found to be Yellowish- Brown for the optimized batch. The colour of the formulation ranges from Yellowish-brown to Dark brown for A, B, C batches respectively.
- **Odour:** Table 6 shows the results obtained for odour of formulated batches of syrup. The odour of formulation was Aromatic for the A, B, C batches respectively.
- **Taste:** Table 6 shows the results obtained for taste of formulated batches of syrup. The taste of formulation was Slightly Pungent for A, B, C batches respectively.

Sr. No.	Parameter	A	B	C
1.	pH	6	6.2	6
2.	Viscosity(poise)	0.01323	0.0582	0.03988

Table 11:- Quantitative Evaluation of Formulated Herbal Cough Syrup Dosage Form

- **pH:** Table 7 shows the results obtained for pH of formulated batches of syrup. The Specific Gravity of formulation was found to be 6.2 for the optimized formulation B. The value was found to be in the range of 6.0 - 6.2 for all three formulations.
- **Viscosity:** Table 7 shows the results obtained for Viscosity of formulated batches of syrup. The Viscosity of formulation was found to be 0.0582 poise for the optimized formulation B. The value was found to be in the range of 0.0582– 0.03988 poise for all three formulations.

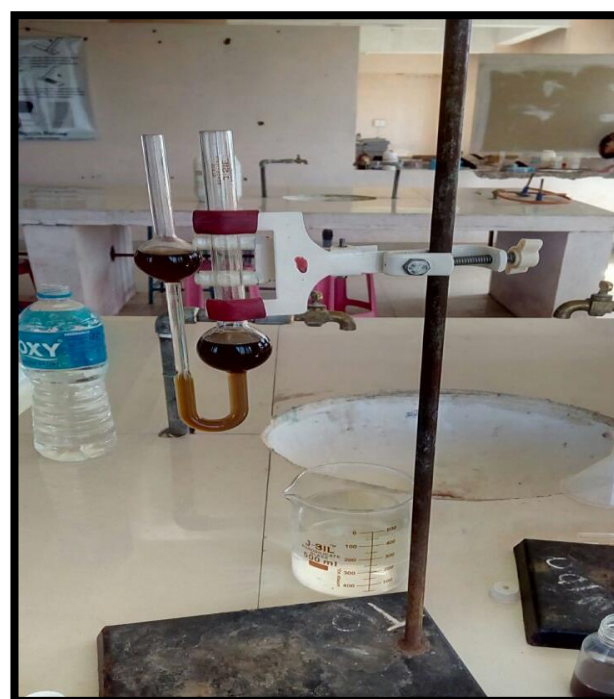


Fig 5:- Determination of viscosity

#### IV. CONCLUSION

The Preformulation studies of all three formulations were within specifications. Also the physiochemical properties of prepared syrup like colour, odour, pH, taste were satisfactory but among the all three formulation is within the all specification, it has proper concentration of honey as per IP and also a good preservative.

The present study help to develop affective and safe herbal cough syrup with 40% W/V honey as a base of cough syrup.

## 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 Adimasu Abeshu and Bekesho Geleta, “A Review “Medicinal Uses of Honey”, *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 Products Research*, May 2011.
- [4]. Farhat Pirjade Mujawar, Manojkumar Patil, Jyotiram Sawale.” Formulation and Evaluation of Herbal Cough Syrup of *Echinops Echinatus Roxb Roots*”, *International Journal Of Pharmacy & Technology*, 09-06-2016, ISSN: 0975-766X
- [5]. G.Sandhyarani and K. Praveen kumar, Development of herbal syrup. *Asian Journal 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]. Swain Pramod Kumar, Nayak Durga Prasan,” Design, Development & Evaluation of a Poly Herbal Syrup from some herbs used as Energy booster”, *International Journal of Ayurvedic Medicine*, 2013, 4(4), 374-378.
- [9]. Hawraa Mehdi Farhan, Hana,a Kadhem Egzar and Eman Hassen Sahap,” Physical and chemical properties of homemade Dates syrup (molasses) from middle Iraq cities”, *International Journal of Scientific and Research Publications*, Volume 7, Issue 1, January 2017, ISSN 2250-3153.
- [10]. Akula Nikhil Prashant, Dr. K. V. Subramanyam, Dr. Manoranjan Sahu P. Sai Karthik, T. Madhavi, G. Mounika and Fasiha Tamkanat, “development and evaluation of herbal cough syrup from the root extracts of *withania somnifera* and *glycyrrhiza glabra*”, *world journal of pharmacy and pharmaceutical sciences*, 14 Sept. 2017, DOI: 10.20959/wjpps201710-10104.
- [11]. Patel Divyakant A, Patel Yogesh K, Shah Paresh B, “Development and evaluation of herbal syrup from *Neolamarckia Cadamba* (Roxb.) Bosser Leaves”, *International research journal of pharmacy*, 2012, 3(9).
- [12]. Priyanka Kantivan Goswami, and Rashmi S Srivastava, “Development and evaluation of herbal syrup from root extract of *nothosaerva brachiata* & *gomphrena celosiodies*”, *international journal of research in pharmacy and chemistry*, 2016, 6(3), 473-475
- [13]. Sagar Bhanu PS, Zafar R, Panwar R. Herbal drug standardization. *The Indian Pharmacist* 2005; 4(35):19-22.
- [14]. Quality Control Methods for Medicinal Plant Materials, WHO, Geneva, 1996.
- [15]. Devesh Tewari and Manoj Kumar. Formulation and comparative evaluation of different Sitopaladi herbal syrups. *Der Pharmacia Lettre*, 2014, 6 (2):178-183.
- [16]. Sarah Spiteri Staines. Herbal medicines, adverse effects and drug-herb interactions. *Journal of the Malta College of Pharmacy Practice*. 2011: 17; 38-42.
- [17]. J.B. Calixto. Efficacy, safety, quality control, marketing and regulatory guidelines for herbal medicines (phytotherapeutic agents). *Braz J Med Biol Res* (2000) 33: 179-189.
- [18]. Karlsson, J.A. (1996) The role of capsaicin-sensitive C fibre afferent nerves in the cough reflex. *Pulm.Pharmacol.* 9, 315–321.
- [19]. Mazzone, S.B. (2003) Sensory pathways for the cough reflex. In *Cough: Causes, Mechanisms and Therapy* (Chung, K.F. ed.), pp. 161–171.
- [20]. Mohmed Sohel Harsoliya, Mohmed Jamal Sabugar, Patel Vishnu M., Singh sarika and PathanJaved Khan, 2011 “The New Multifunctional Plant Selected Cough Syrup: An Overview” *Journal of Pharmacy Research*,4(2),411412.
- [21]. NeerajChoudhary and Bhupinder Singh Sekhon, “An overview of advances in the standardization of herbal drugs”, *J Pharm Educ Res.*, 2011; 2(2): 5570.
- [22]. Moore Michael, “Herbal Formulas for Clinic and Home”, *Bisbee, AZ* 85603, 1995; 34.
- [23]. Kalpesh B Vaishnav,” Diagnostic Approach to Cough”, *Supplement to Journal of the Association of Physicians of India*, May 2013, Vol. 61.