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Formulation and Evaluation of Herbal Vati for the Treatment of Dengue Fever

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ABSTRACT: Herbal Papaya Carica Uses Antimicrobial, anti-inflammatory Vati (Tablets) are used as expression and are prepared by using excerpts i.e., Carica papaya and Embelica officinalis. These vati were prepared this composition the excerpt of leaves of Carica papaya and fruits of Papaya were used for making herbal Vati. Excerpts of leaves of Carica papaya was attained by cold birth and through maceration system and the excerpt of fruits of Amla was attained by maceration process. Both excerpts were dried and mixed. These excerpts were also saturated with the excipients like diluents, binding agents, super disintegrating agent, lubricants, etc. to make grain. Also it is rich in minerals matters like phosphorus, iron and calcium. Amla is used as an Immuno modulatory agent and hence enhance the immunity of the patient. Aim of the study is to design develop and optimize the dosage form to cure dengue and is based on the use of natural plant ingredients to intermingle with chemical as well as synthetic ingredients to develop an effective unit dosage forms for better patient compliance.

KEYWORDS: Carica Papaya, Amla, Giloy, Ginger, Jaggery, Herbal Vati Dengue Fever Platelets count

I. INTRODUCTION

Dengue the virus also known as arbo virus, is a member of the genus flavivirus and family flaviviridae. Every continent on the planet has been impacted by dengue-related illnesses, with the exception of Antarctica. Currently, dengue is a problem in over 120 countries, and 2.5 billion people worldwide might contract the sickness. In some of the places, the disease has attained Dengue fever is caused by an arthropod-borne virus called dengue virus the state of endemic inducing significant health complication in the population. Dengue hemorrhagic fever (DHF), the most serious kind of illness, is caused by dengue fever. Sometimes, however, dengue fever leads to a potentially fatal complication, also known as dengue shock syndrome (DSS). The clinical presentation in both adults and children varies and is dependent upon the severity of the infection, immune status, age as well as genetic background. (DENV) which includes a total of four serotypes i.e., DEN-1, DEN-2, DEN-3, DEN-4

Medicinal plants are widely distributed throughout the world but most abundantly in tropical countries. It is a mosquito-borne disease affected by infection of any antigenically distinct dengue virus serotypes, belonging from Flavivirus genus as well as Flaviviridae family, contain with single positive stranded RNA viruses. It is estimated that about 25% of all modern medicines are directly or indirectly derived from higher plants. Thus, herbal medicine has led to the discovery of a number of new drugs, and non-drug substances. To achieve the desired benefit from herbal preparations, an individual must take the required dose over a certain length of time. Although it is generally believed that most herbal preparations are safe for consumption, some herbs like most biologically active substances could be toxic with undesirable side effects more than 125 countries in tropical and subtropical regions and causes an estimated 390 million infections annually worldwide, of which 96 million are clinically apparent.

II. DRUG FORMULATION

2.1 Carica Papaya: Carica papaya belongs to the fruits and vegetables class of family Caricaceae. The fruit are popularly used as desert or processed into Jam, puree or wine, while the green fruits are cooked as vegetable. Carica papaya leaf (CPL) is used as food or as medication in folk medicine. Traditionally, the leaf extract was used as a tonic for the heart, analgesia and treatment for stomach ache. The extract is also known to have antioxidant properties but there are no scientific data reported on the protective effect of this extract on alcohol induced acute gastric damage. Many benefits including protection against heart disease reduced inflammation aid in digestion and boosting your



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immune system Carica Papaya Treatment of fever pyrexia diabetes gonorrhea syphilis inflammation and as dressing for four wounds



Carica papaya leaf

2.2 Giloy: (*Tinospora cordifolia*) the idea that giloy can considerably raise platelet counts supported by some scientific evidence but this evidence is scant. giloy juice helps To improve immunity and can be used to manage fevers due to its anti pyretic activity if Giloy is used in management dengue fever it has anti inflammatory and anti pyretic that reduce of fever properties regular intake Giloy during dengue the immune system help in increasing platelet count and recovery **Family** Menispermaceae moonseed **Colour** Green colour Bright green Yellowish **Odour** mild earthy and slightly bitter odor **Taste** Bitter taste **Size** 1-3 cm Leaf

2.3 Amla: (*Emblica Officinalis*) It is fresh as well as dried fruits of the plant *Emblica officinalis* or *Phyllanthus emblica* belonging to while amla vitamin c iron and calcium immunity aiding the body fight It may be due to the presence of tannins, which retards oxidation of vitamin C. Amla fruits are largely used in Indian medicine. It is used as an acid, diuretics, refrigerant, laxative, diarrheas and dysentery. It is a popular ingredient of 'Triphala' and 'Chyawanprash'.⁹ The anti-inflammatory response of *E. Officinalis* extract has been well established and predicted mechanism for synovial hyperplasia **family** Euphorbiaceae. **Colour:** Green color changes to light yellow or brick red at maturity **Odour:** Odour less Taste: Sore and Astringent **Size:** Average size is between 1.5 and 2.5 cm in diameter Shape: Depressed and Globular



2.4 Ginger (*Zingiber Officinale* Roscoe) Ginger is a flowering plant whose rhizome ginger is root is widely used as a spice and a folk medicinal Ginger is in family zingiberaceae it is a herbaceous perennial which grows annual pseudo stems (false stems made of the rolled bases of leaves) about one meter tall bearing narrow leaf blades the inflorescences bear on separate shoots **Family** zingiber officinal **Colour** root outer skin or shades found in spectrum and light copper to auburn tones **Odour** warm spicy and slightly citrusy gingerly shoal and sweeter is zinger one Size height typically grows between 2 to 4 feet (60 to 120)



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2.5 Jaggery God (Saccharin Officinarum)) This has been found to alleviate dengue fever. Its antioxidant properties help boost the immune system, which is essential for fighting infections like dengue. Jaggery helps in flushing out toxins from the body, which can be helpful during

III. POWDER

Fine powder all the herbal drugs shows epidermis with uniformly thickened straight walled isodiametric parenchyma cells with irregular thickened walls, occasionally short fibers and tracheids.

IV. PRECOMPRESSION PARAMETER OF POWDER

4.1 Angle of Repose: Powder is poured from a funnel onto a horizontal surface; it will form a cone due to gravitational forces. The angle between the sides of the cone and the horizontal is referred to as the angle of repose. The angle of repose is a relatively simple Formula.

$$\text{Angle of Repose} = \text{Height/Radius}$$

4.2 Bulk Density : This is obtained to know the exact volume of the powder that is being placed in the cylinder. Initials are used in the formula. Bulk density is also known as the fluff and poured density and is calculated by using

$$\text{Formula Bulk} = \text{Mass/Volume}$$

4.3 Tapped Density: It is obtained with the help of tap density apparatus, in which the powder is filled in the cylinders and the tapping is done. After few times of intervals the volume of the cylinder is noted down and the tapped density of the Powder is calculated using following formula:

$$\text{Tapped density} = \text{Weight of granules (W)} / \text{Volume of granules after 50 taps (V50)}$$

4.4 Carr's Index: After obtaining the tapped and fluff density, the Carr's Index is being calculated by using 100ml measuring cylinder and calculated.

4.5 Void Volume This volume of the powder is obtained by using the values of bulk volume and tapped density. This will indicate the air volumes that is being created in the powder during tapping

Phytochemical analysis of papaya extract

Test for alkaloids 2-3 drops of Dragendoff's reagent was reacted in the test tube containing 0.1 ml of crude papaya extract. The presence of alkaloids was indicated by appearance of an orange red precipitate with turbidity

Test for flavonoids Test for flavonoids 4 mg/ml of papaya extract was taken in a test tube in which a piece magnesium ribbon was added. Then gradual drop of concentrated HCl was added to the test tube led to change in color from orange to red and then red to

Test for glycosides 1 ml of papaya extract filtrate was taken in which 10 ml of 50% H₂SO₄ was added and the mixture was heated for 15 minutes. 10 ml of

V. MATERIALS AND METHODS

5.1 Material used Plants used are locally cultivated Papaya (Carica papaya) and Amla (Emblica Officinalis) Giloy (Tinospora cordifolia) Ginger (Zingiber Officinale Roscoe) Jaggery (gud) and authenticated in own laboratory. Lactose, Starch, Magnesium Stearate, Talc, Methyl Parabens, Mannitol, Sucrose, Sodium Starch Glycolate, Ethanol were procured from sigma Aldrich. Vanillin, Calcium Carbonate, Sodium Carbonate and Sodium Saccharin were procured by CDH, chemicals. All other ingredients are of analytical grade parenchyma cells with irregular thickened walls, occasionally short fibers and tracheids

5.2 METHODS

The collected green Carica papaya leaves were washed with distilled water from which 50 grams of the leaves were crushed and grounded in a blender using 200 ml of distilled water in order to obtain the juice from the fresh leaves. An aqueous extract of Carica Papaya was prepared with 100% distilled water by adding 50g of fresh cut leaves in to 200



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ml of distilled water. The mixture was kept in the room temperature for two days. At the end of the first day the water containing the extract was filtered and collected, then it was resuspended with 200ml fresh distilled water and the maceration was continued again for the next day. Finally both extracts were combined

Concentration of Extract The mixture was heated at 50-60° C for 48 hours. The procedure involves simple decoction process of the aqueous extract from which the soluble compounds further heated at a higher temperature 70-75°C for 3 hours until the solvent gets evaporated completely. Temperature was maintained to avoid the charring of the product. The obtained dry product was weighed and the yield .

Types of Vati

There are two types of Vati :-

Agnisandhya Vati: This vati is prepared over a fire. Here, the sugar is heated to a high concentration and combined with additional powdered materials to resemble thick glue. The mixture is then moulded into a sphere.

Anagnisandhya Vati:- This sort of vati is made without the use of fire by pounding the other powdered components with sugar or guggul in the specified liquid medium until they are the right shape.

Preparation of extracts of Emblica officinalis Procured plant materials Amla pericarp was dried and then coarsely powdered in a blender. The coarse powder 1 kg was subjected to maceration for 72 hours, followed by exhaustive maceration for 48 hours by using solvents 60% ethanol. The solvents was decanted and filtered with filter paper and recovered by distillation with help of rotary vacuum evaporator at 750°C to 800°C. The extracts were dried under desiccator and stored in airtight container at room temperature .

Preparation of Vati

Firstly prepared the dried powder of cariya papaya (papay) Giloy (Tinospora cordifolia), Amla (Emblica Officinalis) Ginger (Zingiber Officinale Roscoe's) pass all the ingredients separately through sieve with mesh no. 85 The powder is homogeneously triturated with jaggery in pestle and mortar and then add sufficient quantity of sol extract as per the general rule of trituration. After it got the properties of pill consistency, it rolled in the form of pills or vati.

Preformulation Studies

A. Organoleptic Properties

State- The formulation was taken in a required container and examined with naked eyes.

Color- The formulation was taken in a container and the color of the preparation was observed with the naked eyes.

Odour- The formulation was taken in a suitable container and the fragrance was observed with the nose.

Texture- The formulation was taken in a required container and rubbed the sample on hand to check the texture.

VI. RESULTS AND DISCUSSION

Results Formulation of vati with Plant extracts: Two batches of tablets were prepared using calcium carbonate, lactose, SSG, starch, mannitol, vallinin, sodium saccharin, magnesium stearate, talc, sodium carbonate, Papaya leaves and Amla fruit extract is used in the preparation of tablets. These are the main ingredients that are used for the manufacturing of Trial batch.





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Table 1: Flow Properties of Vati Churna

S. No.	Flow Properties	F1	F2	F3
1.	Bulk Density	0.415g/ml	0.371g/ml	0.335g/ml
2.	Tapped Density	0.415g/ml	0.370g/ml	0.335g/ml
3.	Angle of Repose	40 ⁰	37 ⁰	36 ⁰
4.	Hausner's Ration	1.33g/m ³	1.35g/m ³	1.44g/m ³
5.	Carr's Index	25.8%	27%	29.9%

Table 2: Organoleptic Properties of formulation

S. No.	Organoleptic properties	F1	F2	F3
1.	State	Solid	Solid	Solid
2.	Colour	Dark Blackish	Dark Blackish	Dark Blackish
3.	Odour	Aromatic	Aromatic	Aromatic
4.	Taste	Pungent	Pungent	Pungent

Table 3 : Formula of Vati

S No	Ingredients	F1	F2	F3
1	Cariya papaya	55mg	50mg	45mg
2	Giloy	50mg	50mg	50mg
3	Amla	50mg	50mg	50mg
4	Ginger	50mg	50mg	50mg
5	Jaggery	200mg	175mg	150mg

B. Hardness Test

The hardness testing is a laboratory technique used by the pharmaceutical industry to determine the breaking point and structural integrity of a tablet or vati and find out how it changes under conditions of storage, transportation, packaging and handling before usage. The breaking point of a tablet is based on its shape. The units of hardness testing are kilograms (kg), Newtons (N), or kiloponds (KP).

C. Friability Test

The Friability testing is used to test the durability of tablets during packing processes and transit. This involves repeatedly dropping a sample of tablets over a fixed time, using a rotating drum with a baffle. In simple words, friability test tells how much mechanical stress tablets are able to withstand during their manufacturing, distribution and handling by the customer. A maximum weight loss of no more than 1% is considered acceptable for most tablets.



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D. Disintegration Test

The disintegration test is used to show how quickly vati breaks down into smaller particles, allowing for a greater surface area and availability of the drug when taken by a patient. The primary purpose of disintegration testers is to measure the amount of time it takes inside a liquid medium. The liquid used in the disintegration tester vessel is often an acidic mixture, designed to replicate the inside of the human body

E. Dissolution Test

Dissolution is the process in which a substance forms a solution. Dissolution testing measures the extent and rate of solution formation from a dosage form, such as tablet, capsule, ointment, etc. The dissolution of a drug is important for its bioavailability and therapeutic effect

F. Stability Test

Sability Testing is the process for determining, through storage at defined conditions and testing at pecific intervals, how long a drug substance or product remains safe and effective at particular age conditions. The formulation was stored in a container and was stored at room temperature Aher I month the formulation was checked for its organoleptic property.

VII. SUMMARY & CONCLUSION

Unusual dengue is proposed to be added to the cover those patients who do not fit with the curren kalpana (Tablet Pills) plays a vital part in Ayurvedic pharmaceutics, owing to various stages such as ease of administration, palatability, suitable form for distributing and gortation, ability to keep the medicine potent for a long time, and fast action. Tablets can be made in a variety of methods, and product performance can be influenced by the formulation's Several tablet pill products have been popular in the pharmaceutical market due to the ailability of varied formulation techniques, atrong patient compliance, and great potential. Newer cientife and technological advancements should also be pursued in onder to provide a promising and versatile dosage form with novel performance and attributes. The development of a vati formulation for dengue fever treatment involves a comprehensive understanding of the disease pathology, traditional medicinal knowledge, and modern pharmaceutical principles. Through meticulous formulation, ingredients with known anti-inflammatory, and Immuno modulatory properties are selected to create a rynergistic blend aimed at alleviating dengue fever symptoms. The evaluation process typically involves preclinical studies to assess salty, efficacy, and dose optimization. This includes in vitro studies to examine the mechanism of action, as well as in vivo experiments on animal models to evaluate therapeutic effects and potential side effects.

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