

# Total Quality Management of a Novel Product from Carica Papaya Seeds: A Biochemical and Sensorial Insight

Jyoti D Vora and Dipak Vora

**Keywords:** Ripe papaya, Papaya seeds, Proximate Analysis, Oil Extraction, Novel Product Development, Nutritional and Shelf Life Analysis, Sensory Evaluation.

## ABSTRACT:

This research endeavour aims at addressing Total Quality Management techniques to a Novel Nutraceutical Product from Carica papaya, commonly known as papaya. This fruit has been chosen as the focal point of the research as it is a locally grown, accessible and native dietary inclusion in the Indian diet. The proximate principles include a large variety of secondary metabolites with proven nutraceutical benefits to health and Wellness. Papaya has antioxidant, antihelminthic, antimicrobial activities and anticarcinogenic properties which emphatically enhance the cardiovascular profile, negate hypersensitivity, improve digestion, boost overall immunity and help to maintain an optimised Biochemical profile of all subjects from Paediatric to Geriatric Significantly, most of the fruit is edible and has generated research interest and focus for time immemorial. However, the seeds have been understated and quite often discarded as non-edible and a waste product. The seeds of Papaya are beneficial for overall health and morphologically they are small, round, black coloured and have a loud, pungent flavour resembling black pepper in its texture and taste. Our work encompasses various areas of its biochemical and Nutraceutical profile, but the present study was undertaken with the aim of developing a nutritionally enriched product with incorporation of Papaya seeds and the oil obtained from it. Gastro-free churan balls were prepared using papaya seed as a main ingredient and blending it with other Functional Food components to enhance the overall health benefits. This was to present the Gastro Churan balls as a composite health supplement. Further, nutritional and shelf life study were also conducted in which it was seen that the product is nutritionally rich with diverse nutrients, including a significant of fibre. The shelf life study was performed and it was observed that the total plate count was minimal in first few weeks, with gradual increase in later weeks.

The scientific ethos of this research endeavour was as follows: identification of a locally available and traditionally used functional food as the subject of interest. Assessment of the chosen food was done from the proximate content point of view and its various health benefits were evaluated. An overall analysis of the awareness quotient was carried out as far as this spectrum of health benefits is concerned, through a precise and focussed questionnaire. A viewpoint was also obtained about the requirement of newer products and variants using the functional food of interest. Based on this insight and innovative inputs, a Novel Product was developed which had emphatic Nutraceutical properties. This Novel product was whetted on the benchmarking of several criteria of Food Processing and Food Production. A concerted effort was made towards the establishment of total Quality Management.

Organoleptic acceptance of any food product is at the fulcrum of its sustainability in the commercial context. Debatably, the sensory attributes override every other characteristic of the product and hence, it is of paramount importance to analyse the sensory evaluation indices in a scientific and empirical manner. A non- gender bias panel of trained sensory evaluators was chosen to assess the product for its organoleptic appeal and sensorial bouquet. An invasive sensory evaluation was carried out to observe and record the organoleptic acceptance

of trained panellists. The sensory evaluation concluded that the product was acceptable by majority of the expert panel. The procedure of Sensory Evaluation was executed as per the ASTM Guidelines.

Dietary consumption is the paramount factor of optimisation of biochemical profile and there is a direct connects between diet and disease. Nutrients are in general composed of carbohydrates, proteins, fats, minerals and vitamins and water each of which contribute to sustainable good health and wellness. Additionally, food is a means to management of the emotional quotient in the individual subject. Frameworks were prepared for successful product development. Consumer acceptance is of great importance. Sensory Evaluation is an important criteria for overall acceptability of the novel product. The appropriateness of different sensory attributes were studied.

Carica Papaya is commonly known as papaya and the Sanskrit name is Chirbhita. Papaya seeds are round, black and crunchy to bite, have a strong flavour which is a cross between mustard seeds and peppercorns. Papaya seeds are rich in providing multiple health benefits. Due to its medicinal properties it can be used in various products. Papaya seeds are a value addition in a number of dishes. Papaya seeds are a natural and healthy alternative to black pepper with a similar taste.

1. Papaya is nutraceutical due to its multifaceted medicinal properties. The therapeutic properties of papaya include anti-fertility, diuretic, anti-hypertensive, anti-helminthic; wound healing, antifungal, antibacterial, antitumor and antioxidant.
2. The physiochemical properties of papaya seed oil were investigated and the oil obtained was found to have high oxidation resistance.
3. Research showed that the leaf extract of papaya was found to cure dengue fever by increasing the platelet count.
4. The Papaya seed water extract was found to have antioxidant activity, protective and curative properties.
5. Papaya is used to treat skin disorders, wounds, wound healing and antimicrobial activity.
6. The fatty acids in the seed extracts of *C. papaya* are considered to reduce the number of parasites.
7. Papaya seeds as a rich source of isothiocyanate.
8. Papain and lycopene, the enzymes present in papaya, are capable of inhibiting both formation and development of malignancy.
9. Papaya seed flour was incorporated in hamburgers and its technological and sensorial qualities were evaluated. Incorporation of seed flour improved the technological quality in terms of cooking yield, moisture retention, and reduced shrinkage. Furthermore, the sensory quality of the burgers was not diminished.
10. The oil from Carica papaya has fat as well as possesses antioxidant properties providing nutritional and health benefits.
11. The essential oil from papaya seed showed antifungal activity and have an inhibitory effect against all the tested Candida strains. All in all it was an enriching endeavour with promising future inroads.

Name: Jyoti D Vora and Dipak Vora

Affiliation: Dhirang Consultants, Mumbai, India Email: drjyotidvora@gmail.com