



Research Article

Formulation and Evaluation of Poly-Herbal Cough Syrup

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ABSTRACT

Cymbopogon citrus (Lemon grass) and *Adhatoda vasika* (Adulsa) is most commonly used for the treatment of cough in India. It is used in the treatment of cough, fever, reduce digestive issue it has the ability for busting circulation of immunity. The present research has been undertaken with the aim to formulate and evaluate herbal cough syrup because synthetic may cause the adverse effect to human body. The herbal cough syrup was formulated using crude drugs as *Cymbopogon citrus* and *Adhatoda vasaka* as a main ingredient along with turmeric, yastimadh, Tulsi, black pepper and tulsi. The formulation at laboratory scale was done and evaluated for number of parameters such as pH, Viscosity, Density, Stability Testing. During evaluation formulation found to be stable and ready to use in a cough treatment.

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Introduction

The lemongrass contains a volatile oil, with citral (with 70%), citronellal, geraniol and myrcene as its main consist. The leaves and the oil are used to make medicine. Lemongrass is used for treating digestive tract spasms, stomachaches, pain, vomiting, cough, fever, common cold, and exhaustion. It is also used to kill germs and as a mild astringent agent. As stated to an estimate of the World Health Organization (WHO), there are 80% of the people populations although uses herbs and traditional medicines for needs of their

primary health care. On the basis of WHO they define as there are three kinds of herbal medicines;

1. Raw plant material,
2. Processed plant material, and
3. Medicinal herbal products (Swain, P.K. *et al.*, 2013).

The products of Herbal medicines that they contain active substance for instance other plant material or combination corresponding to as plant preparations. The solutions are a homogenous mixture of the dissolved drug in a

liquid mixture. The molecules (particles) of solid, liquid or gaseous medications are equally allocating among the particles of liquid mixtures. Because medication is mixed already in solution, it absorbed from skin, stomach or other site of administration is faster than dosage form of medication.

The cough syrup medication is a liquid dosage form for use of oral liquid pharmaceutical has been confirm on basis ease of administration to those people who have the problems in the swallowing of solid dosage form medication. Syrup is a concentrated solution contains sugar and purified water. In syrup the high sugar content differentiates syrups from the other types of syrups solutions. The syrups may be or may not be containing medication or mixed flavoring agents. When the syrups without a medication but the flavoring agent present are known as flavored or non-medicated syrups. Flavored syrups are frequently used as vehicles for the unpleasant taste of medications result (found as) is medicated syrups.

Sugar are present in syrups in high amount to predisposes them to the bacterial infections, so they often use as a preservative (Kaushik, A., *et al.*, 2016) Syrups are a very prominent delivery vehicle use for the anti-tussive medication because they give a more soothing to swallow (ingest) than the tablets and capsules. This medication is quickly absorbed. There are some available synthetic cough preparations they cause several adverse effects. So the present study was show to enlarge and evaluate herbal cough syrup carry natural elements having no any side effects (Akula, N. P., *et al.*, 2017) In general, the health professionals having difficulties of accessing effectiveness and safety of natural treatment (therapy).

Number of instances of allopathic medication products has not been studied in large scale and generally they sold without more knowledge of their mechanism of action or side effects. Even so the use of complementary medication is sometime helpful and the confirmation the effectiveness of some of these all medicines literature is limited, they frequently sold with the allopathic medicines in drug store (Mujawar, F.P., *et al.*, 2016).

Material and Method

Collection of Crude Drugs

Fresh plant of *Cymbopogon citrus* and *Adhatoda vasaka* were collected from institute's 'Herbal Garden' then shade dried and powdered was prepared by passing through sieve #40, and kept in air tight polythene bags for further study. Rest of the crude drugs powder like turmeric, yastimadh, Tulsi, black pepper and Tulsi were purchased from local market

Chemicals and Instruments

Solvents and reagents were procured from Research Lab-Fine Chem Industries, Mumbai, India. Some apparatus and other common glassware and instruments used for the study. Brookfield's viscometer, Specific gravity bottle

Method of Preparation

Different formulae's were finalized after literature and marketed survey, then finally prepared syrup by adding various additives (Table 1).

Preparation of decoction

All weighed crude drugs powders were mixed with 3000 ml of water. The mixture was boiled until total volume become one fourth of the initial volume. Then the decoction was cooled and filtered. Filtrate was taken to prepare final herbal syrup (Nambiar, V.S., *et al.*, 2012; Sampath Kumar, K.P., *et al.*, 2010).

Method of preparation of simple syrup

66.7 w/w sucrose was mixed in required quantity of distilled water to prepare a concentrated solution of simple syrup (Hossain, M.T., *et al.*, 2016).

Method of preparation of final Poly-herbal syrup

One part of decoction was mixed with five parts of simple syrup IP (1:5). Required quantity of Javakhar (Potassium carbonate) was added as preservative, to the above mixture. The final herbal syrup was then subjected for evaluation (Fig. 1).

Evaluation Parameters

The evaluation of herbal cough syrup for several physicochemical parameters for instance color, odor, taste, pH and specific gravity (Gangwar A.K., *et al.*, 2014; Patil, J.K., *et al.*, 2019).



Fig. 1: Poly-herbal Cough Formulation

Table 1: Different Poly-herbal Formulation

Ingredients	F1	F2	F3	F4	F5
Adhulsa (<i>Cymbopogon citrus</i>)	8.0gm	6.0gm	4.0gm	2.0gm	1.0gm
Lemongrass (<i>Adhatoda vasika</i>)	1.0gm	2.0gm	4.0gm	6.0gm	8.0gm
Turmeric (<i>Curcuma longa</i>)	0.6gm	0.6gm	0.6gm	0.6gm	0.6gm
Menthol	0.1gm	0.1gm	0.1gm	0.1gm	0.1gm
Camphor	0.03gm	0.03gm	0.03gm	0.03gm	0.03gm
Yashtimadh (<i>Glycyrrhiza glabra</i>)	1.5gm	1.5gm	1.5gm	1.5gm	1.5gm
Tulsi (<i>Ocimum sanctum</i>)	1.0gm	1.0gm	1.0gm	1.0gm	1.0gm
Cinnamon (<i>Cinnamomum zeylanicum</i>)	0.2gm	0.2gm	0.2gm	0.2gm	0.2gm
Black pepper (<i>Piper nigrum</i>)	0.3gm	0.3gm	0.3gm	0.3gm	0.3gm
Javakhar (Potassium carbonate)	0.3gm	0.4gm	0.5gm	0.6gm	0.7gm
Syrup base	q.s	q.s	q.s	q.s	q.s

Examination of color

In a watch glass was taken 5 ml final cough syrup preparation and then it placed against white background in a white tube light. It was detected for its color by its naked eyes.

Examination of odor

In that examination the 2 ml of final cough syrup preparation was smelled separately. The smelling of two separate preparations in between the time interval was kept for 2 min to disestablish (destroy, cancel) the effect of proceeding (earlier, previous) smelling.

Examination of taste

In that a pinch of final cough preparation was taken and then observed for its taste on the taste buds of the tongue.

Determination of pH

In this examination take a correctly measured amount 10 ml of the final cough syrup preparation in a 100 ml volumetric flask and made up the volume up to the 100 ml with the help of distilled water. This solution was

sonicated for about a 10 min. The pH of cough syrup was measured with the help of a digital pH meter.

Specific gravity

Carefully clean and dry pycnometer was selected and calibrated by filling with freshly boiled and cooled water at 25°C and weighing the ingredients. Adjust the temperature of the final syrup is about 20°C and then the pycnometer filled with syrup. Then the temperature of filled pycnometer adjusted to 25°C. In that any excess syrup was removed and weight was taken the tare weight of the pycnometer was removed from the filled weight. Specific gravity of final syrup was obtained by measure out the weight of the syrup consist in the pycnometer by the weight of water consist, both are the determined at the 25°C.

Result and Discussion

After evaluation the all preparation (F1, F2, F3, F4 and F5), the stable formulation found to be 'F5' (Table 2). The result obtained in this study

suggests that the herbal formulation prepared possesses Antitussive activity. The component of the herbal cough formulation was selected due to their reported action that plays a preventative and curative role in prevention of cough. Syrup prepared passes all the physical parameters and shows the significant antitussive activity.

Table 2: Evaluation Parameter for 'F5' Formulation

Parameter	Observation/Value
Color	Reddish grey
Odor	Pleasant
pH	7.01
Specific gravity	1.1096g/ml

Conclusion

In the present study, an experiment was made to develop and evaluate herbal cough syrup by using the Adhulsa and Lemongrass herbal powders. The ingredients of herbal formulation were selected due to the reported action that play the preservative and curative role in the prevention of the cough. The herbal cough syrup was prepared by performing decoction and simple syrup preparation. On the results obtained it was concluded that the herbal cough syrup containing the components found to be in agreement with all evaluations tests and exhibited manifestation of the results. No doubt author agreed that many more evaluation test require to get quality formulation which to be sold in market. But the stated study gives direction for investigators in current field or who wants to do research in this area.

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Conflicts of Interests

Authors do not have any conflicts of interest with the publication of the manuscript.

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