



Original Research Article

Formulation and evaluation of herbal syrup of bhilawa seed extract

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ABSTRACT

Semecarpus anacardium Linn. (Family: Anacardiaceae), commonly known as 'Bhallataka' or 'Bhilwa', has been used in various traditional systems of medicine to treat various ailments since ancient times. Its nuts contain many bioactive compounds such as biflavonoids, phenolics, bhilawanols, minerals, vitamins and amino acids, which exhibit various healing properties. Fruit and seed extracts exhibit various activities such as anti-atherogenic, anti-inflammatory, antioxidant, antibacterial, anti-reproductive, CNS stimulant, hypoglycemic, antitumor, and growth stimulant. hair. Lab scale formulation is made with herbal syrup and evaluated for several parameters like pH, viscosity, density, stability test while evaluating the formula. Is a stable and ready-to-know recipe. F1, F2, F3 and F4 are made with different amounts of ingredients such as alcohol, sugar and a final amount of syrup. Results show that Herbal Syrup Formula 4 (F4) is more stable than other forms.

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1. Introduction

1.1. Bhilawa

Semecarpus anacardium (Anacardiaceae) is a medium-sized tree found in moist deciduous forests across the country.¹ It is commonly known as Bhilawa, Bladur in the Unani system of medicine.² It has been used in the traditional system of medicine for various ailments and diseases. The fruit of the plant is used for its beneficial therapeutic effects to cure diseases. It is used as an anti-arthritis and cardiogenic agent. Biflavonoids, phenolics, bhilawanols, sterols, anacardic acids and glycosides have been identified as components of *S. anacardium* seed extract³ Based on chemical and spectroscopic data, several biflavonoids, such as jediflavanone, galluflavanone, nalluflavanone, semecarpetin, semecarpufuranone and anacardiflavanone

have been characterized.⁴ Jediflavanone is also capable of scavenging, semecarpufuranone, semecarpetin and galluflavanone having a 7-OH group may contribute to the free chelating activity of *S. anacardium*,^{5,6}

2. Active Chemical Constituents⁷

The most important components of *S. Anacardium* Linn. As bhilwanols, phenolic compounds, Biflavonoids, glycosides. Fruit sterols and Bhilwanol were found to be mixtures of cis- and transomers of ursuhenol; This compound mainly consists of 1,2-dihydroxy-3(pentadecadienyl 8',11')benzene and 1,2-hydroxy-3(pentadecadienyl 8')benzene. The other isolated components are, anacardoside, semecarpetin, jediflavanone, nalluflavanone, semecarpufuranone, galluflavanone, anacardufuranone, mono-olefin I, diolefin II, bhilawanol-A, bhilawanol-B, etc

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2.1. Taxonomical classification of *semecarpus anacardium*⁸

1. Kingdom: Plantae
2. Subkingdom: Tracheobionta
3. Super division: Spermatophyta
4. Division: Magnoliophyta
5. Class: Magnoliopsida
6. Subclass: Rosidae
7. Order: Sapindales
8. Family: Anacardiaceae
9. Genus: *Semecarpus*
10. Species: *Anacardium*

2.2. Herbal syrup

Herbal syrups prepared by adding concentrated extracts of herbs with sugar and alcohol have also been used. Herbal syrup is made with decoction. Mixing an herb with sugar helps to thicken the recipe and preserve it. This increases the shelf life of the formula. Added sweeteners can also help enhance the flavor of some herbs. The resulting syrup is delicious! It is defined as a thick, sticky liquid consisting of a concentrated solution of sugar and water with or without added flavoring or medicinal ingredients.^{9–11}

2.3. Following are the ingredients used in formulation

1. **Bhilawa Seed Extract:** It is used in various herbal and ayurvedic treatment of cancer. The Soxhlet extracted alcoholic extract was obtained which was further filtered and used.
2. **Orange oil:** It consist fruit of plant citrus aurantium belonging to family: Rutaceae. It contains not less than 2.5% of volatile oil. It uses as antioxidant, anti-cancer and neurodegenerative disorder.¹²
3. **Alcohol:** It uses in small quantity act as preservative.
4. **Invert sugar base:** It was prepared by mixing 2 cups (480 mL) of water with 4.4 cups (1 kg) of granulated sugar and 1/4 teaspoon of cream of tartar in a pot. The mixture was boiled over medium heat until it reaches 236°F (114°C), stirring occasionally. Next, remove the mixture from the heat, cover, and let cool.¹³

Table 1: Role of ingredients in herbal syrup.

Sr. No.	Ingredient	Role
1.	Bhilawa Seed Extract	Antioxidant, Free Radical Scavenging, Anticancer
2.	Orange oil	Flavoring agent
3.	Sugar Base Invert	Preservative
4.	Alcohol	Preservative
5.	Amaranth red	Coloring agent

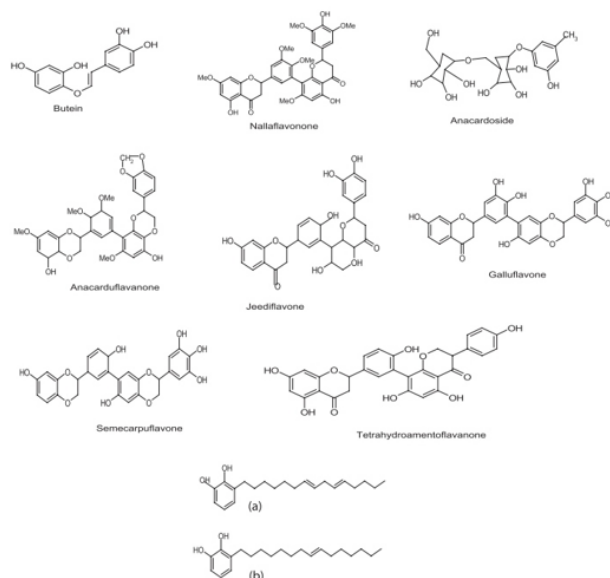


Fig. 1: Active constituents of Bhilawa Plant

3. Materials and Methods

Herbal syrup was prepared by decoction method. Bhilawa Seed Extract was obtained as fine extract from Herbal Creations Pvt Ltd. The extract subjected to prepare an ethanolic extract to obtain the ethanol specific active constituents by Soxhlet extraction method. Further the extract was filtered, and the aliquots of the quantities were used as given in the table to prepared formulations F1 to F4. All extract are mixed with each other and 50ml of syrup was obtained. The coloring agent, flavoring agent are added to it. This obtained syrup was transferred to amber color bottle, closed tightly and placed in cool dry place. Preparation of herbal syrup: The preparation of herbal syrup was performed as per quantities given in Tables 2, 3, 4 and 5 and evaluation parameters are shown in Table 6.

Table 2: Formulation No.1 (F1) - for 50ml.

Sr. No	Ingredient	Quantity
1.	Bhilawa Seed extract	7ml
2.	Orange oil	5ml
4.	Invert Sugar Base	38ml

Table 3: Formulation 2 (F2) - For 50ml.

Sr. No.	Ingredient	Quantity
1.	Bhilawa Seed extract	5ml
2.	Orange oil	2ml
3.	Invert Sugar Base	33ml
4.	Alcohol	10ml

In above formula (F2), we used alcohol because in the formulation number 1 (F1), sugar was not able to inhibit the growth of fungi, so we use alcohol.

Table 4: Formulation 3 (F3) - For 50ml.

Sr. No.	Ingredient	Quantity
1.	Bhilawa Seed extract	8ml
2.	Orange oil	2ml
3.	Invert Sugar Base	33ml
4.	Alcohol	7ml

The formulation number 2 was rejected because of more quantity of alcohol is use. In this formula we use alcohol as minimum quantity.

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

Sr. No.	Ingredient	Quantity
1.	Bhilawa Seed extract	15 ml
2.	Orange oil	4ml
4.	Invert Sugar base	20ml
5.	Alcohol	11 ml

Table 6: Evaluation of herbal syrup

Sr. No.	Parameter	F1	F2	F3	F4
1.	Density	1.50gm.	1.43 gm.	1.29gm.	1.50gm.
2.	Specific gravity	0.63000	0.6130	0.6250	0.6250
3.	Viscosity	3.95cp.	3.97cp.	3.86cp.	3.86cp.
4.	pH Determination				
	a) pH paper	Neutral	Neutral	Neutral	Neutral
	b) pH meter	7.05	7.50	7.35	7.35
	Organoleptic Characters				
5.	1) Color	Reddish	Reddish	Reddish	Reddish
	2) Odor	Aromatic	Alcoholic	Aromatic	Aromatic
	3) Taste	Sweet	Sweet	Sweet	Sweet
	4) Appearance	Turbid	Turbid	Clear	Clear

Following evaluation parameters were performed on formulation 4 (F4).

3.1. Evaluation parameter

3.1.1. Density

It was evaluated by Formula as given below,

Formula for density: Density of liquid under test (syrup) = weight of liquid under test /volume of liquid under test = w_3/v

3.2. Specific gravity

Specific Gravity was evaluated by the formula as given below.

Specific gravity of liquid under test (syrup) = weight of liquid under test /weight of water = w_5/w_4 .

3.3. Viscosity

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

3.4. pH

pH was determined on pH meter.

4. Result and Discussion

The final formulation (F4) was obtained is stable than formulations F1, F2, F3. The formulation (F4) was obtained by minimizing the error in formulation F1, F2, F3. The formulation (F4) having antioxidant property hence it will be very helpful for researchers as well as industries to make the similar formulations on large scale.

5. Conclusion

The Herbal formulation was prepared and F4 can be formulated and prepared on large scale.

6. Source of Funding

None.

7. Conflict of Interest

None.

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