



FORMULATION AND EVALUATION OF HERBAL COUGH SYRUP (TOLU BALSAM)

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Article Received on 21/10/2022

Article Revised on 11/11/2022

Article Accepted on 01/12/2022

ABSTRACT

According to WHO 20000 plant species are used as medicine throughout the world .India is bestowed with unique diversity in culture and natural vegetation exhibiting rich plant diversity. The tribal and rural communities use about 8000 species of wild plants as a traditional medicine. In Ayurveda more than 4000 plants are mentioned but some of the plants are till controversial .these traditional healers are using so many different plants .The attraction on Herbal Medicines and their use have been Expansion quickly in Recent Years. As medicinal plants is the richest source of bioactive compounds used in the Traditional medicine. The present research has been undertaken with for the development and evaluation of the herbal syrup containing Tolu Balsam (Columbian tolu). Tolu balsam of family-*Leguminaceae* is common shrub is mainly in South Africa. Its Annual Herb if with the strongres in. The Herbal Syrup was formulated by the Extraction of Tolu Balsam.

KEYWORDS: Herbal Medicine, *Leguminaceae*, Tolu Balsam, Traditional Medicine.

INTRODUCTION

The WHO defines traditional medicine as “The some total of the knowledge , skills and practices based on theories, beliefs and experiences indigenous to different culture , whether explicable or not, us in the maintenance of a health as well as in the prevention , diagnosis , improvement or treatment of physical and mental illness.” Traditional medicine is also known as indigenous or folk medicine comprises knowledge system that developed over generation within various societies before era of modern medicine. India is a birth place for variety of alternative traditional medical system. Ayurveda India’s medical heritage, it totally based on nature especially plants. So how to identify and how to use the medicinal plants s very well mentioned by the great Ayurved ayurvedists like Charaka and Sushruta.^[1,2]

From last two years, ago COVID-19 situation occurs in which period herbal drug more demanding as comparatively synthetic drug. Herbal cough syrup is Helpful in the Prevention and Treatment of all types of Cough it provides Injective Cough, Dry cough and Sore throat. In addition to this is also work as Immunity Booster. Now a day’s people give preference to the Herbal medicine. Herbal medicines are based on Plants, Drug extract and Minerals. Herbal medicines treatment much arrogant as comparative Synthetic medicine. A large number of herbal medicines like Shrubs, Herbs &Plants are available in our country in the forest and hilly region Herbal medicines cannot harm only care. Even in areas where a modern medicine is available. The

interest on herbal medicines and their utilization have been increasing rapidly in recent years. The aim of this research is to systematically asseff the literature on herbal medicine for cough as symptoms of upper respiratory tract injection and common cold.^[3,4]

Advantages of herbal cough syrup

- Herbal cough syrup is 100 % safe
- Useful in Common cold and cough
- Syrup is 100% Ayurvedic
- Useful for all the ages

Tolu Balsam

Tolu balsam is solid or semisolid balsam obtains from trunks. It mainly consist alcohol resin which contain cinnamic acid, benzoic acid, Benzyl cinnamate and oily lipid. Mainly Tolu Balsam used as Antitussive and Expectorant.^[5,6]

MATERIAL AND METHODS

METHODS

Preparation of Herbal Material

Teigonella Foenum Graenum, Curcuma longa, AdhatodaVasica, Cinnamomum Zeylanium, Black Pepper, Lemon Grass, Tolu Balsam dried powder collected from authentic source of local market of Nashik, Maharashtra-422003, India. All powders were identified and authenticated with respect to their quality by Dr. Rajesh T. Wankhede, Department of Dravyaguna, S.M.B.T. Ayurvedic College and Hospital, Nashik, India.^[7,10]

Chemicals and Instruments

All Solvents and reagents of highest purity purchased and used from the Sigma–Aldrich Chemical Company. Some apparatus, common glassware and instruments were used during the study are Ostwald viscometer, Specific gravity bottle etc.^[9,10]

Methodology for Herbal Cough Syrup

In present study preparation of herbal cough syrup mainly divided in three steps, Preparation of decoction of herbs, Preparation of simple syrup IP. & Preparation of final herbal cough syrup.^[10]

Method of Preparation of Decoction

0.8 gm powder of *Trigonella foenum graenum*, 0.4g leaves powder of *Adhathoda vasika*, 0.4 gm *Curcuma longa*, 0.4 gm *Cinnamomum zeylanicum*, 0.4 gm *Black pepper*, 0.4 gm *Lemon grass* 01 % Tolu balasam were taken in a large vessel. All the powders were mixed with 3000 mL of water (Ashwini, 2019). Formula stated in Table 1. The mixture was boiled until total volume become one fourth of the initial volume that's 750mL. Then the decoction was cooled and filtered. Filtrate was taken to prepare final herbal syrup.^[1,10]

Table 1: Formula for Herbal Cough Syrup.

INGREDIENTS	QTY
<i>Trigonella foenum graenum</i>	0.8g
<i>Curcuma longa</i>	0.4g
<i>Adhathoda vasika</i>	0.4g
<i>Cinnamomum zeylanicum</i>	0.4g
<i>Black pepper</i>	0.4g
<i>Lemon grass</i>	0.4g
<i>Tolu balasam</i>	1.0%
Methyl paraben	0.2%
Menthol	10%
Honey	q.s.

Method of Preparation of Simple Syrup

Traditional simple syrup is made from one part water to one part Honey (1:1). 500 gm Honey is dissolved on 500 mL of distilled water whenever need light heat is applied or boiled at 50-60°C then cool and filtered through muslin cloth.^[2,10]

Method of Preparation of Final Herbal Cough Syrup

One part of decoction was mixed with five parts of already prepared simple syrup (1:5 v/v). Required quantity of methyl Paraben was added as preservative, to the above mixture. Solubility was checked by observing the clarity of solution visually. The final herbal syrup was then subjected for evaluation.^[3,10]

Evaluation of Herbal Cough Syrup

Formula for viscosity

$$\text{Viscosity} = \frac{\text{Density of Syrup} \times \text{Time required to flow Syrup}}{\text{Density of Water} \times \text{Time required to flow water}} \times \text{Viscosity of Water}$$

Herbal syrup was evaluated for various physicochemical parameters such as physical appearance, pH, Specific Gravity and viscosity.^[10]

Physiological Parameters Determination

Color, odor and taste of the herbal cough syrup determined by physiognomic organ of human being.^[4,10]

pH Analysis

For determination of pH, 10%v/v solution prepared in distilled water and analyzed by electronic pH meter at 25 ± 2 °C against standard buffer having pH 7. Find the pH value when temperature and pH reading remains constant on display.^[5,10]

Specific Gravity Determination

Specific gravity determined by specific gravity bottle (6), using water as a standard having specific gravity 1.0000.¹⁰

Formula for specific gravity (w/w),

$$\text{Specific gravity of syrup} = \frac{\text{weight of syrup under test}}{\text{weight of water}}$$

Density Determination

Clean thoroughly the specific gravity bottle with chromic acid or nitric acid. Wash the bottle at least two to three times with distilled water. If required, wash the bottle with an organic solvent like acetone and dry. Take the weight of empty dry bottle with capillary tube stopper. Fill the bottle with unknown liquid and place the stopper, wipe out excess liquid from outside the tube using tissue paper. Weight the bottle with syrup on analytical balance and Calculate weight in grams of syrup.^[7,10]

Formula for density (w/v),

$$\text{Density of syrup} = \frac{\text{weight of syrup}}{\text{volume of liquid under test}}$$

Viscosity

The Ostwald viscometer thoroughly clean with warm chromic acid and if necessary used an organic solvent such as acetone. Then, attached the viscometer in vertical position on a suitable stand and fill water in dry viscometer up to mark G. After that, count time required, in second for water to flow from mark A to mark B. Repeat this at least 3 times to obtained accurate reading. Finally, wash viscometer with herbal cough syrup and then fill it up to mark A, find out the time required for syrup to flow to mark B. Determination of densities of liquid as mentioned in density determination experiment.^[5,10]

Accelerated Stability Testing (AST)

Stability testing of the prepared herbal syrup was performed on keeping the samples at accelerated temperature conditions. The nine portions of the final syrup (F₁, F₂, F₃, F₄, F₅, F₆, F₇, F₈ & F₉), were taken in amber colored glass bottles and were kept at accelerated temperature at 4°C, Room temperature and 47°C respectively. The samples were tested for all the physicochemical parameters viz; color, odor, taste, specific gravity and pH then also for turbidity and homogeneity at the interval of 24 hr, 48 hr and 72 hr to observe any change.^[8,10]

RESULTS AND DISCUSSION

The prepared poly herbal syrup was evaluated immediately after preparation and all the tested parameter along with homogeneity/turbidity were compared with the changes in accelerated stability

testing. The final syrup found to have pH 5.4, density 1.1510 g/ml and specific gravity 0.5704 g/g (Table 2).^[10]

Table 2: Physicochemical Parameters of Herbal Syrup.

Sr. No.	Parameter	Inference
1	Color	Brownish
2	Odor	Pleasant
3	Taste	Sweet
4	pH	5.4
5	Density	1.1510g/ml
6	Specific Gravity	0.5704 g/g
7	Viscosity	3.37 cP

The results of stability study of the final syrup stated in Table 3, revealed that no changes were noticed in all the tested physicochemical parameter as well as turbidity/homogeneity during 24 hr, 48 hr and 72 hr.

Table 3: AST of Herbal Syrup.

Hours	24hrs			48hrs			72hrs		
Sample	F1	F2	F3	F4	F5	F6	F7	F8	F9
Temperature	4°C	25°C	47°C	4°C	25°C	47°C	4°C	25°C	47°C
Color	RC	RC	RC	RC	RC	RC	RC	RC	RC
Odor	RC	RC	RC	RC	RC	RC	RC	RC	RC
Taste	RC	RC	RC	RC	RC	RC	RC	RC	RC
pH	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Density (g/ml)	1.1510	1.1510	1.1510	1.1510	1.1510	1.1510	1.1510	1.1510	1.1510
Specific Gravity (g/g)	0.5704	0.5704	0.5704	0.5704	0.5704	0.5704	0.5704	0.5704	0.5704
Viscosity (cP)	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37

RC-Remain Constant

In current scenario the herbal products/formulations are becomes a symbol of safety in comparison to the synthetic drugs which are regarded as not safe to human being as well as for our mother earth's environment. Although, herbs had been priced for their medicinal, aromatic and flavoring qualities for centuries. It's time to promote them throughout the worldwide. Herbs based drugs/products cannot be considered valid if the drug/product analysis or testing has not been legitimated and characterized in order to make certain reproducibility in the manufacturing of such product. Curative action of herbal products depends on its active phytochemical components.^[10]

CONCLUSION

The present study "Formulation and Evaluation of Herbal Cough Syrup (Tolu Balsam)" revealed certain conclusion. The antitussive herbal cough syrup prepared in the laboratory scale may be used as a liquid dosage form which is stable and the results of the AST may improve in shelf-life degradation studies of herbal syrup helping 'Herbal pharmaceuticals' in future. Finally we conclude that, the evaluation undertaken of developed herbal cough syrup reveal compliance with all the physicochemical and analytical procedures, therefore it is

concluded that *tolu balsam* herbal cough syrup is well standardized product at the base line parameters.

ACKNOWLEDGEMENT

I am Thankful to Dr. Y.V. Ushir Principal, SMBT COP & IODP Dhamangaon, also Thankful to SMBT Trust for allowing us to perform research and laboratory.

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