

FORMULATION AND EVALUATION OF HERBAL SYRUP**Dr. Javesh K. Patil, Dipali R. Mali*, Komal R. More and Shraddha M. Jain.**

Department of Pharmacognosy and Phytochemistry, P.S.G.V.P. Mandal's College of Pharmacy, Shahada- 425409, Dist. Nandurbar, Maharashtra, India.

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Corresponding Author*Dipali R. Mali**Department of
Pharmacognosy and
Phytochemistry, P.S.G.V.P.
Mandal's College of
Pharmacy, Shahada-
425409, Dist. Nandurbar,
Maharashtra, India.**ABSTRACT**

Most of herbal syrup was originally derived from plant herbal medicine refers to use extract of fruit for medicinal purpose. Along with other dosage from herbal drugs also formulated inform of syrups. Today syrup is used for treatment of many ailments and to overcome symptoms of diseases. The antioxidant syrup is used to treat the cancer because of many stress condition and other oxidative reaction in body the free radical are generated, by using these syrup the condition is overcome. The extraction of kiwi is added into orange peel it gives flavored to syrup and basil leaves extract is added as antibacterial agent to inhibit the growth of bacteria and sugar and alcohol used as preservative. Four formulation viz. F1, F2, F3 and F4 were prepared with variation in quantity of ingredients like alcohol, sugar and final volume of syrup. All prepared formulation was by parameters like

density, specific gravity, pH, organoleptic characteristics. The results shown that herbal syrup formulation number 4 (F4) is more stable and elegant as compared to other formulations.

KEYWORDS: Herbal Syrup, Kiwi, Basil, Orange peel, Evaluation.**INTRODUCTION**

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. The finally obtained syrup to be delicious!^[1]

It is defined as a thick sticky liquid consisting of a concentrated solution of sugar and water with or without addition of flavorings agent or medicinal substance.^[2]

Following are the ingredients used in formulation

1. Kiwi fruit: It consist fruit of plant *Actinida deliciosa* belonging to family Actinida.^[3] It is uses as sleep inducer^[4], antioxidant and contained vitamin C^[5], It is use specially in colon cancer.^[6]

2. Basil leaves: It consist of fresh leaves of plant *Ocimum basilicum* belonging to family: Lamiale.^[7] It is uses as GIT disorder, eye disorder, CVS disorder, diabetes mellitus and anti-tumor.^[8]

3. Orange peel: It consist fruit of plant *Citrus sinensis* belonging to family: Rutaceae.^[9] It uses as anti-oxidant, anti-cancer and neurodegenerative disorder.^[10]

4. Sugar: It consist stem of plant *Saccharum officinarum* belonging to family: Poaceae.^[11] It act as preservative and uses to increases shelf life of product.^[12]

5. Alcohol: It uses in small quantity act as preservative.^[13]

Table. 1: Role of ingredients in herbal syrup.

Sr. No.	Ingredient	Role
1.	Kiwi fruit	Antioxidant
2.	Basil leaves	Antibacterial
3.	Orange peel	Flavoring agent
4.	Sugar	Preservative
5.	Alcohol	Preservative

MATERIALS AND METHODS

Preparation of herbal syrup

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

Sr. No	Ingredient	Quantity
1.	Kiwi fruit extract	7ml
2.	Basil leaves extract	5ml
3.	Orange peel extract	5ml
4.	Sugar	33.3ml

Procedure: When herbal syrup is prepared by decoction method. Steps are as follows.

1. Four kiwi fruits (average weight of one fruit around 35 gm) were taken and its outer coat was removed, then cut it into small pieces, then obtained pieces 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.

2. About 20gm peel obtained from two oranges was cut into small piece added to 100 ml of water then heated slowly to get extract. The extract got was filtered and then cool. From whole extract 5 ml of solution is measured.

3. About 20 gm of basil leaves added into 100 ml of water, heated slowly to get extract. The extract got was filtered and then cool. From whole extract 5 ml of solution is measured.

4. Weight accurately 33.3ml of sugar.

5. All extract are mixed with each other and 50ml of syrup was obtained.

6. This obtained syrup was transferred to amber color bottle, close it tightly and place it into cool place.^[14]

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

Sr. No.	Ingredient	Quantity
1.	Kiwi fruit extract	5ml
2.	Basil leaves extract	3ml
3.	Orange peel extract	2ml
4.	Sugar	33.3ml
5.	Alcohol	7ml

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.	Kiwi fruit extract	9ml
2.	Basil leaves extract	3ml
3.	Orange peel extract	3ml
4.	Sugar	33.3ml

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 500ml.

Sr. No.	Ingredient	Quantity
1.	Kiwi fruit extract	90ml
2.	Basil leaves extract	30ml
3.	Orange peel extract	30ml
4.	Sugar	17ml
5.	Alcohol	333ml

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

Evaluation parameter**1. Procedure to determine density**

- 1) Clean thoroughly the specific gravity bottle with chromic acid or nitric acid.
- 2) Rinse the bottle at least two to three times with distilled water.
- 3) If required, rinse the bottle with an organic solvent like acetone and dry.
- 4) Take the weight of empty dry bottle with capillary tube stopper (w_1).
- 5) Fill the bottle with unknown liquid and place the stopper, wipe out excess liquid from outside the tube using tissue paper.
- 6) Weight bottle with unknown liquid on analytical balance (w_2).
- 7) Calculate weight in grams of unknown liquid (w_3).

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

2. Procedure to determine Specific gravity

- 1) Clean thoroughly the specific gravity bottle with chromic or nitric acid.
- 2) Rinse the bottle at least two to three times with purified water.
- 3) If required, rinse the bottle with an organic solvent like acetone and dry.
- 4) Take weight of empty dry bottle with capillary tube stopper.
- 5) Fill the bottle with distilled water and place stopper; wipe out excess liquid from side tube using tissue paper (w_2).
- 6) Weight bottle with stopper and water on analytical balance (w_2).
- 7) Repeat the procedure for liquid under test by replacing the water after emptying and drying as mentioned in step 4 to 6.
- 8) Weight bottle with stopper and liquid under test on analytical balance (w_3).

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

3. Procedure to determine Viscosity

- 1) Thoroughly clean the Ostwald viscometer with warm chromic acid and if necessary used an organic solvent such as acetone.
- 2) Mount viscometer in vertical position on a suitable stand.
- 3) Fill water in dry viscometer up to mark G.
- 4) Count time required, in second for water to flow from mark A to mark B.

- 5) Repeat step 3 at least 3 times to obtained accurate reading.
- 6) Rinse viscometer with test liquid and then fill it up to mark A, find out the time required for liquid to flow to mark B.
- 7) Determination of densities of liquid as mentioned in density determination experiment.

Formula for viscosity

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

4. pH determination: The pH determination of syrup by using two techniques.

- a) Glass electrode. b) pH paper.

Procedure for glass electrode

- 1) Prepare 30ml buffer of each pH. The volume of the stock solution to be taken. Prepare the buffer by mixing appropriate volume.
- 2) Allow the solution for 15minutes to establish equilibrium.
- 3) Measure the pH of solution using a pH meter.

Solutions: Stock solution: Acetic acid 0.2molar: Dissolve 1.2ml of glacial acetic acid in 100ml of distilled water in a volumetric flask. Molecular weight of glacial acetic acid is 60.605; weight per ml is 1.050.

- a) Buffer solution: Dissolve 10.21 gram of potassium hydrogen phthalate in sufficient carbon dioxide free water to produce 1000ml.^[15]



Fig. 1: Density.



Fig. 2: Specific gravity.



Fig. 3: Viscosity.



Fig. 4: a) pH Meter. Fig. 4: b) pH Paper.

RESULT**Table. 6: Result of four evaluation parameter.**

Sr. No.	Parameter	F1	F2	F3	F4
1.	Density	1.07gm.	1.06gm.	1.06gm.	1.06gm.
2.	Specific gravity	0.5289	0.5195	0.5135	0.5135
3.	Viscosity	3.70cp.	3.60cp.	3.66cp.	3.66cp.
4.	pH Determination				
	a) pH paper	Neutral	Neutral	Neutral	Neutral
	b) pH meter	6.01	5.43	6.53	6.63
5.	Organoleptic Characters				
	1) Color	Yellowish green	Yellowish green	Yellowish green	Yellowish green
	2) Odor	Aromatic	Alcoholic	Aromatic	Aromatic
	3) Taste	Sweet	Sweet	Sweet	Sweet
	4) Appearance	Turbid	Turbid	Clear	Clear

DISCUSSION

In today's era the herbal products are the symbol of safety in contrast to the synthetic drugs which are regarded as unsafe to human being and environment. Although, herbs had been priced for their medicinal, flavouring and aromatic qualities for centuries. It's time to promote them globally.

The prepared herbal syrup is having anti-oxidant activity. One kiwi fruit contains about 100 mg vitamin C. Clinical data was proved that the platelet aggregation and plasma triglyceride level were reduced after 28 days of fruit consumption. The daily consumption of kiwi fruits is reduced the harm of cancer, especially colon cancer. It also used in treatment of insomnia, to treat sleep disorder. It helps to promote natural sleep.

CONCLUSION

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.

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