ABSTRACT

Fruits play an important role in lowering incidence of degenerative diseases like heart disease, cancer, arthritis, inflammation, decline in immune function, cataracts and dysfunction of brain. Fruits are important source of digestible carbohydrates and provide the necessary nutrition supplements to body and also improve the body condition. They are rich with antioxidants that help in lowering incidence of degenerative diseases, inflammation, brain dysfunction and acceleration of the aging process like vitamins, phytoestrogens and carotenoids. Papaya has highest content of carotenoids, potassium, fiber and ascorbic acid per serving, among all fruits. It is considered to be a nutraceutical plant because of presence of wide range of enzymes, vitamins and minerals in it fruits. It is available round the year and is known as powerhouse of the nutrients. It is an affluent source of antioxidants like, vitamin A and vitamin C, the minerals like, potassium and magnesium and fiber.

For the present study, three cultivars of papaya fruit (Red lady, Sinta, F1) were procured from horticulture centers and private farms in Rajasthan. They are analysed for nutrient composition in fresh and processed papaya samples and physic-chemical properties and rheological properties in unprocessed and processed papaya samples. The processes used for the study were blanching and microwave drying.

Thereafter, nutritional composition analysis of was conducted using standard techniques. The nutrient analysis of three cultivars of papaya revealed, mean moisture to be 90.23g ± 0.10/100g to 89.21g ± 0.04/100g, mean protein to be 0.40g ± 0.01/100g to 0.80g ± 0.01/100g, mean fat to be 0.56g ± 0.42/100g to 0.74g ± 0.13/100g, mean fiber content to be 0.86g ± 0.08/100g to 0.92g ± 0.21/100g and mean carbohydrate content to be 6.49g ± 0.10/100g to 5.06g ± 0.73/100g. Of all three cultivars of papaya minerals and vitamin content found to be significant difference when compared with ICMR reference values. The nutrient retention after processing revealed, fiber content, β-carotene and minerals (calcium and magnesium) were found more in blanched samples than the unblanched samples.
Thereby, the product development was carried out using the cultivar which having best retention of β-carotene. Products selected for formulation in the present study were “Besan ladoo, Biscuits, Khamman dhokla premix powder, Murrukku” with good shelf life and easy making quality. The products developed with different proportions of 10%, 15%, 20%, 25% and 30% of selected papaya cultivar (Sinta). Sensory evaluation of all products conducted using 5 point rating scale and 10% incorporation of papaya powder was most acceptable proportion observed. Texture analysis of all most acceptable products (10%) and control sample revealed that hardness of besan ladoo to decrease on addition of papaya powder from 2707.96 g mm to 1901.44 g mm respectively but biscuits (with and without papaya powder) the hardness was found to be similar. Furthermore, hardness and fracturability found to be increased in murrukku with papaya powder by approximately 20 per cent in comparison to control murrukkus.

Shelf life of most acceptable products with 10% proportion (besan ladoo (BLP268), biscuit (BP268), khamman dhokla premix powder (KDP268) and murrukku (MP268) revealed no bacterial and fungal growth as well as peroxide value and moisture content too found below the spoilage limit.

On the basis of nutritional composition calculation of all formulated products revealed, all four fulfill the 1/3rd RDA of β-carotene of school age children and 1/4th of adult men and women and adolescent girl and boy.