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## Research Article

# Formulating Papaya Tea Tablets

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### ABSTRACT

Carica papaya is a plant which is widely used in the herbal industry and commonly known as papaya or paw paw. The papaya is a small branch tree usually with the single stem growing from 5 to 10 m tall the leaves are large 52 70 cm in the diameter. This plant contain numerous health benefit included in the cosmetics or in the herbal industry. Write papaya fruit has many medicinal uses it is a digestive aid, stomachic and carminative, diuretic and expectorant. It applications to combat dysentery and chronic diarrhoea, wound of the urinary track ringworm and skin diseases have also cured. Papaya skin pulp and seeds contain variety of phytochemicals including keratinoids and polyphenols as well isothiocyanide with skin and pull please that increase during ripening. In the traditional medicine papaya leaves has been believed useful as a treatment for malaria and abortifacient ,as purgative or smoke to relieve asthma. Leaves of papaya exhibited the strongest antioxidant activity the leaves had 5.58 times higher antioxidant activity than ripe pulp. The leaves of papaya plant are well known to have papain, cystatin, chymopapain, tocopherol, phenolic acids, cyanogenic glucosides, glucosinolates, and vitamin C as main phytochemicals. The present study was conducted to evaluate the anti-oxidants and immuno stimulant effect of the carica-papaya fruit aqueous extract. the safety of papaya leaf consumption is also emphasized in the context of their application in the healthcare sector. This project usually studied about the antioxidant properties of the papaya leaves. The manufacturing of the papaya tea tablet from the leaves are done

### INTRODUCTION

#### THE PLANT :

A plant or plant part utilized for flavour, aroma, or medicinal purposes is called a herb. Herbal supplements are one category of nutritional aids.

They can be purchased as fresh or dried plants, tablets, capsules, powders, teas, and extracts. Herbal remedies are used by people in an effort to preserve or enhance their health.

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**Fig no. 1 Carica Papaya**

**MORPHOLOGY :**

Carica-papaya is a herbaceous succulent plant popularly known as pawpaw, and belongs to the Caricaceae family. The average height is about 5 to 10 m. The leaves of the plant are spirally arranged up to the top stem. Normally, the leaves

are big with oval shape with about 20–28 in. diameter. All parts of the plant contain white latex. All parts of papaya have medicinal values and have been used traditionally for the treatment number of diseases globally. The leaves are spirally arranged in a terminal cluster, simple, on petioles 30-70 cm long.

- HEIGHT : 10-15 feet
- SPREAD : 5-7 feet
- PLANT GROWTH : upright
- GROWTH RATE : fast
- LEAF COLOR : green
- LEAF ARRANGEMENT : alternate
- LEAF SHAPE : star shape
- LEAF BLADE LENGTH : 18-36 inches

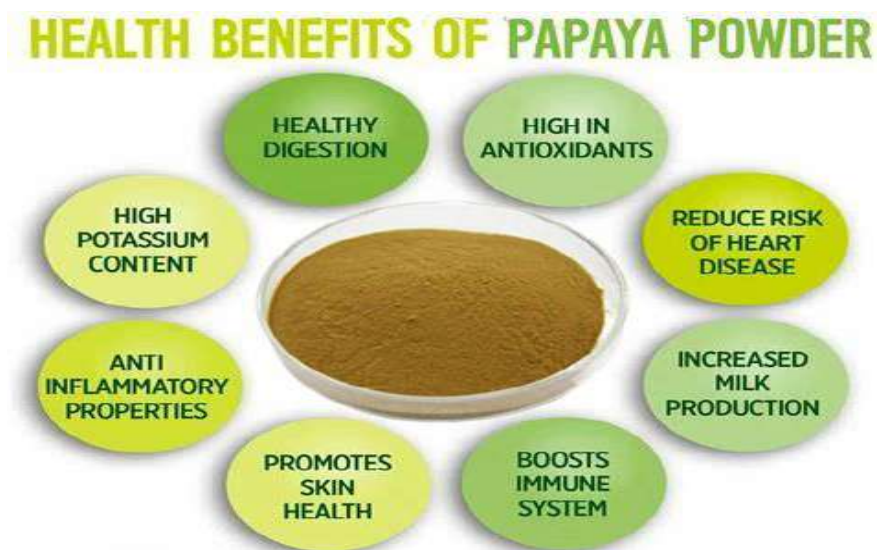
**TABLE 01: Botanical Classification on plant**

Domain	Flowering Plant
Kingdom	Plantae
Sub Kingdom	Tracheobionata
Class	Magnoliopsida
Subclass	Dilleniidae
Super Division	Spermatophyta
Phylum	Streptophyta
Order	Brassicales
Family	Caricaceae
Genus	Carica
Botanical name	Carica papaya Linn.

**BENEFITS OF PLANT :**

C. papaya is tremendously efficient in different types of ailments cure due to availability of wide varieties of phytoconstituents in almost all parts of

plant. Antioxidant activity Free radical causes many chronic health problems. Antioxidants can help us by preventing the formation of free radicals. Symptoms associated with dengue fever.



**CHEMICAL COMPONENTS :**

**TABLE 02 : Phyto-chemical constituents in plant**

Part	Phytoconstituents
Fruits	Protein, fat, carbohydrates, minerals, vitamins, volatile compound, alkaloids, Glycosides
Juice	N-butyric, n-hexanoic and n-octanoic acid, lipid, myristic, palmitic, stearic linoleic, linolenic acid and oBleic acid
Seed	Fatty acid, crude protein, crude fibers, papaiya oil, carpaine, benzyl isothiocyanate, benzylthiourea, $\beta$ -sitosterol, caricin and enzyme myrosin.
Root	Caproside and enzyme myrosine
Leaves	Alkaloids carpain, pseudocarpain and dehydrocarpain 1,2, choline, caproside, vitamin C and E.
Bark	$\beta$ -sitosterol, glucose, fructose, galactose and xylitol.
Latex	Proteolytic enzyme papain, chemopapain, glutamine cyclotransferase, Chymopapain A,B,C, peptidase A and B, lysosome.

**HERBAL TABLETS :**

Herbal teas are widely represented in the traditional medicine of various cultures, due to their health-promoting activities that include anticancer, antimicrobial, antidiabetic, anti-inflammatory and antioxidant properties. Oral solid dosage forms are administered for attaining a local therapeutic effect in the mouth, throat and digestive tract or for a systemic effect in the body after oral or gastrointestinal absorption. Herbal medicines are those with active ingredients made from plant parts, such as leaves, roots or flowers.

But being "natural" doesn't necessarily mean they're safe for you to take.

**EXCIPIENTS USE IN FORMULATION OF HERBAL TABLET**

Natural-origin excipients are of particular interest to us for reasons of reliability and avoid reliance on fossil-derived materials. Excipients are mainly classified according to their application and function in the drug products: -

- **BINDER:**

Binders are added to the tablet formulation to impart plasticity as well as increases inter-particulate bonding strength in the tablet.

• **FLAVORING AGENT:**

These are flavouring agents that are derived from natural sources such as plants, fruits, and vegetables.

• **SWEETNERS :**

The traditional sweetening agent used in the food industry is sucrose, usually produced from sugar beet and sugar cane. Licorice root, also known

as sweet root, is known mostly for its use as a sweetener in candies and beverages.

• **FILLERS AND DILUENTS:**

Diluents and fillers are a ubiquitous class of materials in formulated products, including pharmaceuticals, nutraceuticals, cosmetics and industrial goods. Fillers, also known as bulking agents or excipients, are inert substances added to pharmaceutical formulations to increase the bulk or volume of the final product.

**TABLE 03 : INGREDIENTS USED**

Sr no.	Name of ingredient	Role of ingredient
1	Carica papaya leaves powder	API
2	Liquorice	Sweetners
3	Lemongrass	Flavouring agent
4	Rice starch	Binder

**STUDY OF THE FORMULATION**

- The preparation tea tablet from carrica papaya was the study’s primary goal.
- We us the direct compression method by wet granulation of papaya leaf powder with some excipients.
- The tea flavoured formulation tablets provide benefits of papaya with instant tea for various treatment purpose. Formulating the tablet form of papaya extract provide the proper proportion of dosage and easy and fascinate the formulation for use.
- The leaves of papaya contains papain, cystatin, chymopapain, tocopherol, phenolic acids, cyanogenic glucosides, glucosinolates, and vitamin C as main phytochemicals.



**Fig.03 Papaya tea**

**TABLET MANUFACTURING TECHNIQUES**

**Wet granulation:**

Wet granulation is a process of using a liquid binder to lightly agglomerate the powder mixture. The amount of liquid required to be properly adjusted, as over-wetting will cause the granules to be too hard and under-wetting will cause them to be too soft and friable.

**Dry granulation :**

Dry granulation requires drugs or excipients with cohesive properties. Dry granulation is simpler than wet granulation, therefore the cost is reduced.

The direct compression method is by far the most effective technique of tablet manufacturing. This technique is least tedious and hence is preferred over the other techniques.

**Direct compression:**

**Table 04 : Steps Of Tablet Manufacturing**

**PROCESSES :-**

Wet granulation	Milling and mixing of drugs and excipients. Preparation of binder solution. Wet massing by addition of binder solution or granulating solvent. Screening of wet mass followed by drying of the wet granules. Screening of dry granules. Blending with lubricant and disintegrant to produce running powder, Compression of tablet
Dry granulation	Milling and mixing of drugs and excipients, Compression into slugs or roll compaction, Milling and screening of slugs and compacted powder, Mixing with lubricant and disintegrant, Compression of tablet
Direct compression	Milling and mixing of drugs and excipients, Compression of tablet

**EVALUATION TEST FOR TABLET**

- Appearance
- Size and Shape
- Organoleptic properties
- Uniformity of thickness
- Hardness
- Friability
- Wetting time





**DRUG AND EXCIPIENTS**  
**DRUG PROFILE**



**Fig.05** Leaf image

Carica papaya

**BIOLOGICAL SOURCE :**

Leaves obtained from herbaceous plant of carica papaya.

**FAMILY :**

caricaceae

**Uses :**

1. antimalarial
2. antibacterial
3. Immunobooster anti-oxidant
4. improve digestion
5. aids in cancer treatment

**SYNONYMS**

- a. Pawpaw
- b. Papita
- c. Carica papaya
- d. Tree melon

**BIOLOGICAL NAME :**



## EXPERIMENTAL WORK



### PROCEDURE

#### AUTHENTICATION OF PLANT:-

##### Collection of plant specimen:

The plant of carica papaya specimen collected and authenticate. Plant authentication is the process of identifying a plant species. This is important in research, because it helps to ensure that experiments are conducted using the correct plant species.

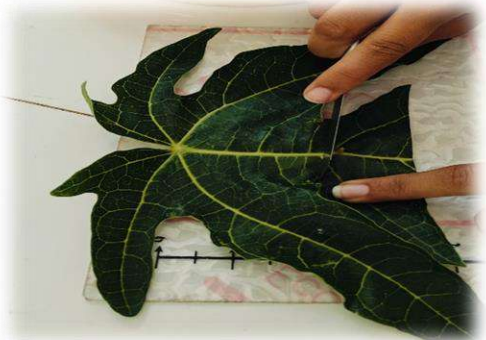


Fig.11 Authentication sample

#### PLANT COLLECTION:-

The fresh green leaves of carica papaya were collected. Then washed with water and cut in

pieces. Further dried in sun rays and make sure they are completely dried. The leaves must be fresh and dark green in colour not yellow and dried.



**Fig.12 leaves collection and cutting**

**FINE POWDER:-**

The dried collected leaves were converted into fine smooth powder. With the help of mortar and pestle. papaya leaves powder in light olive-green colour with soft and fine clay like texture.



**Fig.13 Fine powder**

**EXCIPIENTS**

1. RICE STARCH
2. LIQUORICE
3. LEAMON GRASS

Accurately weighing all the ingredients.

**WET GRANULATION**

1. Mixing all the ingredients in proper proportion in mortar and pestle. Add papaya powder + liquorice + leamon grass powder in mortar and pestle and mix it well.
2. Add starch in water and make solution. Add the solution in all powder mixture and make moist powder form. With the help of wet starch solution, the binding of tablet will be proper. Set the power well mixed and dry.
3. The dried granulated powder form is pass through sieve(no:60) giving fine texture for punching of tablet.

**PUNCHING:-**

**Cleaning tablet punching machine.**

Filling the formulation powder into cavity(two punches and a die).Punches must be pressed together with great force to fuse the material together. Finally, tablet is formed by the combined pressing action of two punches and a die.





**Fig.14 Filling and punching**



**Fig.15 Compressed Tablet**



**Fig.16 Tea**

**FORMULATION :-**

All following ingredients are in mg quantity for 350mg of each tablet.

**TABLET 05: FORMULATION TABLE**

INGREDIENTS	F1	F2	F3
Carica papaya leaf powder	220	220	220
Liquorice	65	72	72
Rice starch	20	22	22.5
Leamon grass powder	35	30	30
Leamon grass oil	—	0.5	0.5
Water	Qs	q.s	q.s

**EVALUATION**

**TABLE 06: EVALUATION TABLE**

PARAMETER	F1	F2	F3
Thickness (mm)	4	4	4
Hardness (Kg/cm <sup>2</sup> )	6.2	6.3	6.1
Friability(%)	0.3	0.2	0.2
Wetting time (s)	4-5	5-7	5-6
Dissolution time (min)	5	6.5	6.5

**RESULT****TABLE 07: PHYSICAL CHARACTERISTICS**

Sr.no	Parameter	observation
1	Colour	Light olive green
2	odour	Aromatic Lemon grass
3	Taste	Light bitter and sweeter

**SUMMARY AND CONCLUSION:****SUMMARY:****Papaya Leaves Tea Tablets :**

The tea tablets prepared from the papaya leaves is a herbal formulation. Which is made up from the fresh green leaves of carica papaya. It is a solid dosage form containing the papaya as an API and other beneficial excipients like lemongrass and liquorice. Rice starch is used as a binding agent with helps to rice starch is used as a binding agent in formulation. Wet granulation technique is used to formulate the tablets with the help of direct compression. Papaya is a pharmacologically active compound with antioxidant properties. This formulation gives the new way to consume the papaya leaves with flavours and daily tea ways.

The expense used in a formulation also give the beneficial therapeutic results like from the lemongrass and liquorice. Evolution of tablets such as hardness test, dissolution, friability and physical characteristics. Purpose of this formulation study is to give the benefits of papaya in the form of tablets which are consumed as a daily tea with some flavour. Papaya leaf teas and extracts are often used as an alternative therapy to elevated uncomfortable digestive symptoms such as gas, bloating and heatburn with it in a cancer treatment and hair growth. The study was done to formulated tablets containing the papaya leaf used as tea.

**CONCLUSION:**

This work concludes that the preparation of tea tablets from the papaya provides the beneficial .

The evolution test and the formulation study provide the significance of therapeutic value. Through our preparation process which successfully encapsulated the beneficial compounds of papaya into the convenient tablet form. Additionally, the initial observation suggests the potential digestive health benefits due to the presence of papain enzyme. Over all our formulation make the easy way to consume the papaya leaves, rather than traditional ways of taking a bitter juice of papaya leaves, enhancing the test of formulation with the help of excipients and giving the touch of tea flavour with the help of lemongrass. The consumption of our formulation is like drinking daily tea with benefits. Papaya leaf tea is rapidly gaining prominence in a world of nutrition to pack incredible health benefits. Papaya leaf herbal tea contains large amounts of vitamins A, C, E, K and B and minerals such as calcium, magnesium, sodium magnesium and iron. Papaya leaf tea is also rich in protein and amylase. They help break down proteins, carbohydrates and minerals helping digestion. Its high anti-inflammatory properties also reduce inflammation of the stomach. Our studied conclude the preparation, evaluation and formulation of a slightly novel oral dosage form with some modern ways to intake the drug.

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