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FORMULATION AND EVALUATION OF MEDICATED HERBAL SYRUP OF VINCA EXTRACT

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Abstract

Cancer is very much known dangerous disease. Vinca extract is very beneficial in treating various cancer conditions. However no syrup of vinca plant or its extract has been formulated. In this cancer conditions, formulation & evaluation of herbal syrup of alcoholic vinca extract may increase the patient compliance in severe condition. It is very easy to administer through oral route. This vinca syrup is formulated using alcoholic preparations and with vinca. This vinca syrup is very easy to formulate and help to overcome many diseased state and patient compliance. This review article deals with formulation of laboratory scale vinca syrup. We have been evaluated various parameters such as PH, viscosity, density, specific gravity, stability of this vinca extract.



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Introduction

Cancer and Indian Scenario Cancer

The number of Indians with cancer is expected from 26.5 million to 30 million in 2025. It is higher in men. According to medical council of research report on "cancer burden in India", Seven Cancers account for more than 40% of the total disease burden: Lung (10.6%), Breast (10.5%), Esophagus (5.8%), Mouth (5.7%), Stomach (5.2%), Liver (4.6%) and Cervix (4.3%). Explaining the period of 2021 -2025. According to the National Center for Disease Informatics and Research (NCDIR), Men will contribute 14.7 million life years lost, Women would be 13.6 million [1, 2].

Role of Vinca in Cancer

Vinca alkaloids are obtained from Madagascar periwinkle. They are naturally extracted from the pink periwinkle, *Catharanthus roseus* G. Don and have hypoglycemic and phytotoxic effects. They have been used to treat diabetes, high blood pressure and have been used as antiseptics. Periwinkle

alkaloids are also important for fighting Cancer. They are main four Vinca alkaloids in Clinical use: vincristine, Vinorelbine, Vincristine and vindesine. These active constituents have been approved for use in the United States. Vinflunine is also a novel synthetic alkaloid from periwinkle, which have been approved in Europe for the treatment of second order transitional cell carcinoma of the ureter is the under development for other malignancy cancer. Vinca alkaloids are second most widely used class of cancer drugs and will remain one of the cancer therapy [3-4].



Fig 1: Vinca Plant

Herbal Syrup with Invert Sugar Base [5-7]

Definition of Syrup

Syrup is a concentrated solution containing pure sugar and water. In syrups of other types of syrup solutions. Syrups may or may not contain drugs or mixed flavors. When syrups without drugs but with flavoring agents are said to be flavored or non-medicated syrups.

Flavored syrups are commonly used as a means mask for unpleasant drug results in medicinal syrups. Syrup is present in syrup in large quantities, so it is often susceptible to bacterial contamination used as a preservative.

Syrup is a widely used carrier for anti-tissue drugs, as it provides a gentle Oral effect than tablets and capsules. This drug was quickly observed. There are similar synthetic cough preparations that cause some undesirable effects. Ayurvedic formulations belong to the liquid form of the drug or combination of drugs. However, the combination of medicinal herbs in syrup form give rise to herbal syrup [8].

Herbal Syrup

Herbal syrup is a concentrated herbal tea, preserved in sugar or honey. Historically, herbal syrups were used to sweeten the taste of bitter medicinal herbs to make them more palatable and extend their shelf life. They are a versatile alternative to alcoholic beverages for children or those who avoid alcohol. The classic herbal syrup that many of us use during cold and flu season is elderberry syrup, which is used to boost immune function and fight infections. Herb syrup may be produced as a medicine or a flavoring agent. The syrup can be added to teas, cocktails or mock tails, made into herbal soft drinks, or simply deliciously eaten with a spoon [9].

Medicated Herbal Syrup

Herbal Syrup containing medicinal extracts intended for medicinal use may be categorized as medicated Herbal syrups. These extracts may be adopted from classified systems of alternative and complimentary medicine, Ayurveda or herbal medicine or pharmacognosy classification systems which may contain invert sugar or sugar base with or without alcohol. The alcohol itself acts as preservative in the herbal syrup. This work deals with the preparation of medicated herbal syrup with invert sugar base [10].

Materials and Methods

Herbal syrup is prepared by the method of Decoction extraction. Vinca extract is obtained as a fine extract.

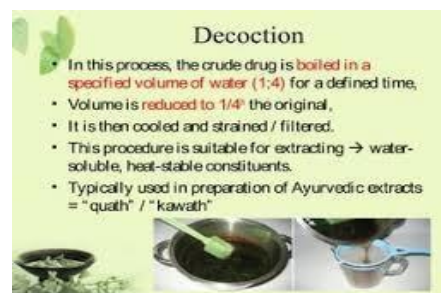


Fig 2: Decoction Extraction

Preparation of Vinca Extract

100gm of healthy vinca leaves are collected from the fresh vinca plant. Dried in the air for 3days and powdered them, after that 60gm of powder is obtained. The extract was prepared with an ethanol, extracted to obtain ethanol-specific active ingredients by the Soxhlet extraction method. Furthermore the extract was filtered, and the extracts of the quantities used as shown in the table was used to prepare formulation on the laboratory scale, this are further mixed with invert syrup to obtain 80ml of medicated syrup of vinca extract. Suitable dyes, flavoring agents were added to it. This resulting syrup were added to an amber colored bottle, tightly closed and placed in a cool, dry place. Table 1 give the final formulation prepared on the laboratory Scale.



Fig 3: Soxhlet Extraction Process

Formula for Herbal Medicated Syrup

Following ingredients used in formulation

Table 1: Role of ingredients in herbal syrup:

S.No	Ingredients	purpose	Quantity
1.	Vinca extract	Anti-cancer	40ml 10ml 30ml 15ml 5ml
2.	Orange oil	Flavoring agent	
3.	Invert sugar	Preservative	
4.	Alcohol	Preservative	
5.	Amaranth red	Coloring agent	

1. Vinca Extract

It is used in various herbal and Ayurveda treatment of cancer. The Soxhlet extracted alcoholic extract was obtained which was further filtered and used.



Fig 4: Obtained vinca extract

2. Orange oil

It consist of fruit of plant citrus aurantium. It contains not less than 2.5% of volatile oil .There are so may antioxidants in orange oil and also we can use other oils also.

3. Alcohol

It uses in small quantity act as preservative.

4. Invert Sugar Base

It was by mixing 1 cups (240ml) of Water with 2.2 cups (1/2 kg) of granulated sugar and ½ Tea Spoon of lemon juice in a pot. The mixture was boiled in medium heat until it reaches to 57°C, Stirring Occasionally. Remove the mixture from the heat, cover and let it cool.

Formulation of final medicated herbal syrup

To Prepare final Herbal Syrup 40ml of Vinca extract, 10ml of Orange oil,15ml of alcohol and 5ml of amaranth red was added to 30ml of invert sugar base, were mixed slowly by Subsequent stirring. The 100ml of final Herbal syrup wasprepared and evaluated. The Prepared medicated Herbal Syrup was evaluated for Color, Odor, Taste, PH, Density, Specific gravity, Viscosity and Solubility.

I. Density:

It was evaluated by given formula, Formula for density: Density of liquid under test (syrup) =weight of the liquid under test/volume of liquid under test (w3/v).



Fig 5: Density meter

II. Specific gravity

Specific gravity was evaluated by the formula is given below

Specific gravity of liquid under Test (syrup) = weight of liquid under test/weight of water=w5/w4.



Fig 6: Specific gravity by pycnometer

III. Viscosity

Viscosity was determined using the following formula
Viscosity=Density of test liquid*time required to flow test liquid/Density of water *time required to flow water=viscosity of water.



Fig 7: Viscometer

IV.PH

PH was determined on pH meter.

The evaluated parameters of the final extract have noted in Table-2.

V. Solubility

Herbal syrup was prepared, and solubility was checking by observing clarity of solution visually and passing it after filtration through proper medium. The syrup was lustrous and clear.

Stability testing

Stability Testing of the prepared herbal syrup was performed on keeping the sample at accelerated temperature conditions .Nine portions of the final herbal syrup was taken kept thawed at accelerated temperature at 4c and Room temperature further to47crespectively.Thesamplewere tested for all the physicochemical parameters, turbidity, sand homogeneity at theintervalof24hr48hrand72hr to observe any change.

Results and Discussion

Final formulation which is obtained as a stable form and readily prepared and ready for industries to make the similar formulation on large scale. It is also ready for technology transfer which is adapted by researchers as well as industries. Vinca alkaloids are often used in combination with other anti-cancer drugs. However combining vinca alkaloids with cytostatic drugs can reduce cell death. The PH of the vinca extract (herbal syrup) is 7.5 is measured by PH meter, and neutral is measured by PH paper. Vinca extract exhibit a significant anti-Oxidant & also anti-inflammatory activity Vinca extract contains Various phyto chemical Compounds like alkaloids, glycosides & phenolic Compounds, these phytochemical Compounds plays a vital role in destroying cancer cells. Vinca extract shows activity against Various bacterial & fungal Strains. Due to presence of bio-active compounds, anti-microbial activity & anti-oxidant in the vinca extract Syrup suggest that potential of Vinca extract syrup as a natural remedy for conditions. The density, specific gravity, viscosity and organoleptic parameters are evaluated. Vinca extract acts as an anti-cancer agent. Orange oil, invert sugar base, alcohol, amaranth red acts as excipients

Table 2: Evaluation parameters for herbal medicated syrup of vinca extract (Final Formulation)

Roll no	Parameters	F1
1.	Density Specific gravity	1.60kg/m ³ 0.6200 3.95cps Neutral 7.02
2.	Viscosity	
3.	pH Determination	
4.	pH paper	
5.	pH meter Organoleptic parameters	Reddish Aromatic Sweet Clear
	1. Color	
	2. Odor	
	3. Taste	
	4. Appearance	

Conclusion

The Formulated and Evaluated medicated Herbal Syrup of vinca extract is much useful for treating various cancer conditions. This Herbal Syrup can be Formulated in Large Scale Industries. Vinca alkaloids are one of the microtubule targeting agents to be produced and certified for the treatment of hematological and lymphatic neoplasms. Vinca alkaloids have been generally included in combination chemotherapy regimes for medicinal therapies. They do not have cross resistance with drugs that alkylate DNA and have a different mechanism of action. Vincristine works by stopping the cancer cells from separating into two new cells so it stops the growth of the cancer.

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Conflict of Interest

No Conflict of interest

Informed Consent

Not Applicable.

Ethical Statement

Not Applicable.

Author Contribution

All authors are contributed equally.

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