Research Article

www.ijrap.net (ISSN:2229-3566)

DEVELOPMENT AND EVALUATION OF POLY-HERBAL SYRUP FROM NATURAL INGREDIENTS HAVING EXPECTORANT AND ANTIPYRETIC ACTIVITY

Ojas Patel *, Mona Patel
Assistant Professor, Faculty of Pharmacy, SSSRGI, District Mehsana, Gujarat, India

Received on: 15/04/21 Accepted on: 13/06/21

*Corresponding author

E-mail: ojas.patel1984@gmail.com

DOI: 10.7897/2277-4343.120372

ABSTRACT

Ayurvedic formulations are mainly administered by oral route and most of the orally administered Ayurvedic formulations belong to liquid dosage form of drug or drug combination. However, Herbal products have to fulfil legal requirements with regards to quality including stability testing. Herbal Syrup is commonly used and popular dosage form which is used to cure cough, cold and fever because it having ease of patients compliance. In present study, Prepared Herbal Syrup contain Ginger macerated honey base and also Tulsi, liquorice, neem, amla, cinchona, fennel, peppermint, turmeric, brahmi, clove, is used as expectorant and antipyretic. Quality of final herbal syrup was evaluated for pre formulation and post formulation parameters like density, specific gravity, pH and various organoleptic characteristics. The results of stability study of the final herbal syrup that no changes were observed in all the tested physiochemical parameter as well as turbidity/ homogeneity during 24 hours, 48 hours and 72 hours.

Keywords: Herbal syrup, Antipyretic, Expectorant, Density, Specific gravity, Stability.

INTRODUCTION

Ayurvedic formulations are mainly administered by oral route and most of the orally administered Ayurvedic formulations belong to liquid dosage form of herbal drug or various drug combination. Now a days, Herbal plants and formulations are used for many types of disease. In herbal syrup, many types of herbal plants are used, for example Ginger macerated honey base and also Tulsi, liquorice, neem, amla, cinchona, fennel, peppermint, turmeric, brahmi, clove, is used as antitussive, antipyretic, carminative and expectorant. During preparation of herbal syrup, whole medicinal plants are used since a many years. Herbal formulations are most commonly used in development as well as developing countries as health care aid.¹⁻¹⁴

Herbal plants used as Expectorant

These are herbs that help the body to remove excess mucous from the lungs. However the word is often used to mean a remedy that is a tonic for the respiratory system. Herbal drugs like Turmeric, *Eclipta alba*, Liquorice, Fennel, Ashwagandha, Kalmegh, etc. used as Expectorant.⁸

Herbal plants used as Antipyretic

Herbal drugs that help into lower the body temperature and get it normal. Herbal care or traditional systems of medicine are used throughout the world. Several Medicinal plants contain so many chemical compounds which having antipyretic. Various medicinal plants like Neem, Arjuna, Ashwagandha, Tulsi, etc. traditionally used for treating fever.⁸

Stability testing of Herbal formulations

Stability testing studies help to establish recommended storage conditions, shelf life and retest period of herbal products by providing evidence on how the quality of herbal products varies with time under the influence of environmental factors such as temperature, light, oxygen, moisture, presence of other ingredients or excipients in dosage form, microbial contamination, particle size of drug, trace metal contamination, leaching from container and other factors.¹²⁻¹⁴

MATERIALS AND METHODS

Following herbal drugs are used in the formulation of herbal syrup having Expectorant and Antipyretic activity.

Table 1: List and details of Herbal raw material used

Ingredients	Biological source	Uses
Tulsi	<i>Ocimum sanctum</i>	Antipyretic
Neem	<i>Azadirachta indica</i>	Antipyretic
Amla	<i>Phyllanthus emblica</i>	Antipyretic
Cinchona	<i>Chinchon officinalis</i>	Antipyretic
Ginger	<i>Zingiber officinale</i>	Antipyretic
Fennel	<i>Foeniculum vulgare</i>	Expectorant
Turmeric	<i>Curcuma longa</i>	Expectorant
Clove	<i>Syzygium aromaticum</i>	Expectorant
Peppermint	<i>Mentha piperita</i>	Flavouring agent
Liquorice	<i>Glycyrrhiza glabra</i>	Expectorant
Brahmi	<i>Bacopa monnieri</i>	Antipyretic
Lemon oil	<i>Citrus limon</i>	Preservative
Honey	<i>Apis mellifera</i>	Sweetening agent

Figure 1: Advantages and Disadvantages of Herbal Medicine⁵

Figure 2: Ingredients used in Herbal syrup

Pre formulation evaluation parameters are as follow

Table 2: Pre-formulation of raw material

Test	Procedure
Moisture content	1. Weigh 2 gram of sample and take in Petridish. 2. Heat it in the hot air oven at 100°C for 1 hour. 3. Then allowed to cool. Weight the sample again.
Determination of ethanol extractive value	1. Take macerated 5 gram of air dried, shaken coarsely powdered drug with 100 ml of 95% ethanol in closed flask for 24 hours. 2. Shake it frequently for first 6 hours and then allowed to stand for 18 hours. 3. Then filter it rapidly (take care for loss of ethanol). 4. Evaporated 25 ml filtrate to dryness in a flat bottomed petridish. 5. Dry at 105°C and weighed.
Determination of water extractive value	1. Macerated 5 gram of air dried drug coarsely powdered with 100 ml chloroform water (2.5 ml chloroform in 1000 ml water) in closed flask for 24 hours. 2. Shaken frequently for first 6 hours. 3. Allowed to stand for 18 hours. 4. Evaporate 25 ml of filtrate to dryness in a flat bottomed petridish. 5. Dry at 105°C and weighed.

Formulation Table

Table 3: Formulation table for herbal syrup

S. No.	Ingredient	Quantity taken
1.	Tulsi	3 gram
2.	Neem	1 gram
3.	Amla	3 gram
4.	Cinchona	1 gram
5.	Ginger	2 gram
6.	Fennel	3 gram
7.	Turmeric	3 gram
8.	Clove	1 gram
9.	Peppermint	2 gram
10.	Liquorice	3 gram
11.	Brahmi	2 gram
12.	Lemon oil	1 gram
13.	Honey	q. s.

Preparation of Liquid oral

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

Method of preparation of Decoction

Figure 3: Method of preparation of Decoction

Figure 4: Preparation of Decoction and extract

Method of preparation of Maceration

Figure 5: Method of preparation of Maceration

Figure 6: Maceration of ginger with Honey

Preparation of final herbal syrup

Figure 7: Preparation of final syrup

Post formulation evaluation parameters are as follow

Table 4: Post formulation evaluation parameters of final syrup

Test	Procedure
Colour examination	1. 5 ml of prepared syrup was taken on a watch glass 2. Watch glass placed against white background in white tube light. 3. Colour was observed by naked eyes.
Odour examination	1. 2ml of prepared syrup was taken and smelled by individually 2. The time interval between 2 smelling was 2 minutes to nullify effect of previous smelling
Taste examination	1. A pinch of final syrup was taken and examined on taste buds of the tongue.
pH determination	1. 10 ml of prepared syrup taken in 100 ml of volumetric flask. 2. Make up volume to 100 ml with dist. water. 3. Sonicated for 10 minutes. 4. pH was measured by using digital pH meter.
Viscosity determination	1. The viscosity of each formulation was determined by using Ostwald's U-tube viscometer.
Stability study	1. Final syrup was taken in amber colour bottle. 2. Kept at accelerated temperature at 40°C, Room temperature and 47°C respectively. 3. Sample was tested all physicochemical parameters and turbidity at the interval of 24 hours, 48 hours and 72 hours to observe any change.

RESULT AND DISCUSSION

Pre formulation studies

Table 5: Physicochemical evaluation of raw material

Test	Result
Moisture content	1.3
Ethanol soluble extractive	12.1
Water soluble extractive	12.9

Post formulation studies

Table 6: Evaluation of formulated polyherbal syrup

Test	Observed value
Colour	Yellowish-Brown
Odour	Aromatic
Taste	Slightly pungent
PH	6.4
Viscosity	16.45
Specific gravity	1.16

Figure 8: Viscosity determination

Stability study

Table 7: Stability testing of Herbal drug syrup dosage form

Time Duration (Hour)	Temperature (°C)	Turbidity	Colour/Odour
24	4 °C	No Turbidity	No Change
24	RT	No Turbidity	No Change
24	47 °C	No Turbidity	No Change
48	4 °C	No Turbidity	No Change
48	RT	No Turbidity	No Change
48	47 °C	No Turbidity	No Change
72	4 °C	No Turbidity	No Change
72	RT	No Turbidity	No Change
72	47 °C	No Turbidity	No Change

CONCLUSION

Poly-Herbal syrup having Expectorant and Antipyretic action were Developed and Evaluated by various Parameters. Pre-formulation studies of prepared formulation were within specifications. Also the Physicochemical properties of prepared herbal syrup like colour, odour, taste, pH, viscosity and specific gravity were within standard limits, it has proper concentration of honey and also a good preservative. The results of stability study of the final syrup reveal that no changes were noticed in all the tested physicochemical parameter as well as turbidity/homogeneity during 24 hours, 48 hours and 72 hours. Thus it can be concluded that the prepared poly herbal syrup may be used as a stable liquid dosage form.

REFERENCES

- Anu Kaushik Vivek, Chauhan and Dr. Sudha. Formulation and Evaluation of Herbal Cough Syrup. European Journal of Pharmaceutical and Medical Research 2016; 3(5): 517-522.
- Meenakshi Parihar, Ankit Chouhan, M.S. Harsoliya, J. K. Pathan, S. Banerjee, N. Khan, V. M. Patel. A Review- Cough and Treatments, International Journal of Natural Products Research 2011; 5(2): 213- 218.
- Farhat Pirjade Mujawar, Manojkumar Patil, Jyotiram Sawale. Formulation and Evaluation of Herbal Cough Syrup of *Echinops echinatus* Roxb. Roots, International Journal of Pharmacy and Technology, ISSN: 0975-766X; 2016.
- G. Sandhyarani and K. Praveen Kumar. Development of herbal syrup. Asian Journal of Pharmaceutical Science and Technology 2014; 4(2): 101-103.
- Swain Pramod Kumar, Nayak Durga Prasan. Design, Development and Evaluation of a Poly Herbal Syrup from some herbs used as Energy booster, International Journal of Ayurvedic Medicine 2013; 4(4): 374-378.
- 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): 201- 202.
- 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.
- Mohmed Sohel Harsoliya, Mohmed Jamal Sabugar, Patel Vishnu M., Singh Sarika and Pathan Javed Khan. The New Multifunctional Plant Selected Cough Syrup: An Overview, Journal of Pharmacy Research 2011; 4(2): 411- 412.
- Neeraj Choudhary and Bhupinder Singh Sekhon. An overview of advances in the standardization of herbal drugs, J Pharm Educ Res 2011; 2(2): 5570.
- Moore Michael. Herbal Formulas for Clinic and Home, Bisbee, AZ 85603; 1995. p. 34.
- Kalpesh B Vaishnav. Diagnostic Approach to Cough, Supplement to Journal of the Association of Physicians of India, May 2013; Vol. 61.
- Stability testing for new dosage forms. QIC. (ICH), International Conference on Harmonization; 1996.
- Deepa P, Kannappan N. Comparative Stability study of formulated Ayurvedic health supplement and marketed product. Der' Pharma Chemica 2012; 4(5): 2068-2072.
- Chauhan S.K, Agarwal S. Stability studies of herbal drugs. The Eastern Pharmacist; 1999. p. 35-36.

Cite this article as:

Ojas Patel. Development and evaluation of Poly-Herbal Syrup from Natural ingredients having expectorant and Antipyretic activity. Int. J. Res. Ayurveda Pharm. 2021;12(3):46-51
<http://dx.doi.org/10.7897/2277-4343.120372>

Source of support: Nil, Conflict of interest: None Declared

Disclaimer: IJRAP is solely owned by Moksha Publishing House - A non-profit publishing house, dedicated to publishing quality research, while every effort has been taken to verify the accuracy of the content published in our Journal. IJRAP cannot accept any responsibility or liability for the site content and articles published. The views expressed in articles by our contributing authors are not necessarily those of IJRAP editor or editorial board members.