



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Development And Evaluation Of Polyherbal Honey Base Syrup

DHANYA RAJAN E. P.*¹, THANSEEHA T. P.², MUHAMMAD ZABREEN C. P.³, SNEHA P.⁴
ABSHAR U. K⁵

¹Professor, Department of Pharmacognosy, Crescent College of Pharmaceutical Sciences, Kannur.

Corresponding Author: Dhanya Rajan E.P*

Postal address; Crescent College Of Pharmaceutical Sciences, Madayipara ,Payangadi,
Kannur dist, Kerala

ABSTRACT

Polyherbal formulations are products that incorporate multiple herbal ingredients as active component. The raw materials used in the creation of the polyherbal syrup include coleus leaves, orange peel and cinnamon. These raw materials contain countless properties such as antioxidant activity, antitussive activity, antimicrobial activity, anti-inflammatory activity and antilipidemic activity. Phytochemical analysis exposed the presence of carbohydrates, flavonoids, phytosterols, fixed oil, alkaloids, terpenoids, volatile oil, phenolic compounds and tannins in the raw materials. To ensure consistency, three 50 ml samples of syrup, prepared by the decoction method, underwent standardization using different evaluation variables. The evaluation criteria include determination of organoleptic parameters, determination of pH, determination of viscosity and establishment of antioxidant property by DPPH assay. This unique blend of herbal ingredients has shown promising results in the effective treatment of various respiratory symptoms. Consequently, a perfect combination of all these ingredients in the form of polyherbal syrup represents a significant advancement in curing various types of ailments including cough and other respiratory conditions.

Key words: Polyherbal syrup, phytochemical analysis, invitro antioxidant

INTRODUCTION

Any chemical substance or compound used to treat or cure disorder or relieve signs and symptoms or assist in diagnosing disease is known as medicine. Today, natural drug treatments, which might be chemicals organized from flora, are extensively used in fitness care. They are surely nutritional supplements that humans devour to enhance their health, and are bought in the shape of pills, capsules, powders, extracts, plants, clean or dried, and so forth. Presently, natural products are used to deal with many health issues and situations, which include allergic reactions, arthritis, migraines, ache, fever, and greater. The World Health Organization The arena health corporation decided that among 119 pharmaceutical tablets derived from flowers, about 74% of that are utilized in modern medication in methods which might be at once associated with their traditional uses as plant drugs in local cultures. Equipped-made herbal products crafted from famous recipes and regularly containing multiple natural substance as the active ingredient are known as “polyherbal preparations”. Arrangements prepared by combining sugar with vegetable infusions, decoctions, fermented alcoholic beverages, bottled juices, or easy aqueous answers are referred to as syrups. Honey and refined sugar act as higher preservatives and have added blessings in terms of soothing movements, making them a perfect car for cough combos as well as relieving sore

throats. Effective nice control standards are very crucial in the improvement of natural formulations to make certain batch to batch uniformity inside the system contents and to verify an appropriate amount of dosage or extract per dosage unit.^{1,2,3,4}

MATERIALS AND METHODS

SELECTION AND COLLECTION OF HERBS

The selection of materials and herbs for the herbal syrup was based on a comprehensive literature review. The formulation includes

Coleus aromaticus

The plant is a perennial succulent herb of 30 – 90 cm, shrubby below, with a fleshy stem. Flowers are pale purplish in densely many flowered whorls. Leaves are the useful part. It belongs to the family, Lamiaceae. Common names



Figure 1 Leaves of *Coleus aromaticus*

Citrus sinensis

Citrus sinensis is a small, shallow rooted evergreen shrub or tree, 6-13 meters tall. It is cultivated for both its oil and fruit in warm temperature in tropical and subtropical zones. It has glossy and aromatic leaves. Clusters of upto 6 creamy white and fragrant flowers blooms during early spring. Fruits are usually round to slightly oval in shape. It belongs to the family, Rutaceae. Common names are Navel orange, Naranja, Mandarin, Citrange and Pomelo.^{7,6}



Figure 2 *Citrus sinensis*

Cinnamon

It is an evergreen tree; branches are strong and bark is smooth and yellowish in colour. It has leathery leaves. The leaves are dark green on top and light green at the bottom. The inconspicuous yellow flowers have a disagreeable odour, which are tubular with 6 lobes. The fruit is a small, fleshy berry. It belongs to the family, Lauraceae. Common names are True cinnamon⁸

2. Collection and Authentication

The plant materials collected for the preparation polyherbal honey base syrup from Kannur, kerala and was authenticated.

3. Extraction

Extract of the three raw materials were prepared using decoction method. Extract of all the three ingredients that is, Coleus aromaticus, citrus sinensis and cinnamon were prepared separately using decoction method.

4. Phytochemical screening

The following phytochemical screening were performed using the extract of all three raw materials prepared.^{3,4}

Table 1 Phytochemical analysis

CONSTITUENTS	CHEMICAL TESTS
Carbohydrates	Molisch's, Benedict's, Fehling's and Barfoed's test
Alkaloids	Wagner's, Dragendorff's and Mayer's test
Glycosides	Borntrager's test and Legal test
Flavonoids	Shinoda, Alkaline reagent and Lead acetate test
Terpenoids	Salkowski test
Phytosterols	Liebermann-burchard test
Fixed oils	Spot test
Phenolic compounds and Tannins	Ferric chloride and Lead acetate test
Saponins	Frothing test
Volatile Oil	Sudan-III test

ANTIOXIDANT ASSAY OF THE EXTRACT

DPPH gives a strong absorption band at 517nm in visible region. When the phenolic compounds in the extract react with the stable DPPH radical, the absorption reduced and DPPH is decolourised from blue complex into light yellow. This discoloration depends on the intrinsic concentration of present antioxidant and its reactions speed towards DPPH. A freshly prepared DPPH solution in 0.5 ml ethanol were added to 3 ml of diluted each extract to start the antioxidant reaction. The decrease in absorbance was measured at 517 nm. The absorbance is correlated with the scavenging action of the test compound.¹¹ The radical scavenging activities were expressed as percentage of inhibition and calculated according to the following formula equation:

$$\text{DPPH radical scavenging activity (\%)} = \left[\frac{\text{Abs control} - \text{Abs sample}}{\text{Abs control}} \right] \times 100$$

Where, Abs control is the absorbance of sample at t = 0 min

Abs sample is the absorbance of sample at t = 30 min

Development of Syrup

The herbal syrup was prepared using decoction method. About 30g of orange peel were taken, crushed and added into 100 ml water, boiled and the extract was then filtered and cooled. 30g of Coleus aromaticus leaves were cut into small pieces and added to 100 ml of water, heated slowly and then filtered. Similarly, 30g of dried Cinnamon bark were taken and crushed, which was added to 100 ml water, heated and then filtered to get the extract. Using these extracts, three different formulations (F1, F2 and F3) were made. All extracts were mixed together. Weighed

3×25 ml of honey, added to each formulation to obtain 50 ml of syrup. Finally, sodium benzoate and potassium sorbate (0.3 and 0.2%, respectively) were added to the mixture as microbial preservatives. The obtained syrup was transferred to amber coloured bottle and stored at room temperature.¹²

6. Standardisation of Syrup

a) Organoleptic parameters:

The colour, odour and taste of the prepared formulations were determined.

b) Viscosity determination:

Viscosity was determined using Ostwald Viscometer.

$$\text{Viscosity} = \frac{\text{Density of test liquid} \times \text{time required to flow test liquid}}{\text{Density of water} \times \text{time required to flow water}} \times \text{viscosity of water}$$

c) pH determination:

The pH determination of syrup was done using pH paper.

d) Stability studies:

The stability testing of the prepared syrup was performed under accelerated temperature conditions.¹³

RESULTS

1. Collection and Authentication

For the purpose of plant identification and authentication, the leaves of *Coleus aromaticus* were collected from Kannur District, Kerala by using proper collection method and was authenticated.

2. Extraction

Extracts of all the three raw materials were prepared using decoction method.

3. Phytochemical screening

Coleus aromaticus

It showed the presence of:

Carbohydrates: Molisch's, Benedict's, Barfoed's and Fehling's test.

Flavonoids: Shinoda test, Alkaline reagent test and Lead acetate test.

Phenolic compounds and Tannins: Ferric chloride and Lead acetate test.

Volatile oil: Sudan-III test.

Citrus sinensis

It showed the presence of:

Carbohydrates: Molisch's, Benedict's, Barfoed's and Fehling's test.

Flavonoids: Shinoda test, Alkaline reagent test and Lead acetate test.

Phytosterols: Libermann-burchard test.

Volatile oil: Sudan-III test

Cinnamon

It showed the presence of:

Alkaloids: Wagner's, Dragendorff's and Mayer's test.

Flavonoids: Shinoda test, Alkaline reagent test and Lead acetate test.

Terpenoids: Salkowski test

Phytosterols: Libermann-burchard test.

Phenolic compounds and Tannins: Ferric chloride and Lead acetate test.

Fixed oils: Spot test.

Volatile oil: Sudan-III test

1. Antioxidant study of Coleus extract

The antioxidant study of Coleus extract was performed using DPPH assay method, by making use of Ascorbic acid as standard.

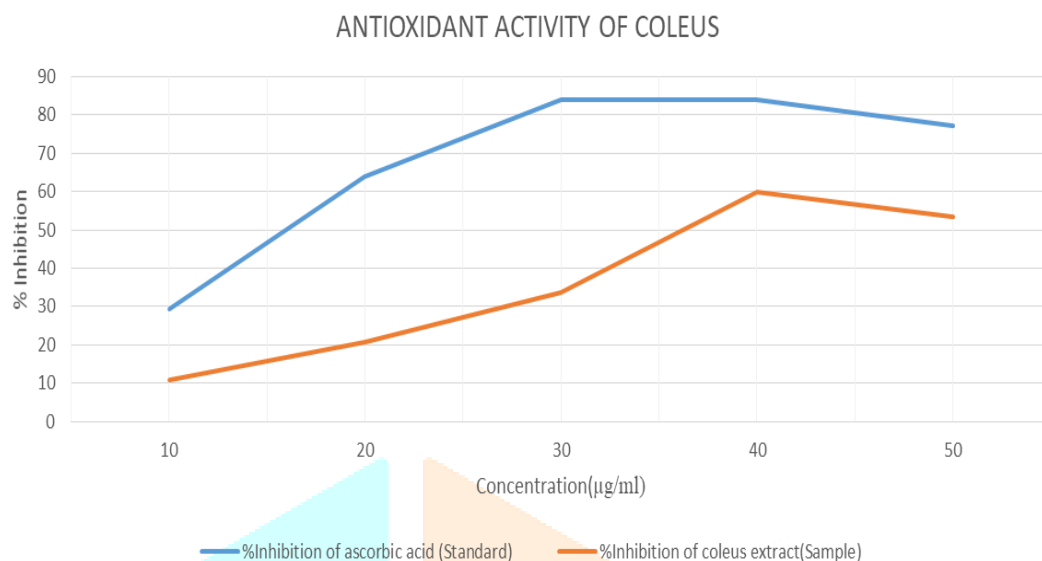


Figure 3: In vitro antioxidant activity of Coleus aromaticus leaf extract

Free radical scavenging efficacies of all the extracts showed a dose-dependent gradual increase in the activity. The results showed that the tested extract had a DPPH free radical scavenging activity at 50 µg/mL, the maximum concentration.

1. Development of Syrup

50ml of polyherbal syrup was prepared using decoction method. The mixture was filtered. Finally, sodium benzoate and potassium sorbate (0.3 and 0.2%, respectively) were added to the mixture as microbial preservatives and then labeled

PREPARATION OF DECOCTION

Formulation No.1 (F1) – for 50ml.

INGREDIENTS	QUANTITY
Coleus leaves extract	8ml
Orange peel extract	7ml
Cinnamon extract	10ml
Honey	25ml

Formulation No.2 (F2) – for 50ml.

INGREDIENTS	QUANTITY
Coleus leaves extract	10ml
Orange peel extract	9ml
Cinnamon extract	6ml
Honey	25ml

Formulation No.3 (F3) – for 50ml.

INGREDIENTS	QUANTITY
Coleus leaves extract	7ml
Orange peel extract	10ml
Cinnamon extract	8ml
Honey	25ml

6. Standardisation of Syrup

a) Organoleptic parameters:

PARAMETERS	F1	F2	F3
Colour	Yellowish - brown	Yellowish - brown	Yellowish - brown
Odour	Aromatic	Aromatic	Aromatic
Taste	Sweet	Sweet	Sweet

b) Viscosity determination

F1	F2	F3
8.27cp	9.23cp	7.50cp

F2 formulation was found to be more viscous than F1 and F3 formulations.

c) pH determination:

It was done using pH paper, and the observed values are:

F1 – 6-7 (Neutral)

F2 – 6-7 (Neutral)

F3 - 7 (Neutral)

d) Stability studies:

The stability testing of three formulations were done. After the observation made at 48 and 72 hours, the turbidity in the F2 formulation was found to be less when compared to other two formulations. F2 was considered as stable.

DISCUSSIONS

Here we have prepared a polyherbal syrup proposed to have antioxidant activity using Coleus leaves, Orange peel, Cinnamon and Honey. The preliminary phytochemical screening for all the raw materials was carried out to reveal the presence of various constituents like carbohydrate, alkaloids, flavonoids, terpenoid, phytosterols, volatile oil, phenolic compounds and tannins. The syrup was prepared using decoction method and standardization of the preparation was carried out. Among the three formulations, F2 was found to be more stable than other two formulations.

CONCLUSION

Polyherbal formulations are those products which contain more than one herbal material as the active component. The raw materials which were used in the preparation of the polyherbal syrup includes Coleus leaves, Orange peel and Cinnamon. These raw materials were collected following good collection practices and authenticated. These raw materials contain several properties like antioxidant activity, antitussive activity, antimicrobial activity, anti-inflammatory activity and antilipidemic activity. The phytochemical screening revealed the presence of carbohydrates, flavonoids, phytosterols, fixed oil, alkaloids, terpenoids, volatile oil, phenolic compounds and tannins in the raw materials. Three samples of 50ml syrup, which was prepared using the decoction method was then standardized by using different evaluation variables. The evaluation variables followed were determination

of organoleptic parameters, pH determination, Viscosity determination and establishment of antioxidant property using DPPH assay. Henceforth, we reached to a conclusion that F2 formulation was more stable relative to other formulations. From the DPPH assay, it was established that the Coleus leaves exerts antioxidant activity, and this may be due to the presence of Flavonoids and Phenolic compounds. All the ingredients listed in the preparation have already reported to have antioxidant, anti-inflammatory, antibacterial and antitussive property. So, a perfect combination of all these ingredients as a polyherbal syrup can provide important advancement in curing various types of ailments including cough and other respiratory disorders.

REFERENCES

- 1) Kaderkar Dattatray Shrikar *et al* (2020), Review on concept and Scope of Polyherbal Formulations, International Journal of Innovative Research in Technology, Vol. 7 (1), page no. – 282 – 288.
- 2) S S Agarwal *et al* (2007), Herbal Drug Technology, Vol. 5, page no. – 661 - 662.
- 3) Kunle Oluyemisi Folashade *et al* (2012), Standardisation of herbal medicines – A review, International Journal of Biodiversity and Conservation, Vol. 4 (3), page no. – 101- 112.
- 4) Vandana Murali *et al* (2020), Pranayavani [*Plectranthus amboinicus* (Lour.) Spreng.] – Pharmacological and Ethnomedicinal Uses – A Review, International Journal of Science and Research (IJSR), Vol. 10 (9), page no. – 66 – 73.
- 5) Om Prakash Rout *et al* (2012), Pathorchur (*Coleus Aromaticus*): A review of the medicinal evidence for its phytochemistry and pharmacology properties, International Journal of Applied Biology and Pharmaceutical Technology, Vol. 3 (4), page no. - 348 – 353.
- 6) Juan Manuel J Favela-Hernandez *et al* (2016), Chemistry and Pharmacology of *Citrus sinensis*, Molecules, Vol. 21 (247).
- 7) Priya Chand *et al* (2020), A review on citrus: Medicinal activity of *Citrus sinensis* (orange), International Journal of Scientific Development and Research, Vol. 5 (8), page no. - 438 – 442.
- 8) Motuma Adimasu Abeshu *et al* (2016), Medicinal uses of honey, Biology and Medicine, Vol. 8 (2).
- 9) Biren Shah *et al* (2010), Textbook of Pharmacognosy and Phytochemistry 1st edition, page no.- 161,233 – 234.
- 10) Fan Xiao *et al* (2020), Guidelines for antioxidant assays for food components, Food Frontiers, Vol.1, page no. – 60 – 69.
- 11) Dr. Javesh K Patil *et al* (2019), Formulation and evaluation of herbal syrup, World Journal of Pharmaceutical Research, Vol.8 (6).
- 12) Miss. Telange Patil P V *et al* (2022), Formulation and evaluation of herbal cough syrup of clove by using jaggery base, International Journal of Creative Research Thoughts (IJCRT), Vol. 10 (12), page no. – 778 – 789.