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Research

Development, Standardization and Evaluation of Herbal Syrup

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ABSTRACT

The present study is an effort to develop herbal syrup to treat cough, cold and acidity with proven standardization and evaluation of the formulation. The plant chosen crude drugs as pudina, tulsi, funnel seed and turmeric as a main ingredient. The pudina shows the activity such as providing the cooling effect they have carminative properties where raw material collected authenticated as per WHO guidelines. The syrup formulation we used the aqueous extract. The in that we used the turmeric and funnel seeds also these seeds used to treat the acidity tulsi is the trat the cough also reduces the infection. We study these all ingredients properities and the result was positive, it reduces the growth of the bacteria and produces the cooling effect in respiratory tract. An accelerated stability study of this formulation was carried out the flavour was also used the mint such as the menthol.

Keyword: Herbal syrup, WHO guideline's, Standardization, Accelerated stability study.

1. INTRODUCTION

Cough it is a most common problem are face by most of the people. The raw materials were collected, authenticated and standardized as per WHO guidelines. Types of coughs one is the Dry cough and second is wet cough. The dry cough is a no mucous and secretion while in wet cough there is cough mucous or secretion. The syrup is most commonly used and popular dosage form there is used in cure the cough and cold because it having ease of patient's compliance. Today syrup is used for treatment of may ailments and to overcome symptoms of disease temporary relief the infection of respiratory tract. Reduces the redness in the upper respiratory tract. Advantages of the formulation, it should be mixed type of syrup because they treat the acidity, used the ingredient such as the pudina. The pudina's carminative properties help to digestion and relieve gas also treat the acidity. Also used the funnel seed, it shows antimicrobial property. The common cold imposes a substantial disease and economic burden stemming from its high frequency, with an estimate of about six episodes per year in children under 2 years of age, and two to three episodes per year in adults, as well as from its impact on quality of life. Symptoms of the common cold are so well known that self-diagnosis is normal in that the common infection in that the redness in upper respiratory tract. Herbal medicines are naturally occurring from plant substances that are used to treat illness within local or regional healing practices. WHO has given specific guidelines [16], for the assessment of safety, efficacy and quality of herbal medicines as a prerequisite for global harmonization. The World Health Organization recently estimated that 80 % of population used rely on herbal medicines for some part of their primary health care. medicines are widely in the form of syrup, also known as Linctus When it comes to India, people in this country mostly used the herbal medicine and keeping this sentiment [1].

2. MATERIAL AND METHODS

2.1 Collection and Authentication

The basic formula used for preparing the herbal syrup collection and authentication plant materials were collected from authenticated herbal suppliers and their genuine was checked and confirmed by comparing with the standard. The raw material

should clean and free from any adulteration. The raw materials were primarily identified by the any product analysis we use the parameter for the herbal syrup we use the ayurvedic parameters such as colour odour, taste, shape and size [2]. The relevant plant parts of the four plants chosen for the herbal formulation were separately shade dried and powdered. Monographic analysis of herbs. The herbs were evaluated for loss on drying, ash value to confirm their standard specifications according to the ayurvedic Pharmacopeia of India[3].

2.2 Monographic Analysis of Herbs

The herbs were evaluated for loss on drying, ash value and extractive value to confirm their standard specifications according to the ayurvedic pharmacopeia of india3. Phytochemical screening for raw materials

The detection of the active principles in medicinal plants plays a strategic role in the phytochemical investigation as well as for linking the phytochemical to its pharmacological actions. Identification of phytochemical constituents present in individual raw materials was done qualitatively and quantitatively by using various chemicals tests [4].

Analysis of heavy metals for raw materials.

The heavy metals were analysed both qualitatively and quantitatively as per the ayurvedic pharmacopoeia of India [3].

2.3 Microbial load analysis

For the safe use of the plant drugs, microbial load was tested for all raw materials which include total aerobic count, total yeast and moulds count, absence of escherichia coli, salmonellae, clostridia and shigella as per WHO guidelines [5]. Development of herbal syrup method of preparation of decoction. The four dried raw materials were coarsely powdered. The dried powder was mixed with 100 ml of water and the mixture was boiled until the total volume. The mixture was cooled the important step is cooling of the mixture and filter finally prepare the herbal syrup.

2.4 Method of preparation of simple syrup

In addition to the raw materials as given in composition of herbal formulation table 1

Table 1 Composition of Herbal Formulation

Biological name	Family	Part used	Quantity
Curcuma Longa	Zingiberaceae	All part	30g
Genus Mentha	Lamiaceae	Leaves	30g
Ocimum tenuiflorum	Lamiaceae	Leaves	30g
Umbelifers	Apiaceae	Seeds	20g

35 gm of sugar was weighed and to purified water and heated until it dissolved with stirring.

Sufficient boiling water was added to produce 100ml. All trial batches were prepared as 1liter quantity by varying the concentration of sweetener and flavouring agent details are given in Table 2. the other additives that have been used for preparation of the trial batches are given in composition of trial batch table 2.

Table 2 Composition of Trial Batch

Name of the ingredients	Trial1	Trial 2	Trial3	Trial 4	Trial5
Methyl Paraben	1g	1g	1g	1g	1g
Propyl Paraben	0.5	0.5	0.5	0.5	0.5
Sugar	66g	30g	--	33g	35g
Mint flavour	-	-	-	-	-

2.5 Preparation of herbal syrup

One part of decoction was mixed with five parts of simple syrup (1:5). Required quantity of methyl paraben, propyl paraben, mint was added to the above mixture. Solubility was checked by observing the clarity of solution visually. The final herbal syrup was then subjected to evaluation of production quality as per official standards.[1]

2.6 Evaluation of herbal syrup

The chosen batch of the herbal syrup after scaling up was evaluated important test for the physical constants, phytochemical screening, heavy metals and microbial load analysis and HPTLC fingerprinting. The polyherbal syrup was evaluated for physical appearance (colour, odour, taste), pH, total solids, specific gravity, and viscosity.[16]

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3 Results and discussion

3.1 Evaluation of physical constants

Determination of PH: The pH of polyherbal syrup was determined by using pH meter. The pH meter was calibrated using distilled water, buffer (at pH 4 and 9) till constant readings were obtained.

Determination of total solids: The term 'total solids' is applied to the residue obtained when the prescribed amount of the preparation is dried to constant weight. Determination of specific gravity: Pycnometer was used to determine the specific gravity at 25°C. It was determined dividing the weight of sample (expressed in gm) by the weight of water (in ml).

Determination of viscosity: Ostwald viscometer was used to determine the viscosity of herbal syrup. The method was followed as per the standard procedure8.

Phytochemical screening- phytochemical screening was done using standard procedure4

Quantitative estimation of phytoconstituent

The quantitative estimation for the following phytoconstituents: phenols9 flavanoids 10alkaloids11tannins12, sugar13 was also carried out in the herbal syrup.

Quantitative estimation of heavy metals- Analysis of heavy metals in the syrup was quantified by ICP-OES method [14].

Microbial load analysis: Microbial load was tested for the herbal syrup which includes Total yeast and moulds count, absence of Escherichia coli, Salmonellae, Clostridia and Shigella as per WHO guidelines [5].

HPTLC finger-printing of the herbal syrup- HPTLC is high performance thin layer chromatography or thin layer chromatography. This is a sophisticated advancement of thin layer chromatography (TLC). HPTLC is one of the most versatile chromatographic methods. It has several advantages like better resolution, faster development of spots and also easy detection and quantification of separated compounds. The time required for the demonstration of most of the characteristic constituents of a sample standards are very quick and short. The fingerprint obtained is suitable for monitoring the identity and purity of drugs and for detecting adulteration and substitution in the sample.[16]

Accelerated stability testing of herbal syrup-The Accelerated Stability study of prepared syrup was carried out for 3 months. The syrup was kept at 40°C ± 2° C / 75% RH ± 5% and syrup was stored in ambered coloured bet bottle. The parameters evaluated every month were pH, total solids, specific gravity and viscosity. The quantitative estimation of phytoconstituents, and microbial load was done at the beginning and at end of the 3 months period [15]

Phytochemical Analysis of Raw Materials Table 3

Components	Pudina	Turmeric	Funnel seeds
Alkaloids	+	-	+
Flavonoids	+	+	+
Tannins	+	-	-
Saponins	+	+	+
Phenol	-	+	-
Sugar	+	+	+
Glycosides	+	+	+
Terpenoids	-	-	+
Proteins	-	-	+
Steroids	+	+	+

Figure No.1 Alcohol soluble ash and acid insoluble ash

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Monographic Analysis of Herbs Table 4

Loss on drying	Total ash	Acid insoluble ash	Alcohol soluble ash
3.01+ 0.1	6.1+-0.1	0.3+-0.13	3
1.56+-0.1	1.02+-0.2	1.2+-0.13	5.2
0.5+-0.1	2.02+-0.1	0.4+-07	4
0.2+-0.1	4.02+-0.52	0.3+-0.4	3

Analysis of Total Heavy Metals in The Raw Material Table 5

Ingredients	Total Heavy material
Curcuma Longa	Complies
Genus Mentha	Complies
Ocimum tenuifloru	Complies

Microbial Load Analysis for Raw Material Table 6

Parameter	Result	Limits As Per WHO
Total microbial count	Nil	NMT100cfu/ml
Yeast and moulds	Nil	NMT100cfu/ml
Escherichia	Absent	Absent
Salmonella	Absent	Absent

3.2 Evaluation of Trial Batch

The trial batches important to evaluated for physical parameters such as included the pH, total solids, specific gravity, viscosity and taste. Based on the results, the trial batch 5 was chosen as this had the most acceptable and taste.

Evaluation of Herbal syrup Table 7

Parameters	Observed value
pH of decoction	4
Total solid Decoction	0.12
Specific Gravity	1.0
pH of syrup	5
Total solid of Syrup	0.4
Specific Gravity of Syrup	1

Figure no.2 Triturated powder form of 4 herbs

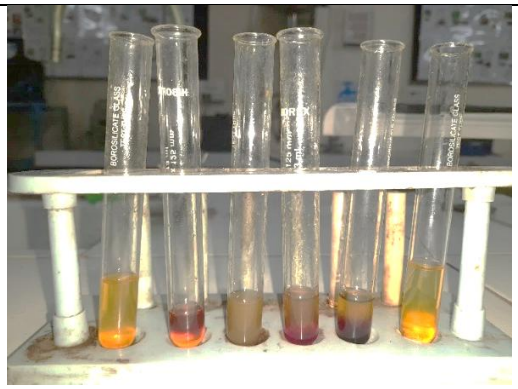

Figure 3 Phytochemical test

Phytochemical Analysis of Herbal Syrup Table 8

Chemical Constituents	Result
Alkaloids	+
Glycosides	+
Flavonoids	+
Phenol	+
Protein	+
Saponins	+

Steroids	+
Sugars	+
Tannins	+
Terpenoids	+

Phytoconstituents in Herbal Syrup Table 9

Phytoconstituents	Result
Alkaloids	0.56mg
Flavonoids	63mg
Phenol	11mg
Tannins	19mg
Sugar	36mg

Evaluation of Physical Parameters Table 10

Parameter	Initial study	First Month	Second month
PH	4.5	4.3	4.5
Total Solids	0.4	0.4	0.3
Specific gravity	1	1	1
Viscosity	0.08	0.09	0.09

Figure no.4 Herbal Syrup
(3different quantity of sugar)

Microbial load Analysis Table 11

Parameter	Initial study	Third month study
Total microbial count	Nil	Nil
Escherichia coli	Absent	Absent
Salmonella	Absent	Absent

4.Discussion: Herbal cough and acidity syrup containing natural ingredients like tulsi, pudina turmeric and funnel seeds. Are popular and often preffered option for cough and acidity relief, offering potential benefits like reduced side effects and a focus on natural remedies.

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7.Conclusion

Herbal syrups, those containing the four herbs particularly those formulated for cough and cold also treat the acidity problem offer a natural and safe alternative to synthetic medications, with studies

showing them to be effective and well-tolerated. They are a popular dosage form no any side effect and not the toxic to the body due to ease of patient compliance and can be tailored with various herbs to target specific ailments.[17]

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