International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/

(RESEARCH ARTICLE)

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Development of carminative syrup to improve gastrointestinal prophylaxis

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International Journal of Science and Research Archive, 2024, 12(01), 578–585

Publication history: Received on 01 April 2024; revised on 08 May 2024; accepted on 11 May 2024

Article DOI: https://doi.org/10.30574/ijsra.2024.12.1.0835

Abstract

The carminative qualities of spices like asafoetida, clove, cumin, cardamom, fennel, honey, cinnamon and black pepper are highlighted in particular. Medicinal plants are widely recognized as a crucial and valuable resource for the development of pharmaceutical products. These herbal products possess carminative properties and offer additional health benefits in a wide range of therapeutic uses of carminative like as Anti-microbial, Diuretic, Irritable bowel syndrome, etc. To enhance their effects, formulations were made utilizing a geometrical approach and different weights of these powders were combined and evaluated. To confirm the quality and safety of the carminative syrup, organoleptic evaluation, physicochemical characteristics, rheological evaluation, and carminative potential were evaluated.

Keywords: Carminative; Gastro-intestinal Prophylaxis; Herbal plants; Esophageal Pressure

1. Introduction

Herbal plant and formulation are used for many types of disease like cough syrup and other disease. The cough syrup many types of herbal plant are used for pudina, Tulsi, Cinnamon, honey in that whole plant are used for making herbal medicine the many years. Herbal formulation a most commonly used a development as well as developing countries as health care [1].

Volatile oils are known to have antispasmodic and carminative action as they stimulate the intestinal motility by increasing muscle tones. Over years, many medicinal herbs such as Cinnamon, Caraway, Fennel, Chamomile, Cardamom, Peppermint, Thyme, Eucalyptus, Lemon, and Dill have a focus of interest due to their volatile oil content. It was reported that the essential oil shave various activities such as carminative, anti- spasmodic, analgesic and other indications. The well-known properties of Dill in traditional medicine stated that it is used as carminative, stomachic and diuretic. Also, it was reported that Dill has anti-bacterial and antioxidant activity. Fennel is a well-known medicinal and aromatic plant the volatile oil of fennel has antispasmodic antiflatulence properties; it is used for dyspeptic complaints and as hepatoprotective drug. The peppermint oil has smooth muscle relaxant activity; conforming its antispasmodic activity [2, 3].

Herbal syrup is prepared by adding concentrated decoction of herbs with either honey or sugar and we also use alcohol. The herbal syrup is made by decoction process. Mixing a decoction of herbs with sugar it helps to the formulation for thicken and preserve the formulation. This was responsible to increase the shelf life of formulation. The added sweetener can also help to increase the palatability of some herbs [4].

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1.1. Herbal plants

Medicinal plants throughout the ages, humans have relied on nature for their basic needs, for the production of food, shelter, clothing, transportation, fertilizers, flavors and fragrances, and medicines.

Man relied on the healing properties of medicinal plants. Some people value these plants due to the ancient belief which says plants are created to supply man with food, medical treatment, and other effects. It is thought that about 80% of the 5.2 billion people of the world live in the less developed countries and the World Health Organization estimates that about 80% of these people rely almost exclusively on traditional medicine for their primary healthcare needs. Medicinal plants are the "backbone" of traditional medicine, which means more than 3.3 billion people in the less developed countries utilize medicinal plants on a regular basis. There are nearly 2000 ethnic groups in the world, and almost every group has its own traditional medical knowledge and experiences [5].

1.2. Herbs

An herb is a plant or plant part used for its scent, flavor, or therapeutic properties. Herbal medicines are one type of dietary supplement. They are sold as tablets, capsules, powders, teas, extracts, and fresh or dried plants. People use herbal medicines to try to maintain or improve their health [6].

Most common herbs are clove, cumin, cardamom, cinnamon, asafoetida, mint, rosemary, thyme, oregano, dill, fennel, basil, and lemongrass etc.

2. Materials and methods

2.1. Materials

Following herbal parts are used in formulation of carminative syrup:

Figure 1 Asafoetida

Figure 2 Clove

Figure 3 Cardamom

Figure 4 Cinnamon

Figure 5 Fennel

Figure 6 Cumin

2.2. Pharmacognostical profile of active ingredients

Table 1 Pharmacognostical profile of active ingredient

S. No.	Name	Biological Source	Chemical Constituents	Uses	References
1	Asafoetida	*Ferula foetida, ferula asafoetida. umbelliferae*	Volatile oil, resin, gum.	Carminative, expectorant, antispasmodic.	[7]
2	Clove	*Eugenia caryophyllus (Spring.) Spraque Myrtaceae.*	Volatile oil Eugenol, Tannins, methyl furfural and dimethyl furfural.	Antiseptic, Carminative, Flavoring agent, Stimulant.	[8]
3	Cardamom	*Elettaria cardamomum zingiberaceae*	Terpenine, Terpineol Terpenylacetate, Cineole & Borneol.	Aromatic, Flavoring agent, Stomachic, Expectorant. Treatment of Headaches.	[9]
4	Cinnamon	*Cinnamomum zeylanicum. Lauraceae.*	Eugenol, Cinnamic acid & Cinnamic aldehyde.	Flavoring agent, Germicide, Somachic & Diaphoretic.	[10]
5	Fennel	*Foeniculum vulgare Umbelliferae.*	Volatileoil, Anethole, Phenolicester, Fenchone, B-pinene.	Stomachic, Aromatic, Diuretic, Carminative, Antipyretic, Antimicrobial.	[11]
6	Cumin	*Cuminum cyminum, Apiaceae*	Beta-pinene, Para-mycene.	Diarrhea, Puerperal disorders.	[12]
7	Black pepper	*Piper nigrum Linn. Piperaceae*	Piperidine group ofalkaloids, volatileoil, Resin, Starch Argenine.	Antimalerial, Stomachic, Stimulant, Flatulent, Antiarthritis.	[13]

2.3. Ingredients table

Table 2 List of carminative based ingredient

S.No	Ingredients	properties
1	Asafoetida	Antispasmodic, expectorant
2	fennel	Antioxidant
3	Cumin	Antioxidant

4	Cinnamon	Antitussive
5	Cardamom	Anti-clotting , flavoring agent
6	Clove	Anti-inflammatory, anti-microbial
7	Black Pepper	Anti-microbial ,antioxidant
8	Honey	Base viscosity modifier
9	De-ionized water	Additive

2.4. Extraction Process method

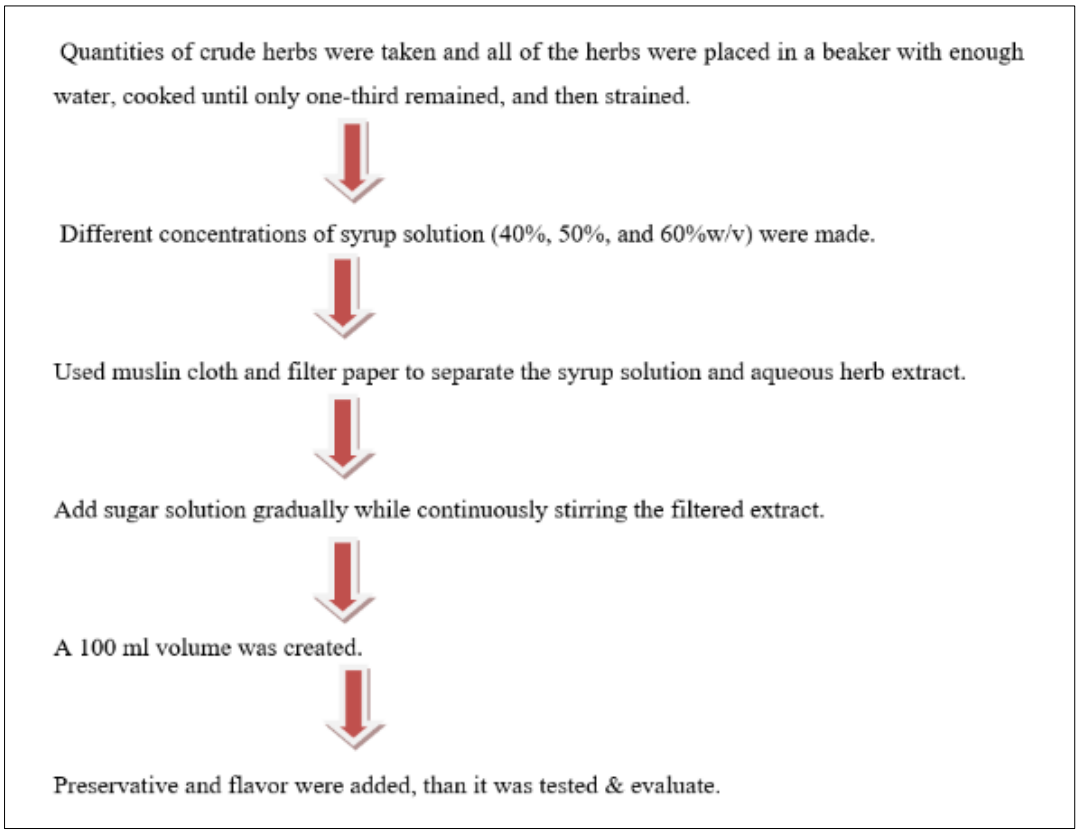
- **Step 1:** First we collect all the herbs and left it for drying in absence of sunlight.
- **Step 2:** After drying of herbs triturate it properly with the help of mortar pestle.
- **Step 3:** Then put this triturated powder in RBM (round bottom flask).

Figure 7 Triturated herbs

- **Step 4:** Then put the suitable solvent it in and add some porcelain pieces into it for not bumping of the formulation.
- **Step 5**: Now we set the Clevenger assembly and start the extraction process for 70 degree temperature for 6 hours.

Figure 8 Extraction of herbs

2.5. Preparation of syrup



2.6. Evaluation parameters

2.6.1. Organoleptic tests

- **Color:** Table 03 shows the result obtained for color of formulated batches of syrup. The color of formulation was found to be yellowish – brown for the optimized batch. The color of the formulation ranges from yellowish – brown to dark brown for A, B, C batches respectively.
- **Odor:** Table 03 shows the results obtained for odor of formulated batches of syrup. The odor of formulation was Aromatic for the A, B, C batches respectively.
- **Taste:** Table 03 shows the results obtained for taste of formulated batches of syrup. The taste of formulation was Slightly Pungent for A, B, C batches respectively.

Table 3 Organoleptic test

Formulation	Color	Odor	Taste
A	Yellowish -Brown	Aromatic	Slightly Pungent
B	Yellowish -Brown	Aromatic	Slightly Pungent
C	Yellowish -Brown	Aromatic	Slightly Pungent

2.6.2. pH

Table 03 shows the results obtained for pH of formulated batches of syrup. The Specific Gravity of formulation was found to be 6.1 for the optimized formulation B. The value was found to be in the range of 6.0 - 6.1 for all three formulations.

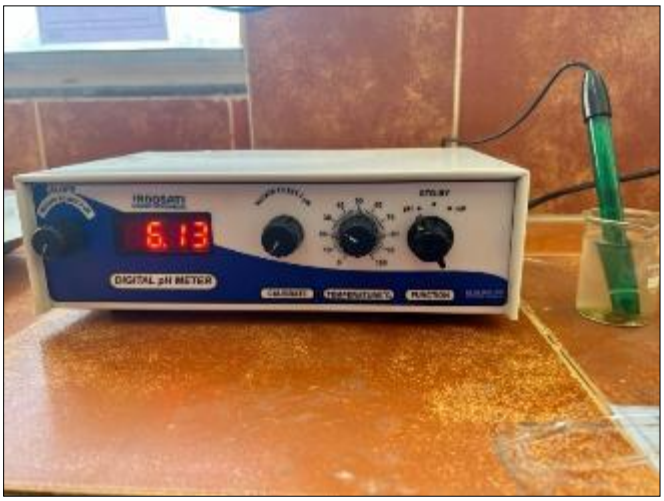


Figure 9 pH given sample by Digital pH meter

2.6.3. Viscosity

Table 04 shows the results obtained for Viscosity of formulated batches of syrup. The Viscosity of formulation was found to be 0.0582 poise for the optimized formulation B. The value was found to be in the range of 0.0582 – 0.03988 poise for all three formulations.

Table 4 Quantitative evaluation of formulation

S.No.	Parameter	A	B	C
1.	pH	6	6.1	6.1
2.	Viscosity(poise)	0.01323	0.0582	0.03988

2.6.4. Stability

We observe the stability analysis of our formulation in different temperature.

The stability data is shown in table no.05.

Table 5 Stability analysis of formulation

Time Duration (Hour)	Temperature (°C)	Turbidity	Color/Odor
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

3. Result and discussion

The result obtained in this study suggest that the herbal formulation prepared processes antioxidant activity show the component of the herbal indigestion formulation was selected due to their reporter action that play a preventative and curative role in the indigestion prevention of indigestion of syrup prepared passes all the physical parameters and show the significance antioxidant activity positive results.

4. Conclusion

This study was an attempt to develop a formulation of carminative syrup to improve gastro-intestinal prophylaxis with purely herbs or herbal plants. The carminative qualities of spices like asafoetida, clove, cumin, cardamom, fennel, honey, cinnamon and black pepper are highlighted in particular. The plant of meat constraint extraction was studied and they prepare formulation is tested for different test give a good reason for formulated product does not give irritation for our body further prepared indigestion of syrup. The organoleptic properties of the formulation are shown in table no.2. The pH and viscosity of the formulation is shown in table no. 3. 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 carminative herbal syrup may be used as a stable liquid dosage form.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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