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Original Research Article

Formulation and evaluation of herbal syrup of onion (Allium Cepa)

Amit G Nerkar[1,2,*], **Ashutosh Pansare**[2]

[1] *Founder and Director, Ateos Foundation of Science Education and Research, Pune, Maharashtra, India*
[2] *Dept. of Pharmacy, CAYMET's Siddhant College of Pharmacy, Pune, Maharashtra, India*

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ABSTRACT

A cepa or onion is the most edible vegetable throughout the world. It also has diverse pharmacological properties. It is a fibrous perennial plant belonging to the Amaryllidaceae family. Onions contain vitamins such as folic acid and vitamin B6. It also contains minerals such as magnesium, calcium, potassium, and phosphorus. It shows diverse pharmacological properties such as anticancer, antidiabetic, antioxidant, anticoagulant, antihypertensive and antidepressant and neuroprotective effects. It is believed to be a carminative and shows beneficial effects on circulatory and respiratory systems as well as the immune system.

Allium cepa finds its uses in cancer because of many stress conditions such as oxidative stress can be subsided by the Allium cepa extract and formulations. In this review, an attempt was made to formulate the medicated syrup of A. cepa. Four such formulations were made (F1, F2, F3, F4). The F4 formulation was optimized and was stable. The Formulation F4 can be adopted for preparation of A. cepa syrup on Industrial scale.

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1. Introduction

1.1. Medicinal plants

Plants with desirable and undesirable pharmacological activities can be called medicinal plants. At present, it has been established that plants normally synthesize and collect a number of optional metabolites, similar to alkaloids, glycosides, tannins, volatile oils, and contain minerals and nutrients, which have specific characteristics.[1]

1.2. Allium cepa (Onion)[1–5]

They grow as underground root tubers. It is a perinneal herb. Onions belong to the Liliaceae family, also known as Aliaceae family. Since ancient times onions were seldom grown and imported from Afghanistan/Iran/Soviet Union and which lead to the cultivation in 175 countries worldwide. Onions are made up of sugar, sulfur compounds, fiber and about 90% water. The main active constituents of onion include several vitamins (B2, C and B1), and minerals such as selenium and potassium. These active constituents have been shown to possess pharmacological properties such as diabetes, heart disease and stomach cancer. Onion peel shows a beneficial effect in preventing dermatological conditions such as hypertrophic scars and keloid scars. The onion extract and consumption of onions in daily meals reduces risk of certain cancers. It also shows antiplatelet aggregation properties. A. Cepa (onion) shows antioxidant pharmacological property as it contains organosulfur compounds, polyphenols and flavonoids, which are believed to be natural antioxidants. Garlic and onion extract shows anti-parasitic and parasiticidal pharmacological effect. They have shown the biological effect in Trypanosomiasis by inhibiting certain parasitic enzymes A. Cepa extracts

* *Corresponding author*.
E-mail address: dragnerkar@gmail.com (A. G. Nerkar).

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possess hepatoprotective effects. With their Aqueous extract against ethanol-induced hepatotoxicity. However, researchers found some toxicity reports on onions as well which induces hemolytic anemia in puppies.

2. Herbal Syrup

Herbal syrup is prepared by herbal extract decoction with appropriate herbal excipients such as flavored sugar syrup, preservatives such as regenerated alcohol, flavoring, and herbal additives. To increase the shelf life of the prepared formulation it was mixed with sugar helps to build the viscosity and as natural preservative. Herbal syrup contains extracts of medicinal plants. Several herbal and medicinal syrups have been prepared and evaluated as per reported literature methods.[6]

2.1. Description of the plant

2.1.1. Allium cepa (Onion Cepa)

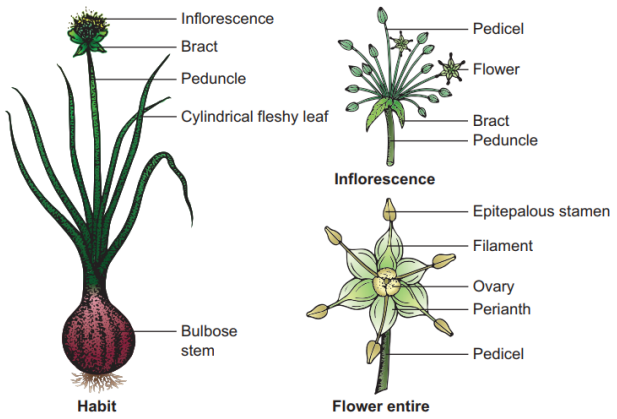

Fig. 1:

Synonym: Bulb onion or common onion
Taxonomical classification Allium Cepa (onion)

1. **Kingdom:** Plantae
2. **Division:** Magnoliophyta
3. **Class:** Liliopsida
4. **Order:** Asparagales
5. **Family:** Alliaceae
6. **Genus:** Allium
7. **Species:** A. Cepa
8. **Edible parts:** Leaves, flowers, seed, root.

2.2. Bioactive compounds

2.2.1. Sulfur compounds

They make the back of mouth and throat feel burning. thiosulfins, pyruvic acid, Thiosulfinates and mono-, di-, tri- and tetrasulfides.[7,8] The major active constituents of onion volatiles are dipropyl trisulfide, dipropyl disulfide, and propenyl disulfides, while several other compounds including dipropenyl sulfide and dipropyl sulfide have been known among them.[9] Methiin , S-alk(en)yl-L-cysteine derivatives, isoalliin, alliin, deoxyalliin, cycloalliin, N-(gamma-glutamyl)-S-(2-propenyl)-L-cysteine, N-(gamma-glutamyl)-S-methyl-L-cysteine, N-(gamma-glutamyl)-S-(2-propenyl)-L-cysteine sulfoxide, N-(gamma-glatamyl)-S-(E-1-propenyl)- Lcysteine(Glu-PEC), S-(2-carboxypropyl) glutathione, and N-(gamma-glutamyl)-S-(E-1-propenyl)-Lcysteine sulfoxide (Glu-PECSO).[10–12] 5-Hydroxy-3-methyl-4-propylsulfanyl-5H- furan2-one.[13]

2.2.2. Non-structural carbohydrates

Glucose, fructose, and sucrose, although low molecular fructans are absent. FOS are polyfructoses of different molecular sizes. Fructans are called fructooligosaccharides (FOS).

2.2.3. (SDF:IDF)

It is defined as higher soluble/insoluble nutritional fiber ratio. The pharmacological effects include SDF increases stomach viscosity causing nutrients to be reduced and absorbed, while IDF decreases intestinal transit and increases food mass for the majority of people.[14]

Table 1: Role of ingredients in herbal syrup.

S.No.	Ingredient	Role
1.	Allium Cepa Extract	Antioxidant, Free radicals Scavenging
2.	Orange oil	Flavoring agent
3.	Sugar base invert	Preservatives
4.	Alcohol	Preservatives
5.	Amaranth red	Coloring agent

3. Materials and Methods

Herbal syrup is prepared by the method of decoction. The steps are as follows. Calotropis Gigantea Extract was obtained as a fine extract from Herbal Creations Pvt Ltd. The extract was prepared with an ethanol extracted by the Soxhlet extraction method. Furthermore, the extract was filtered and the extracts of the quantities used as shown in the table were used to prepare formulations F1 to F4. All extracts were mixed together and 50ml of syrup was obtained. Dyes, flavoring agents are added to it. Refer Tables 2, 3, 4 and 5 and the evaluation parameters are recorded in Table 6.[15–18] for more details.

The following evaluation parameters were performed on formulation 4 (F4).

3.1. Evaluation parameter

1. Density: It was measured by Weighing Bottle method.

Table 6: Evaluation of herbal syrup

S.No.	Parameters	F1	F2	F3	F4
1.	Density	1.50gm..	1.43gm	1.29gm	1.50gm
2.	Specific gravity	0.6189	0.6195	0.6135	0.613
3.	Viscosity	3.75cp.	3.67cp	3.66cp	3.66cp
4.	pH determination				
	a) pH paper	Neutral	Neutral	Neutral	Neutral
	b) pH meter	7.01	7.44	7.54	7.61
5.	Organoleptic characters				
	a) Color	Reddish	Reddish	Reddish	Aromatic
	b) Odor	Aromatic	Aromatic	Aromatic	Aromatic
	c) Taste	Sweet	Sweet	Sweet	Sweet
	d) Apperance	Turbid	Turbid	Clear	Clear

Table 2: Formulation no.1 (F1) – For 50ml.

S.No.	Ingredients	Quantity
1.	Allium Cepa Extract	7ml
2.	Orange oil	5ml
3.	Sugar base invert	38ml

Table 3: Formulation no. 2 (F2) – For 50ml.

S.No.	Ingredients	Quantity
1.	Allium Cepa Extract	5ml
2.	Orange oil	2ml
3.	Sugar base invert	33ml
4.	Alcohol	10ml

Table 4: Formulation no.3 (F3) – For 50ml.

S.No.	Ingredients	Quantity
1.	Allium Cepa Extract	8ml
2.	Orange oil	2ml
3.	Sugar base invert	33ml
4.	Alcohol	10ml

Table 5: Formulation 4 (F4) – For 50ml.

S.No.	Ingredients	Quantity
1.	Allium Cepa Extract	15ml
2.	Orange oil	4ml
3.	Sugar base invert	20ml
4.	Alcohol	11ml

2. Specific gravity: It was measured by Ostwald's Viscometer.
3. Viscosity: It was measured by Ostwald's Viscometer.

4. Result and Discussion

The formulation F4 was optimized at the laboratory scale. The formulation can further be technology transferred for bulk and industrial production of herbal syrup of C. gigantea. The formulation is evaluated for stability and optimized for qualitatively with various parameters as per literature.

5. Conclusion

The Herbal formulation of A. cepa was formulated, evaluated, and can be adopted for batch production on an industrial scale.

6. Source of Funding

None.

7. Conflict of Interest

None.

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Author biography

Amit G Nerkar, Professor (UG) and Research Head https://orcid.org/0000-0002-1377-8466

Ashutosh Pansare, Final Year Under Graduate Student

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