



## FORMULATION AND SENSORY EVALUATION OF PAPAYA SEEDS (CARICA PAPAYA LINN.,) POWDER INCORPORATED TOFFIES

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### ABSTRACT

(Carica Papaya Linn.,) is well known for its medicinal and nutritional properties. Papaya is one of the tree which was planting by all and it should easy and cheap to get. later we realized that the whole plant should including its bark, leaves, latex, seeds, roots are used for many purposes in nutritionally and medicinally. In this papaya contain the papain should use of various pharmaceutical products. Papaya seeds should help to prevent many diseases like antimicrobial, antifungal, anti malarial lung disease ,cancer , male fertility. In this Study mainly focused on the papaya seeds against the cancer using cell line. In this papaya seed contain phytochemical, The component of isothiocyanate contain for papaya seed, work for cancers.

### Key words

Anti – cancer, Papaya seeds, Phytochemicals, Medicinal Plant, Cell line

### Introduction

The Papaya belongs to a small family – Caricaceae having four genera in the world. The genus Carica Linn. is represented by four species in India, of which Carica Papaya Linn. is the most cultivated and best known species. C.cauliflorajacq.,C.pubescensLenne&K.Koch and C. quericifoliaBenth. &Hook.f. exHieron.are possible sources of breeding material for including frost and virus resisitance in cultivated papaya. Papaya contains broad spectrum of phytochemicals including polysaccharides, vitamins, minerals, minerals, alkaloids, glycosides, fats and oils, lecitins, saponnins, sterols, etc.(Table 1) <sup>1,3,4</sup>, Cancer is the First or Second Leading Cause of death before age of years in 112 of 183 Countries and ranks third or fourth in further 23 countries. The Sources and methods used in Compling the GLOBOCAN estimates for 2020 are described Online at the Global Cancer Observatory (GCO) in the American Cancer Society (*Global Cancer Statistics 2020*).Cancer refer 's to any one of a large number of disease characterized by the developmental of abnormal cells that uncontrollably and have the ability to infiltrate and destroy normal body tissue. Cancer often has ability spread throughout the body. Cancer is caused by Change mutation to the DNA within cells. Cancer can cause Complications including pain can be caused by Cancer or by Cancer treatment, though not all cancer is painful. Medications and other approaches can effectively treat cancer has many Causes, but it can often be managed. Fatigue associated with chemotherapy or radiationtherapy treatment is common. Cancer or Cancer treatment may cause a feeling of being short breathe. Certain cancer's and Cancer treatment can cause nausea. It can affect our bowels and Cause diarrhea or Constipation. As Cancer advances, it may spread metasize to other parts of the body. Where Cancer spreads depends on the type of Cancer ( AliakbarMuhamedAmeri, 2019 ) There are many causes which may cause Cancer in different body parts like painly 22% deaths are due to tobacco consumption, 10% of deaths are due to poor diet, Obesity, lack of physical activity, excessive drinking of alchcohol and other facts include certain exposure to ionizing radiation environmental pollutants and infection. About 15% of Cancer in the world is due to some infections like

hepatitis A & C, HIV virus Epstein – Barr virus, Inherited genetic defects from patient’s parents are also responsible for 5 - 10% of Cancer. ( Manish Kumar, Vipin Saini 2020)

Cancer is the uncontrolled growth of body cells and can start almost anywhere in the human body. When cancer develops in the cervix of female it is termed as cervical cancer of cervix. Cervix is the lower part of the uterus that connects the body of the uterus to the vagina. (Tabish et.al.,2017) Yet the lung Cancer still Caused mere deaths in 2017 than breast, Prostate, Colorectal and brain Cancer Combined. Recent Mortality declines were also dramatic for melanoma of the skin in the wake of US food and drug Administration approval of New therapy for metastatic disease escalating to 7% annually during 2013 through 2017 from 1% during 2006 through in men and Women aged 20 – 49 years. Annual Declines of 5% to 6% in individuals aged 65 years and older are Particularly striking because rates in this age group. Were increasing prior to 2013. It is also notable that long term rapid increases in liver Cancer Mortality have attenuated in Women Stabilized in Men. ( Rebecca .,L Seigal et al., 2020).

Table 1: Chemical composition of various parts of papaya plant. <sup>1,3,4</sup>

Part	Constituents
Fruits	Protein, Fat, Fibre, Carbohydrates, minerals: calcium, phosphorus, iron, Vitamin – c thiamine, riboflavin, niacin, amino acids, citric acid carpine, benzylisothiocyanate, cis trans 2.
root	Carposide and enzyme myrosin.
leaves	Alkaloids carpaine, Pseudocarpaine and dehydrocarpaine, 1 and 2 choline, carposide, Vitamin C and E
juice	N – butyric, n – hexanoic, n – octanoic, lipids: mystric, palmitic, stearic, linoleic, oleic acids.
seed	Fatty acids, crude protein, Carpaine, Benzylisothiocyanate, caricinmyrosin, glucotropacolin, benzylthiourea, B- sistrol
Bark	b – sistrol, glucose, fructose, sucrose, galactose, and xylitol

The side effects of systemic chemotherapy used to treat cancer are often severe. For decades, oncologists have focused on treating the tumor, which may result in damage to the tumor-bearing host and its immune system. Recently, much attention has been paid to the immune system of patients and its activation via biological therapies. Biological therapies, including immunotherapy and oncolytic virus (OV) therapy, are often more physiological and well tolerated. The present review elucidated how these therapies work and why these therapies may be better tolerated (Volker Schirrmacher December ., 2018) Natural plants have been used to prevent and to treat various diseases. There are excellent sources are materials for gourmet food consumption. There is an estimate that approximately 50 – 60 % of Cancer Patients in the United States utilize agents derived from different parts of plants of nutrients. Exclusively or Concomitantly with traditional therapeutic regime such as Chemotherapy and radiation therapy. ( Gutheil WG. Free

G. Ray DharA ., 2011)In this symptoms included in Cancer bone pain (CIBP) is a frequent complication in patients suffering from bone metises. ( Ya – Qun – Zhou, Dai – Qianglill 2018). some of the recent approaches induce overwhelming inflammation and autoimmunity. Cytokine-release syndrome (CRS) describes a complex of symptoms including fever, hypotension, and skin reactions as well as lab abnormalities. However, vessel formation is also essential for regeneration and tissue repair. Therefore, severe vascular side effects, including thromboembolic events, gastrointestinal bleeding or perforation, hypertension, and congestive heart failure, compromise antitumor efficacy. (Kroschinsky et al. Critical Care 2017)The seeds of unripe fruits are rich in Benzyl Isothiocyanate, a sulphur containing chemical that has been reported to be an effective germicide and insecticide, These substances ae important for plant natural defence mechanism ( Dr.Neethu S Kumar, Sreeja Devi PS., 2016)In that Papaya Seeds experimental of animal ‘s Sample presentation and extraction to use this phytochemical analysis for flavonoids, alkaloids, saponins, tannins, Cardiac glucosides, antroquinones (qualitative) test. (M.A Kanadi., 2019)Preliminary phytochemical Screening showed the presence of Tannins, Proteins and amino acids, Glycosides, Phenolic Compounds, Carbohydrates, Saponins and Flavonoids. Thin layer Chromatographic studies also had been done on ethanolic and hexane extracts. HPTLC fingerprinting is a valuable method for the quantitative determination of phytochemicals present in plant extract. ( Varsa Singh., Aleza Rizvi., 2021)The papaya seed contain fatty acids, crude protein, crude fibre, papaya oil, carpaine, caricin, glucotropaeolin, benzyl glucosinolates, benzyl Isothiocyanate, benzyl thiourea, hentriacontane,  $\beta$ -sistrol, caressing and an enzyme myrosin. The seeds and the pulp of Carica papaya contain benzyl glucosinolate which can be hydrolyzed by myrosinase to produce benzyl isothiocyanate. Seed extracts have profound bactericidal activity. The seeds of unripe fruits are rich in benzyl isothiocyanate, a sulphur containing chemical that has been reported to be an effective germicide and insecticide ( Sreeja Devi P S January 2017). A number of studies support the fact that a thioglycosideconsistuent, benzyl isothiyocynate, benzyl glucosinolate (BG) exist in all tissues except the mature pulp of Carica Papaya. In the Catalysis of Myrosinose. Benzyl glucosinolate (BG) can be hydrolysed into benzylisothiocyanate (BITC), a compound which has cancer preventive and anti – cancer activities. (Ze – you Li..., 2012).The papaya seed extract also showed a very high activity of myrosinase and, without myrosinase inactivation, produced 460 $\mu$ mol of benzyl isothiyocyanate n 100g of seed. In contrast, papaya pulp contained an undetectable amount of benzyl glucosinolate and showed no significant myrosinase activity. The n – hexane extract of the papaya seed homogenate was highly effective in inhibiting superoxide generation and apoptosis induction in HL – 60 cells, the activities of which are comparable to those of authentic benzyl

isothiocyanate. (Motoko Yoshimoto ..2007) Papaya seeds which make up 8% to 15% of fresh fruit weight are rich source of proteins, crude fibre, fatty acid, calcium and phosphorus. The aim of this study is to determine the composition of papaya seed oil, to evaluate the antioxidant activity of defatted – papaya seed residue, and to optimize the phenolic compound extracted from defatted papaya seed residue. The papaya seed oil contained high level of oleic acid(73.79%) and other acids such as palmitic (14.38%), stearic (3.58%), linoleic (1.06%). (Doan, Minh chi pham feb 2020)

## SELECTION, PROCUREMENT AND PROCESSING OF RAW MATERIALS:

### Selection, procurement of Carica papaya Seeds Powder:

In this process of making a Cookies from components that has carica seeds as main ingredient and other wheat flour and choco chips butter are the other ingredients as the substituent, we have a simple and easy method of bringing up the ingredients as a mix.

### Treatment of Carica Papaya seeds powder :

The Carica papaya seeds are taken or bought for a moderate rate from a local fruit shop or market and cleansed thoroughly for removal of bacteria. Then, the carica papaya seeds are dried of from moisture content and taken in a clean and dry tray of good convenience.

### Preparation of Carica Papaya seeds Powder:

The Carica Papaya seeds in the plate are left outside in a free area for sun-dry to be natural for consumption for about a time of 2-3 days. After this, the dried carica papaya seeds are ground into a fine powder which is then ready for the Cookies.

### Storage of Carica Papaya Seeds:

Carica papaya seeds powder was stored in an air tight container for the development of food product and for the analysis of nutrients.

### Procurement of other ingredients:

The other ingredients added to prepare the food products are Wheat flour, butter, Jaggery, Cho – co chips,

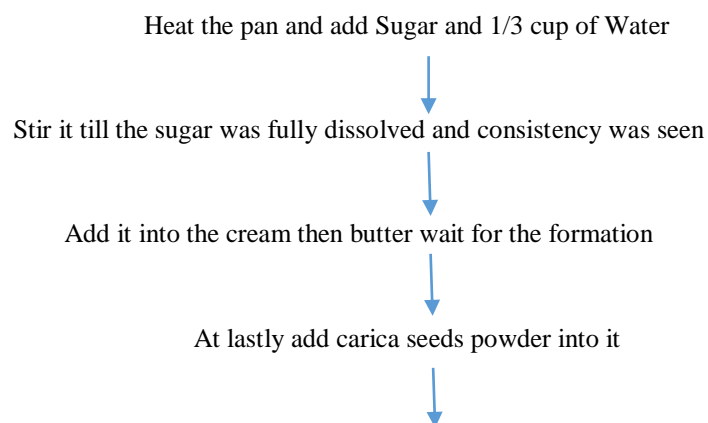
## STANDARDISATION AND FORMULATION OF PAPAYA SEEDS TOFFIES:

A Standard toffies were prepared using various ingredients, which are locally available sugar(20gm),cream(7gm),butter(3gm),without papaya seeds powder

Papaya seeds toffies were prepared in three variants the variation 1 contained, sugar(20gm),cream(6gm),butter(3gm),papaya seeds powder (1gm). Variation 2 sugar(20gm),cream(5gm),butter(3gm) papaya seeds powder(2gm). Variation 3 contained, sugar(20gm), cream(4gm), butter(3gm), papaya seeds powder(3gm).

### Preparation Of Carica Seeds Powder Toffies :

#### Figure: Flow Chart for the Preparation of Toffies:



Put it in the chocolate muds and makes the shape



## STANDARDISATION AND FORMULATION OF PAPAYA SEEDS TOFFIES:

Standardisation and formulation of Carica Papaya Seeds Powder Toffies.(30g) is given in the Table

STANDARDISATION AND FORMULATION OF PAPAYA SEEDS TOFFIES(30g)

S.No	Ingredients	Standard	Variation 1 (g)	Variation 2 (g)	Variation 3 (g)
1	Sugar	20	20	20	20
2	Cream	7	6	5	4
3	Butter	3	3	3	3
4	Carica Papaya Seeds powder., L	-	1	2	3
	TOTAL	30	30	30	30

S –

Standard, V1 – Variation 0.3% V2 – Variation 0.6% V3 – Variation 0.9%

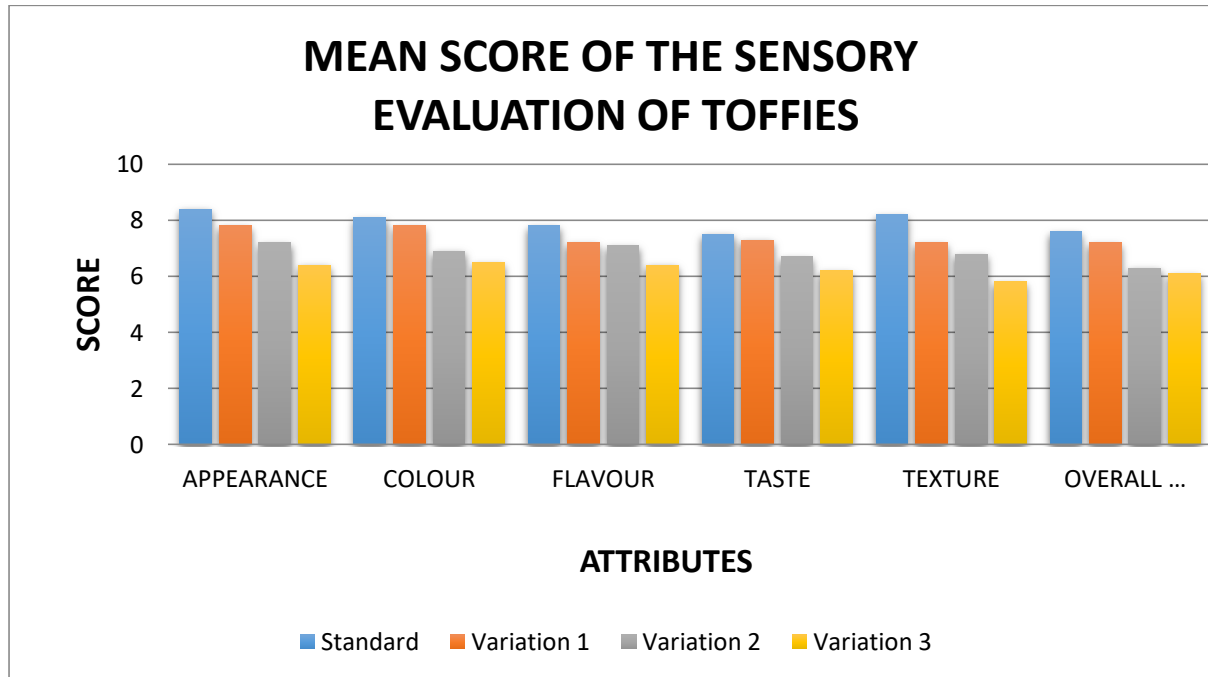
## MEAN SCORE OF THE ACCEPTABILITY OF DELONIX ELATA LEAVES POWDER INCORPORATED DHAL POWDER

SAMPLE	MEAN ± STANDARD DEVIATION
1 Standard	8.7 ± 0.5
Variation – 1	8.2 ± 0.4
Variation – 2	7.4 ± 0.8
Variation – 3	7.3 ± 0.9

S- Standard, V1- Variation 5%, V2- Variation 10%, V3- Variation 15%

The overall acceptability of Delonix Elata leaves powder incorporated Dhal powder revealed that the variation 1 has got the highest mean score of . The least accepted sample were V3 with a mean score . The mean score of the Variation 1 is higher than all the variations.

## MEAN SCORE OF THE SENSORY EVALUATION OF CARICA PAPAYA L., SEED POWDER TOFFIES



The mean score of the sensory evaluation showed that Carica papaya seeds incorporated toffies, the variation 1 has been better appearance of (8.4), colour (8.1), Flavour (7.8), Taste (7.5), Texture (7.2), and overall acceptability(7.6) among all the other variations. Of all the Toffies with the incorporation of carica papaya seeds powder at 5% had the highest level of overall acceptability.

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