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Standardization And Development of Papaya (Carica Papaya) Jam

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ABSTRACT: Papaya (*Carica papaya* L.) is a common and economically important fruit tree of tropical and subtropical countries. The fruit is used up world-wide as fresh fruit and as a vegetable or used as processed products. An account of the dietary and nutritional composition of papaya, how these differ with culture methods, and secondary metabolites, both beneficial and harmful, and those having therapeutic applications, are discussed. Papaya jam sounds like a delightful and unique treat. It's not a very common type of jam, but it sounds fascinating. To prepare papaya jam, you'd typically start by strident or mashing ripe papaya pulp. Then, cook it down with sugar, ghee (clarified butter), and probably some milk powder or condensed milk to thicken it. Flavorings like cardamom powder or saffron can improve a lovely aroma and taste. Once the mixture thickens and starts to consent the sides of the pan, you'd transfer it into a greased tray, flatten it, and let it set. After it cools, you can cut it into squares or shapes and enjoy your homemade papaya jam. During analysis of papaya jam we were found that Fiber 2.2gm, protein 0.11gm, Sugar 27.35gm, Vit C 70 Mg, Vit B1 0.01mg, Vit B2 0.02mg, Vit B6 0.12mg.

KEYWORDS: Papaya, Jam, secondary metabolites, Medicinal applications

I. INTRODUCTION

Papaya (*Carica papaya*) is a tropical fruit having profitable importance because of its high nutritive and medicinal value. Papaya cultivation had its origin in south Mexico and Costa Rica. Total annual world production is projected at 6 million. Tennes of fruit. India leads the world in papaya production with an yearly output of about 3 million tonnes. Other important producers are Brazil, Mexico, Nigeria, Indonesia, China, Peru, Thailand and Philippines. The papaya is a slight, sparsely branched tree, typically with a single stem growing from 5 to 10 m (16 to 33 ft) tall, with spirally settled leaves confined to the top of the trunk. The lower trunk is conspicuously blemished where leaves and fruit where borne. The papaya a formerly exotic and rare fruit, is now available at most times of the year.

The possible health benefits of overwhelming papaya include a reduced risk of heart disease, diabetes, cancer, in digestion enlightening blood glucose control in people with diabetes lowering blood pressure and improving wound healing. Papaya are a soft, freshy fruit that can be used in a extensive variety of culinary ways. Here we will explore more on the health benefits use how to include more of them into diet and nutritional value. papaya are fruit that retell us of the tropics the regions of the world in which they are grown once considered an exotic fruit, papaya increase in popularity has made them much more available.



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Papaya are round or pear-shaped fruit that can be as long as 20 inches. The ones normally found in the market usually average about 1 inches and weight about one pound. Their flesh is a vibrant range color with either yellow or pink hues.

Papaya has a wonderfully soft, butter like consistency and a tastily sweet, musky taste. Inside the inner cavity of the fruit are black round seeds encased in a gelatinous similar substance. Papayas seeds are edible, although their peppery flavor is little bit bitter. The fruit as well as the other part of the papaya tree have papain an enzyme that. Helps digest protein. this enzyme is specially concentrated in the fruit when it is unripe pepsin is extracted to create digestive enzyme dietary supple. Meats and is also used as on ingredient in nearly chewing gums.

TYPE OF PAPAYA

1. Kamiah papaya
2. Mexican papaya
3. Mexican yellow
4. Solo
5. Kalaheo papaya
6. Sunrise and sunset papaya
7. Vista solo
8. Walmanalo

Kamiah papaya:

The Kamiah papaya is unique of the cultivars of papayas. This medium sized fruit covers orange flesh, thin rind, mild, delicate aroma, smooth texture, and high sugar content. This papaya is round in form than most of other papayas, because as it contains more flesh in it. The ripeness of this papaya does not be contingent on the color of the skin. This can be determined when the skin of this fruit yield to the pressure exerted by the finger. This thoughtful of papaya is more resistant to viruses, cutting the costs of the farmers.



Mexican red :

The Mexican red papaya is reddish to red-orange in color, and it is actual sweet in nature. This papaya sweeter and greter than the Hawaiian variety. This type of plant will produce only in the sunlight, and also the tree requires a well drained soil. The fruit is quite extended in shape. The ripeness of this papaya does not be contingent on the color of the skin. This can be forecast when the skin of this fruit yield to the pressure exerted by the finger. This fruit also comprise much flush in it. A rose-fles hed papaya that is brighter in flavor than Mexican Yellow.



HEALTH BENEFIT OF PAPAYA

1. **Lower cholesterol :** Papaya is ironic in fibre, Vitamin C and antioxidants which inhibit cholesterol build up in your arteries. Too much cholesterol build-up can lead to numerous heart diseases including heart attack and hypertension.
2. **Helps in weight loss :** Those looking to lose weight essential include papaya in their diet as it is very little in calories. The fibre content in papaya leaves you feeling full and also disperses your bowel movement making your weight loss regime easier.

- 3. Boosts your immunity :** Your immunity system acts as a shield against numerous infections that can make you really sick. A single papaya covers more than 200% of your daily requirement of Vitamin C, making it great for your immunity.
- 4. Good for diabetics :** Papaya is an outstanding food option for diabetics as it has a low-sugar content even though it is sweet to taste. Also, people who don't have diabetes can eat papaya to avoid it from happening.
- 5. Great for your eyes :** Papaya is ironic in Vitamin A which helps defend your vision from degenerating. Nobody wants to misplace their ability to see due to diseases like age-related macular degeneration, and eating papayas will confirm that you do not see a day where you cannot see.
- 6. Protects against arthritis :** Arthritis can be a actually debilitating disease and people who have it may treasure their quality of life reduced significantly. Eating papayas are worthy for your bones as they have anti-inflammatory properties along with Vitamin C which helps in keeping numerous forms of arthritis at bay.
- 7. Improves digestion :** In today's times, it is near unbearable to avoid eating foods that are bad for your digestive system. Often we find ourselves eating junk food or restaurant food prepared in extreme quantities of oil. Eating a papaya daily can make up for such infrequent mistakes, as it has a digestive enzyme known as papain along with fibre which helps increase your digestive health.
- 8. Helps ease menstrual pain :** Women who are suffering menstrual pain should help themselves to several servings of papaya, as an enzyme named papain helps in regulating and easing flow during menstrual periods.

II. MATERIALS AND METHODS

MATERIAL USED

- PECTIN
- CYTRIC ACID
- SUGAR
- PAPAYA
- ALOE VERA
- APPLE

METHOD

Method of preparation of papaya jam

Flow sheet papaya Jam

Selection of ripe fruit (papaya/Aloe Vera)

↓
Washing

↓
Peeling

↓
Pulping (Removal of seeds)

↓
Addition of sugar syrup

↓
Boiling with agitation
(With continuous stirring)

↓
Addition of citric acid & pectin

↓
Judging of end point

↓
Filling in hot sterilized bottler

↓
Cooling

↓
Capping

↓
Storage
(at ambient temperature)

1. Selection of Fruit :-

The Fruit papaya and Aloe Vera for process of fruit preserves should be unconditionally fresh. Selected fruit ripe and uniformly material completed ripe and unripe fruit should be rejected. Fruit papaya & Aloe Vera should be free from any dirt, dust, soil, insect damage also conveying in injury. Fruit papaya should be firm, fully ripe and should have a thin brown skin & soft green flesh color. Aloe Vera should be ripened and have a green colour

2. Washing :-

Washing is the important to detached dust particles from fruit papaya & Aloe Vera. 1 gram of soil contains 10^{12} spores of microorganism. Therefore removal of microorganisms from the surface of fruit and Aloe Vera. Before you start washing of fruit initial wash your hands with hot water and soap for at least 20 sec before and after handling . Fruits are also washed by soaking in water having chlorine about 20-25 ppm parts per million) they can also be washed by spores water or by steam washing.

3. Peeling:-

The rudimentary objective of peeling is to removed outer layer of fruit skin. Peeling can be done with different faces

- 1) Hand peeling in this case fruit (Papaya) & Aloe Vera can skinned by using hand
- 2) Steam peeling :- also we can use steam peeling of fruit (Kiwi) Peel the Aloe Vera leaves by expending a vegetable peeler to peel away the green the green portion of the leaves.

Be sure to cut over the inner white layer to the gel underneath. peels off all of the skin on once side of each leaf. leaving a can shaped half filled with gel.

- If you have big leaves it may be helpful to cut them into smaller pieces before peeling.
- Discard the green skin as you go so it won't get diverse in with gel.

1. Pulping :-

After peeling process the fruit (Papaya) & Aloe Vera are cut into small pieces for pulping. For creation pulp select the cut pieces of Aloe Vera and kiwi. Place in a pot/ utensil and crushing them by using spoon or bottom of glass. Also fruit pulping machine is used for creating the fruit pulp. The Fruit pulping machine is appropriate for extraction of pulp from fruits such as Mango, peaches, tomatoes, bananas, draw berries and celeries etc.

2. Addition of sugar syrup

After the pulping procedure next addition of Sugar Syrup in the fruit (Papaya) & Aloe Vera Pulp and mix fine Addition of sugar syrup has several functions in jam. It does additional than give a sweet flavor. At the great concentration used. It "blinds" water As a result pectin precipitates out of solution to form on , a gel in addition. Sugar turns as a preservative by "tying up" water so that most micro organism cannot grow.

3. Boiling :-

Place a pan on a little heat As the Fruit pulp heats through a glorious Fresh warm small will fill in air prolong heating gently until a very gentle boil is reached.

4. Addition of citric acid & pectin.

At the stage of boiling the citric acid and pectin are added and stirring constant Acid. Acid is essential to form the gel in same jams. Additional acids are requested for a suitable set Lemon Juice is an example of an added acid. To set properly Jam essentials the correct proportion of acid. acid affects the colour of the final jam, creating it brighter and cuts sweetness so the jam tastes more of the fruit than sugar.

5. Judging of end point:-

Boiling of jam should not be long period or time since excessive boiling resulting destruction of pectin and inversion sugar. If a jam is cooked for extend period of time it become gummy sticky, syrup and deteriorate in colour and Flavor the end point of boiling can be judged by following tests.

6. Filling in hot sterilize Bottles

Before filling hot in bottles initially we have to do sterilize the bottles. Sterilizing just means a really good clean hygienically cleans the jar of bottles. There are the diverse ways of sterilize jars & bottles but they are all incredibly easy. It is important to recall that whatever method you decide to go with, you should never put plastic or rubber lid in the oven, boiling water of rubber lids in the oven.



7. Cooling

After the filling procedure, jam should be cooled as fast as probable without the breaking the glass. This outcomes in the brighter colour and the fresher flavor of the product. The process of cooling is done by using water spray in cold water on the jar. Cool the jars at room temperature for 12 to 24 minutes.

8. Storage :-

Store jam in a cool, dray and dark room at an ambient room temperature. The keeping quality of jam, is basically determined by the set and the correct proportion of sugar. But even with great sugar proportion jam may go moldy if kept in a damp store. The type of cover used those is also an essential factor. A waxed disc pressed consistently on the surface of the jam while still hot certainly avoids mould growth to a large extent and even if mould develops it rarely penetrates through the paper into the jam.

III. RESULTS AND DISCUSSION

- 1) Aloe Vera =10gm
- 2) Papaya =90gm
- Total =100gm

Fruit content

100 gm of Jam 45% Fruit content
 10gm of Aloe Vera =4.5gm
 90gm of Papaya =40.5gm
 Mixture Papaya + Aloe Vera =10.9⁰Brick

Sugar to be added = T.S. – Sugar in pulp
 = 68- 10.9
 = 57.1 gm

Amount of Sugar Syrup = T.S x1.3836
 = 57.1x1.3836
 =79.00gm

100gm of Sugar Syrup =0.25gm C.A.
 79 gm of Sugar syrup = 0.1975 gm /C.A.

Acid

Acidity =2.4x0.1x0.0064x100
 =0.1536gm

Acid to be added = Total acid - acid in pulp - acid in sugar
 =0.65 - 0.1536 - 0.19
 = 0.3064 gm

Pectin :- **0.68gm**

Proximate Analysis		
100gm Jam		
Energy	-	173/41.3 KJ/Kcal
Water	-	31%
Fiber	-	2.2gm
Fat	-	0
protein	-	0.11
Sugar	-	27.35gm
Vit A	-	5Ug
Vit C	-	70 Mg



Vitem B1	-	0.01mg
Vit B2	-	0.02mg
Vit B6	-	0.12mg
Vit EF	-	1.9mg

IV. CONCLUSION

The current investigation entitled “STANDARDIZATION AND DEVELOPMENT OF PAPAYA (*Carica papaya*) JAM” was carried out in the Department of Food Technology, Ballarpur Institute of Technology, Dr. Babasaheb Ambedkar Technological University, Lonere (Maharashtra) India, during the academic year 2023-2024. The experiment was conducted to develop fruit papaya jam by incorporation papaya and Aloe Vera with different composition. It can be concluded that papaya and Aloe Vera can be incorporated in a suitable amount in the fruit preserve which has many health benefits. From the above study it has been concluded that fruit preserve jam with high vitamin A C E and minerals and also high in Amino acid and fatty acids can be prepared by Aloe Vera and papaya for good texture. Texture and taste of fruit preserve papaya jam is improved by amount of sugar syrup. By using Aloe Vera and papaya increase the vitamin and minerals. Sugar syrup are used to improved the taste, mouth feel.

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