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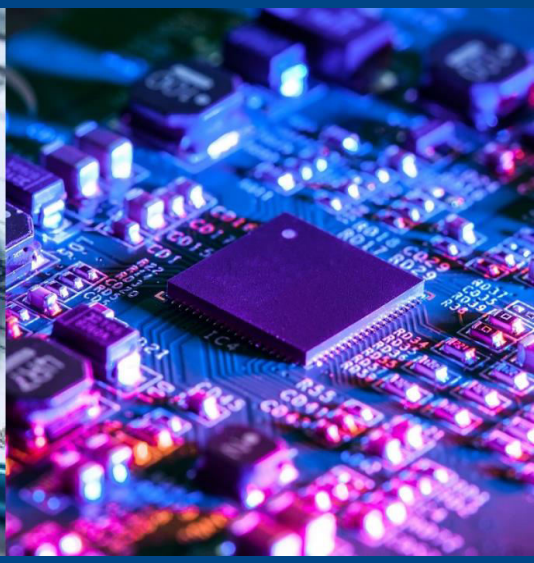

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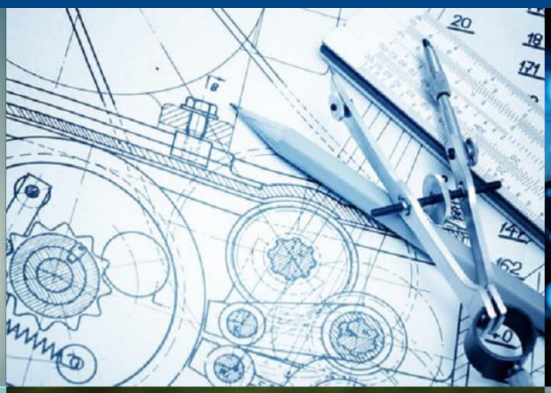

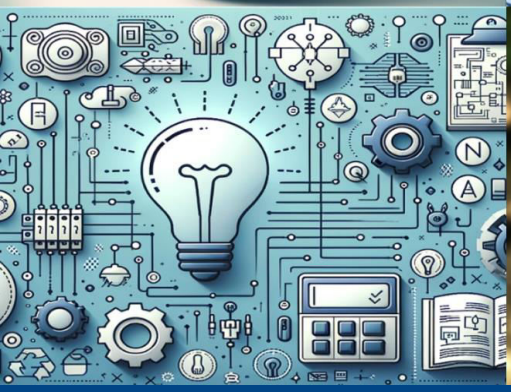

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Formulation and Evaluation of Polyherbal Syrup for the Management of COPD

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ABSTRACT: Chronic obstructive pulmonary disease (COPD) is a significant health concern, prompting interest in alternative therapies. A recent study evaluated a Persian herbal formulation, Compound polyherbal syrup, for managing COPD. This randomized clinical trial involved 76 patients, divided into two groups: one received CPS, which combines honey with extracts of ginger, cinnamon, saffron, cardamom, and galangal, while the other received a placebo. The study aimed to assess the efficacy of CPS on quality of life and lung function over eight weeks. The results indicated that CPS may improve symptoms associated with COPD due to the anti-inflammatory, antibacterial, and bronchodilator properties of its herbal components. This approach highlights the potential of integrating traditional herbal medicine into modern treatment regimens for respiratory diseases. In addition to CPS, another study focused on formulating a polyherbal cough syrup using various medicinal plants like Clove, Ginger, Turmeric, Cardamom, and Ajwain. This syrup demonstrated significant antitussive and anti-inflammatory effects, showcasing its potential as a natural remedy for respiratory ailments. Overall, these studies suggest that polyherbal formulations could serve as effective adjuncts in managing COPD and related respiratory conditions by leveraging the therapeutic properties of natural ingredients.

KEYWORDS: Medicinal plant, Curcuma longa**,** Brunette, Cleavage, etc.

Poly-Herbal Syrup

Polyherbal expression (PHF) is the use of further than one condiment in an herbal drug medication. The conception is set up in Ayurvedic and other traditional medicinal systems where multiple sauces in a particular rate may be used in the treatment of illness. (1) It's used in these systems for the treatment of numerous conditions, including diabetes. (citation demanded) The Ayurvedic textbook Sarang Dhār Samhita, dated 1300 CE, has stressed the conception of poly-herbalism in Ayurveda. In the traditional system of Indian drug, factory phrasings and combined excerpts of shops are chosen rather than individual bones.

Ayurvedic herbal phrasings are prepared in a number of lozenge forms, in which substantially all of them are PHF. (farther explanation demanded) Due to mutualism, poly-herbalism confers some benefits which is not available in single herbal expression.

I. INTRODUCTION

“Preface habitual obstructive pulmonary complaint” (COPD) is a term for lung and airway conditions that circumscribe your breathing. People with COPD have airway inflammation and scarring, damage to the air sacs in their lungs or both. Emphysema and habitual bronchitis are both forms of COPD. Treatments can manage symptoms and reduce exacerbations. COPD, or habitual obstructive pulmonary complaint, is a condition caused by damage to the airways or other corridor of the lung.

This damage leads to inflammation and other problems that blocks tailwind and makes it hard to breathe. habitual obstructive pulmonary complaint (COPD), which includes habitual bronchitis and emphysema, is a long- term lung complaint that makes it hard to breathe. The good news is COPD is frequently preventable and treatable. Then you will find information, coffers and tools to help you understand COPD, manage treatment and life changes, find support and take action habitual obstructive pulmonary complaint (COPD) is a type of progressive lung complaint characterized by habitual respiratory symptoms and tailwind limitation. GOLD 2024 defined COPD as a miscellaneous lung condition characterized by habitual respiratory symptoms dyspnea or briefness of breath, cough, foam product and/ or exacerbations) due to abnormalities of the airways (bronchitis, bronchiolitis) and/ or alveoli (emphysema) the cause patient, frequently progressive, tailwind inhibition.

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The seditious response and inhibition of the airways beget a drop in the forced expiratory volume (FEV1) and towel destruction leads to tailwind limitation and disabled gas exchange. Hyperinflation of the lungs is frequently seen on imaging studies and occurs due to air trapping from airway collapse during exhalation. The incapability to completely exhale also causes elevations in carbon dioxide (CO2) situations. As the complaint progresses, impairment of gas exchange is frequently seen. The reduction in ventilation or increase in physiologic dead space leads to CO2 retention. Pulmonary hypertension may do due to verbose vasoconstriction from hypoxemia. COPD will generally present in majority and frequently during the downtime months. Cases generally present with complains of habitual and progressive dyspnea, cough, and foam product. Cases may also have gasping and casket miserliness.

II. MATERIALS AND METHODS

2.1 Plant Material and Chemical used

(a) Turmeric, Ajwain, Clove, Cardamom, Ginger are taken from the local market (Marothiya Market).
(b) Saccharin, Sodium benzoate was taken from the college laboratory.

2.2 Method

2.2.1 Pre-formulation Study

(a) Test for Alkaloids: The plant extract was dissolved in 100 mL of water, filtered, and cooked in steam with 2 mL of the filtrate and three Drops of 1% HCl. Then, 1 mL of the heated mixture was combined with 6mL of the Mayer-Wagner reagent. The Appearance of a cream or brown-red colored precipitate indicated the presence of alkaloids.
(b) Test for Tannins: About 200 mg of the plant extract was boiled with 10 mL of distilled water; and 0.1% Ferric chloride was added to the Mixture; which was then observed for blue-black coloration indicating the presence of tannins.
(c) Test for Saponins: About 0.5 milliliters of the extract and 5 mL of distilled water were combined and agitated. Then, the formation of foam Confirmed the presence of saponins.
(d) Test for Phenols: About 1 mL of the extract was combined with three drops of FeCl3, and 1 mL of K2Fe (CN6). The formation of greenish blue forms confirmed the presence of phenols.
(e) Test for Flavonoids: 200 mg of the plant extract was mixed with 10 mL of ethanol and filtrated. Two mL of the filtrate, concentrated HCl, and Magnesium ribbon were mixed. The formation of a pink or red color indicates the presence of flavonoids.

2.2.2 Preparation of Polyherbal Syrup: Ginger (average weight of one piece around 30gm) were taken and cut it into small pieces then grind the ginger were added into 100ml of water then heated slowly to get extract. The extract got was filtered and then cool. From whole extract 7 ml of solution is measured. 12.5 gm of turmeric were taken in conical flask then 37.5 ml of ethyl acetate was added in it. After that keep it for 48 hours at room temperature. The Ajwain powder added into 100ml of water then heat slowly to get extract. The extract got was filtered and then cool from whole 5ml of solution is measured. The Clove powder added into 100ml of water then heat slowly to get extract. The extract got was filtered and then cool from whole 5ml of solution is measured. The Cardamom powder added into 100ml of water then heat slowly to get extract. The extract got was filtered and then cool from whole 5ml of solution is measured. Added Saccharin and Sodium benzoate. All extract is mixed with each other 20ml of syrup was obtained. This obtained syrup was transferred to amber color bottle, close it tightly and place it into cool place.

S.no.	Ingredient	Formulation 1	Formulation 2	Formulation 3
1.	Turmeric extract	1ml	1ml	1ml
2.	Ajwain extract	2ml	1ml	1ml
3.	Clove extract	1ml	2ml	1ml
4.	Cardamom extract	1ml	1ml	2ml

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5.	Ginger extract	2ml	2ml	2ml
6.	Saccharin	1ml	1ml	1ml
7.	Sodium benzoate	0.025gm	0.025gm	0.025gm
8.	Distilled water	2ml	2ml	2ml

Table 1. Formulation of Polyherbal Syrup

2.2.3 Evaluation of Polyherbal syrup

1. Organoleptic property
The prepared syrup will be examined for their appearance, color, taste and odor.

2. Measurement of pH
The pH of the syrup is determined by using digital pH meter. The measurement of pH of each syrup is done in triplicate and average values were noted.

3. Determination of density
The following steps are followed in determination of density. The specific gravity bottle can be completely cleaned using chromic acid or nitric acid. Fill the bottle with distilled water and rinse it out at least twice. Third, if necessary, clean the bottle with acetone or another organic solvent and let it dry. Weigh the container with the capillary tube stopper in place (w1). Put the cap on the bottle and pour in the mystery liquid; then, using a tissue, remove any surplu s liquid from the tube. Measure the density of an unidentified fluid using an analytical balance (w2). The weight of the mysterious liquid (w3) must be determined in grams.

4. Viscosity
The viscosity was estimated by following steps of procedure. Use heated chromic acid or an organic solvent like acetone to thoroughly clean the Ostwald viscometer. Set up a vertical setup for the viscometer. Fill the dry viscometer with water to the G mark. How long, in seconds, does it take for water to travel from point A to point B Perform step 3 at least three times to ensure a reliable reading. Measure the time it takes for the liquid to flow from mark A to mark B after rinsing the viscometer with the test liquid.

Viscosity %= Density of liquid × Flow time for liquid × water viscosity

5. Stability study
Three months of storage at 40 2°C and 75 5% RH are used to evaluate the stability of the final syrup formulation. The samples were analyzed at 0, 7, 14, and 21 days for things like colour, smell and taste.

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III. RESULT AND DISCUSSION

1. Phytochemical Screening

S. No.	Tests	Turmeric	Ajwain	Clove	Cardamom	Ginger
1.	Alkaloids	+	+	+	+	+
2.	Tannins	-	+	+	+	+
3.	Saponins	-	+	-	+	+
4.	Phenol	+	-	-	-	-
5.	Flavonoid	+	+	+	-	-

Table 2. Phytochemical Screening

2. Organoleptic characteristics: A Comparative study was done for the powder extract in methanol and water solvent. The following table represent the comparison profile.

Features	F1	F2	F3
Color	Brown	Dark brown	Brown
Odor	Aromatic	Aromatic	Aromatic
Taste	Sour sweet	Sour sweet	Sour sweet

Table 3. Organoleptic characteristic features of syrup

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3. Determination of PH, Density and Viscosity

The extracts were observed for their pH, solubility and % yield. Methanolic extract of turmeric powder shown the pH, respectively. While aqueous extract of turmeric shown the pH as 6.0.

Features	F1	F2	F3
pH	5.71	6.21	4.55
Density	1.22gm	1.23gm	1.25gm
Viscosity	2.55cp	2.49cp	2.53cp

Table 4. Estimation of pH, Density and Viscosity

Fig. no. 1 Polyherbal syrup

IV. CONCLUSION

The conclusion of studies on polyherbal syrups for treating conditions like chronic obstructive pulmonary disease (COPD) and cough indicates promising result Polyherbal formulations, such as the anti-tussive syrup, demonstrate significant effectiveness in reducing cough severity and improving respiratory function. Ingredients like clove, Ajwain, turmeric, Cardamom, and Ginger contribute to their efficacy by providing anti-inflammatory and expectorant properties. The final formulation (F3) was obtained is stable than formulations F1, F2. The formulation (F3) was obtained by minimizing the error in formulation Fl, F2. The formulation (F3) having Anti-inflammatory and antioxidant property hence it will be very helpful for researchers as well as industries to make the similar formulations on large scale.

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