

## **OPTIMIZATION OF PROCESSING PARAMETERS FOR FROZEN TENDER JACKFRUIT**

M.G.F. CHOWDHURY, A.A. SABUZ, M.H.H. KHAN, M. M. MOLLA, S. PERVIN

### **Abstract**

The present study aimed at processing tender jackfruit as fresh like vegetable meat and stored at frozen condition applying different postharvest pretreatment as such, (T<sub>1</sub>) 0.3% citric acid (CA) + 1% CaCl<sub>2</sub>; (T<sub>2</sub>) 0.3% ascorbic acid (AA) + 1% CaCl<sub>2</sub>; (T<sub>3</sub>) 0.3% KMS + 1% CaCl<sub>2</sub>; (T<sub>4</sub>) 0.3% CA + 0.3% AA + 1% CaCl<sub>2</sub>; (T<sub>5</sub>) 0.3% CA + 0.3% KMS + 1% CaCl<sub>2</sub>; (T<sub>6</sub>) 0.3% AA + 0.3% KMS + 1% CaCl<sub>2</sub>; (T<sub>7</sub>) 0.3% AA + 0.3% KMS + 0.3% CA + 1% CaCl<sub>2</sub>, and (T<sub>8</sub>) water soaking. After the pretreatment, jackfruits were stored at -10°C and different quality parameters were studied over 180 days at 60 days' intervals. Results revealed that moisture and total acidity content in all samples were slightly increased throughout the storage period. The bioactive compounds such as ascorbic acid, beta-carotene, and total phenolic contents were significantly decreased with the storage period increased. All pretreated frozen tender jackfruit showed potent antioxidant properties being treatments T<sub>6</sub> and T<sub>7</sub> showed the antioxidant capacity. The physical observation for external color, flavor and texture revealed that these parameters were not significantly changes up to 120 days of storage except in some samples where slight brownish color was developed. Moreover, all samples were in edible stage after 180 days of storage with some decrement of nutritional quality. In conclusion based on the overall findings of this study, tender jackfruit pretreated with T<sub>5</sub> (0.3% CA+ 0.3% KMS+1% CaCl<sub>2</sub>), T<sub>6</sub> (0.3% AA+0.3% KMS+1% CaCl<sub>2</sub>), and T<sub>7</sub> (0.3% AA+0.3%KMS+0.3% CA+1% CaCl<sub>2</sub>) could be stored at frozen condition for longer storage without appreciable quality change.

## **STANDARDIZATION OF PACKAGES FOR VACUUM FRIED JACKFRUIT CHIPS**

M.G.F. CHOWDHURY, M.H.H. KHAN, M.M. MOLLA, S. PERVIN, A.A. SABUZ

### **Abstract**

The objective of this study was to standardize the packaging material best suited for the storage of vacuum fried jackfruit chips. For this five different packages (high-density polyethylene, double layer aluminium foil, single layer aluminium foil, polypropylene, and metalax foil packet) have been used in this study. The study was conducted for 120 days from the initial processing day. The results revealed that the moisture content varied irregularly from 2.43 to 4.44% (wb) at the beginning and ranged between 2.88-5.60% (wb) after 120 days of storage for different packages. The acidity content slightly increased throughout the storage period. All packaged chips retained a significant amount of antioxidant properties although their values decreased over the storage period. Also, the bioactive compounds like ascorbic acid, total carotenoids, and total phenolic content become decreased for all packages used during the storage period. The color properties indicated that the yellowish color becomes faded, however, vacuum fried jackfruit chips packed in double-layer aluminium foil and metalax foil keep the nutritional quality as well as the color properties. The consumer perception taste revealed excellent score and acceptability of the vacuum fried jackfruit chips packaged in high-density polyethylene, double layer aluminium foil, and metalax foil packet Therefore, for the storage of vacuum fried jackfruit chips, it is recommended to use double-layer aluminium foil and metalax foil packages.

## **DEVELOPMENT OF A SUITABLE PACKET FOR KEEPING VACUUM FRIED JACKFRUIT CHIPS**

M.G.F. CHOWDHURY, M.H.H. KHAN, M. M. MOLLA, A.A. SABUZ, M.M. KAMAL

### **Abstract**

The aim of the study was to fabricate a suitable packet for keeping vacuum jackfruit chips on the basis of existing packaging materials of fried chips product available in the market. The length and width of the proposed packet were selected from the existing information of the packet available in the market. To sustain the new product on market, it is required to choose an attractive packet in proper way. Predicting the opportunity, a market survey was conducted with the help of Postharvest Technology Division of BARI, Gazipur to analyze the existing chips packet and its physical appearance with properties and quality and then propose a new one for fabricating jackfruit chips packet for the stakeholders. Packet thickness varied as per the product specification. The tensile strength was recommended among seven best samples according to the laboratory test result. The packet should able to show the highest tensile strength such as 39.47 N/mm<sup>2</sup> with lowest elongation such as 14.08 mm before bursting. The study showed that the suitable packet thickness should be recommended a range 63-65 µm for four layers including print ink where the length and width might be with a range 19-21 mm and 15.5-16.5 mm, respectively. The permissible moisture content should be maintained between 0.8% and 2.3% for the average weight of the chips packet (50 g or more). The size of the packet can be modified maintaining the same ratio of the design and fulfilling the design criteria.

## **OPTIMIZATION OF PROCESSING PARAMETERS FOR FREEZE DRIED CHIPS FROM JACKFRUIT**

M.G.F. CHOWDHURY, M.H.H. KHAN, M.M. MOLLA, S. PERVIN, A.A.SABUZ, M.KAMAL

### **Abstract**

The aim of the study was to optimize the freeze-dried jackfruit chips processing to produce quality jackfruit. Jackfruit chips were prepared from matured khaja type jackfruit. The harvested matured jackfruit was cut into halves and separated the bulbs. The seed was removed and bulb was sliced into about 5 mm thickness and then treated with 5, 10, 15% maltodextrin and 40% sugar solution then packaged in high density polyethylene (HDPE) packet (~60 micron) and frozen at -18°C for 24-36 hours. Then the frozen slices were dried in freeze dryer at -53°C for 72 hours (main drying 36 hours, final drying 36 hours) at 0.0010 mbar pressure. The dried chips were packaged in metalex foil (~50 micron) packet without nitrogen gas and sealed for storage at ambient temperature (26±2°C & 75±5% RH). The changes of physicochemical properties for different maltodextrin and sugar concentration as well as consumer preference test were evaluated by expert panelists. According to the sensory panelists judgement, initially jackfruit chips coated with 10% maltodextrin and then dried in freeze-drier exhibited better quality in terms of overall acceptability score (7.10) (Like moderately to like very much). The study will generate the information to the food processors and product development sectors to find out proper ways and means of processing and production of good quality freeze dried jackfruit chips and thus mitigate the postharvest losses by extending the shelf life and marketability.

## **EFFECTS OF FRYING TEMPERATURE AND TIME ON PHYSICOCHEMICAL CHANGES AND SHELF LIFE OF VACUUM FRIED CHIPS FROM GIANT TARO**

M.G.F. CHOWDHURY, M.H.H. KHAN, M. M. MOLLA, A.A. SABUZ

### **Abstract**

The aim of the study was to optimize the vacuum fried taro chips processing to produce quality taro chips at suitable frying temperature and time. Taro chips were prepared from matured taro. The harvested matured giant taro was cut and then packaged in high density polyethylene (HDPE) packet (~60 micron) and frozen at -18°C for 24 - 48 hours. Then the frozen slices were fried instantly using BARI Vacuum Frying Machine at 100,110 and 120°C for 12, 14 and 16 minutes, respectively. The fried chips were de-oiled using BARI De-Oiling Machine at 1400 rpm for 3 minutes. Finally, the de-oiled chips were packaged in metalex foil (~50 micron) packet without nitrogen gas and sealed for storage at ambient temperature (26±2°C & 75±5%RH). Then the changes of physicochemical properties with different frying temperature and time at one-month interval upto six months and consumer preference test was evaluated by expert sensory panelists. According to the sensory panelist, the best frying temperature and time combination was found 110°C for 14 minutes, where sensory parameters scored 8.12. The study will generate the information to the food processors and product development sectors to find out proper ways and means of processing and production of good quality vacuum fried taro chips and thus mitigate the postharvest losses by extending the shelf life and marketability.

## **COMPARISON OF COOKING METHODS AND OILS ON PHYSICOCHEMICAL, NUTRITIONAL, MINERALS AND BIOACTIVE COMPOUNDS OF MIXED VEGETABLES**

M.M. MOLLA, M.H.H. KHAN, A. A. SABUZ, M.G.F. CHOUHDURY AND S. PERVIN

### **Abstract**

Cooking is a crucial part of our daily life. Several cooking methods and oil exert their effects on nutritional, physicochemical, minerals and phytochemical compounds. Most of them are directly or indirectly include with human health merits and demerits. Hence, the present study was conducted to find out the effect of different edible oils viz. soybean oil, mustard oil, extra virgin coconut oil and extra virgin olive oil on the nutritional, physicochemical, minerals and phytochemical compounds under different cooking conditions. Results revealed that steam cooked mixed vegetables minimized more nutrient loss than the traditional one. The mixed vegetables cooked using soybean oil by traditional cooking process exhibited higher amount of crude fat content (26.90±0.10 %) whereas the low fat content is found by the other edible oils. The low fat content was recorded by the traditional and steam cooked vegetables without oil. The highest crude fiber (5.68±0.20 to 6.48±0.02) was documented by the steam cooked vegetables as compared to traditionally cooked vegetables. The highest crude protein content was found by the traditionally cooked vegetables using mustard oil. The lower

carbohydrate ( $49.42 \pm 0.03$  %) content was also recorded by the steam cooked vegetables using extra virgin olive oil. Most of the minerals especially human body essential Ca, Mg, Fe, Cu and Zn found notable in traditionally cooked and steam cooked vegetables using mustard oil and extra virgin olive oil. The leading phytochemical compounds  $\beta$ -carotene was found by the steam cooked vegetables using mustard oil. The highest anthocyanin and ascorbic acid found by the steam cooked vegetables without oil. Total carotenoid and total phenolic content was dominant in the steam cooked vegetables using extra virgin coconut and extra virgin olive oil. Highest lycopene was noted by the traditionally cooked vegetables using extra virgin coconut oil. However, the findings obtained from this study confirm that except soybean oil, all the edible oils used in this study retained more bioactive compounds and essential minerals although no oil is good for the better dietary life style. Only limited amount of oil may be required for the more functioning of vitamin A, D, E and K.

**Key words:** Cooking process, Cooking oil, Crude fat, Carbohydrate content, minerals content, phytochemical compounds.

## **THE NUTRITIONAL, PHYSICOCHEMICAL, MINERALS AND BIOACTIVE COMPOUNDS ANALYSIS OF SELECTED BARI MASUR (LENTIL) VARIETIES**

M.M. MOLLA, M.H.H. KHAN, A.A. SABUZ, M.G.F. CHOWDHURY, S. PERVIN, M.S. ZAMAN, R. PODDER AND P. BHOWMIK

### **Abstract**

Fresh lentils contain huge amount of bioactive compounds, antioxidant activity, amino acid, vitamins and minerals profile but during dehulling, milling and flouring most of them are going to nutritionally loss. Hence, the first attempt has been taken to collect the BARI Mosur (lentil) varieties and their bioactive compounds, antioxidant activity, amino acid, vitamins and minerals profile analysis under both fresh and dehulled lentils. The selected fresh BARI Mosur (lentil)-3, BARI Mosur (lentil)-6, BARI Mosur (lentil)-7, BARI Mosur (lentil)-8 and BARI Mosur (lentil)-9 has been collected from the Pulse Research Center (PRC), BARI, Ishurdi, Pubna. After collection, these five fresh varieties were incorporated for its analysis of physicochemical, nutritional, minerals, phytochemicals and energy value. All the analysis has been performed by internationally recognized method using HPLC and Double Beam Spectrophotometer. Then the obtained data has been varified with reputed national and international journals and books. Results revealed that BARI Mosur-3 and BARI Mosur-6 is the lycopene rich. BARI Mosur-3 is the superior of energy value. BARI Mosur-8 is the rich source of  $\beta$ -carotene, total phenol, Fe and Zn. BARI Mosur-9 is the rich source of anthocyanin and ascorbic acid.

## **EFFECT OF MOISTURE CONTENT ON THE PROCESSING AND QUALITY OF BARI MOSUR (LENTIL) CHIPS USING SINGLE SCREW EXTRUDER**

M.M. MOLLA, M.H.H. KHAN, A.A. SABUZ, M.G.F. CHOWDHURY, S. PERVIN, M.S. ZAMAN, R. PODDER AND P. BHOWMIK

### **Abstract**

The study was conducted to develop lentil chips through find out the proper moisture level and barrel temperature of the single screw extruder. The single screw extruder was installed successfully in the postharvest Technology Division of BARI. The initial trial has been conducted to develop lentil chips. The trialed product has been sensory evaluated by the formation of judgment panel. The initially produced product has been packed in to metalex and polypropylene pouches for storage studies under the room temperature. Results show that the uncontrolled moisture content increases the barrel temperature and pressure of the single screw extruder. The increased barrel temperature (more than  $100^{\circ}\text{C}$ ) reduces the feed rate and finally burn the product. However, the moisture level 10% ( $T_1$ ) and 20% ( $T_2$ ) assisted to produce the quality product initially.

**Key words:** moisture level, barrel temperature, barrel pressure, product quality

## **EFFECT OF VEGETABLE POMACE ON THE FORMULATION OF PROBIOTIC PICKLE**

M.M. MOLLA, S. PERVIN, A.A. SABUZ, M.G.F. CHOWDHURY, M.H.H. KHAN

### **Abstract**

The present Investigation was carried out to assess the lactic acid bacteria during fermentation of the selected vegetables and after fermentation, to develop probiotic pickle using the fermented vegetables. The sauerkraut method and three acidic media viz. lactic acid, glacial acetic acid and apple cider vinegar was used to ferment

the vegetables. The 5.00% acidic media was used to ferment the vegetables. After pre-processing, all the vegetables were fermented and the relevant data was recorded at on the day of fermentation and after 30 days of interval during fermentation. Results revealed that the TSS, total acid and pH values were increased with the advancement of fermentation periods. The vitamin-C content was decreased dramatically with increasing fermentation time. But the highest vitamin-C values were retained by the apple cider vinegar due to its pH value maintained at lower than 5.00. The study will be continued for its application to produce probiotic bacteria enriched vegetable pickles.

**Key words:** Fermentation, Vitamin-C, TSS, Acidity, pH and Probiotic bacteria

## **COMPARATIVE STUDY OF DOMESTIC AND INTERNATIONALLY PRODUCED JAM AND JELLY IN TERMS OF THEIR PHYSICOCHEMICAL, NUTRITIONAL, COLOR, TEXTURE AND SENSORY EVALUATION**

M.M. MOLLA, M.H.H. KHAN, A.A. SABUZ, M.G.F. CHOWDHURY AND S. PERVIN

### **Abstract**

The study was performed to collect the domestic and overseas jam and jelly from the local and city market of Bangladesh and evaluate their physicochemical and nutritional composition, color, texture and sensory evaluation. Domestically produced jelly and jam was compared to the internationally produced jelly and jam highlighting their softness, spread ability, color, flavor, taste and sugar content. Study shows that jelly sample J<sub>5</sub> (guava natural jelly) and the jam sample Ja<sub>2</sub> (PHTD Bael jam) and Ja<sub>7</sub> (PRAN mixed fruit jam) was acceptable by the sensory evaluator. Considering the color index, the jelly J<sub>5</sub> (guava natural jelly) and the jam Ja<sub>3</sub> (PHTD bael jam) and Ja<sub>4</sub> (PHTD jackfruit jam) was the region of 90° performed as red color. Texture study confirm that jelly J<sub>2</sub> (RESCO brand guava jelly) and J<sub>3</sub> (Ahmed Food products produced guava jelly) was more softness than other samples. Physicochemical and nutritional study shows that the highest TSS (66.26°B), β-carotene (12.18 mg/100 g), total (34.31%) and reducing sugar (28.66%) found in Malaysian jelly as compared to others. Highest moisture (36.50%), vitamin-C (22.63 mg/100 g) and energy content (5.62 Kcal/g) was recorded by the guava natural jelly than others. In case of the collected jam, highest TSS (75.30°B), total (39.88%) and reducing sugar (33.36%) found in the PHTD developed pineapple jam. The highest TSS may be contributed to gain more hardness of the PHTD developed pineapple jam although is the rich source of ascorbic acid. Highest energy (7.43 Kcal/g) found in the sample Ja<sub>5</sub> (Foster clarks mixed fruit jam, made by Italy). The results of this study will contribute to improve and up calling the PHTD of BARI produced products, small and commercial manufacturer products.

**Keywords:** nutrition, color, texture, sensory evaluation.

## **EXTRACTION OF ANNATTO COLOR AND EVALUATION THEIR MICROBIAL AND ANTIMICROBIAL ACTIVITY BEFORE APPLYING IN FOOD PROCESSING**

M.M. MOLLA, A.A. SABUZ, M.H.H. KHAN, M.G.F. CHOWDHURY, S. PERVIN, S. BRAHMA AND M.S. UDDIN

### **Abstract**

Preservatives are natural or synthetic substances that are added to fruits, vegetables, prepared food items, cosmetics and pharmaceuticals in order to increase their shelf life and maintain their quality and safety by inhibiting, retarding or arresting their fermentation, acidification, microbial contamination and decomposition. Adulteration in foods is a serious problem nowadays and is considered an alarming issue to ensure safe food consumption for all ages of people. Due to the consumption of synthetic foods, people suffer from different diseases; even in some cases, they do not recover using synthetic medicine. In recent years, public concern about synthetic pigments and preservatives' safety has led to increasing interest in developing natural food colorants and preservatives from plant tissues, especially from some edible sources. Therefore, the aimed of the present study was to extract natural color from the annatto and develop annatto powder using freeze dryer for its further application into food processing industry like jam, jelly, marmalade etc processing. Annato (*Bixa orellana* L.) has been renowned as a tropical plant rich in carotenoid pigments such as nonpolar bixin and polar norbixin. The extraction was carried out by maceration for 10 mins using distilled water as the extraction solvent at various pH and extraction temperatures. The variations of solvent pH used in this research were below 7 and above 7 following three extraction temperatures viz. 70, 80, and 90°C. The potential of annatto extract as an antimicrobial agent was tested by analyzing the extract's ability to inhibit pathogens and its physicochemical, phytochemicals and nutritional compounds. The extracted powder was evaluated for its microbiological as well as carcinogenesis viz. mycotoxin, aflatoxin and Antimicrobial activity. Results revealed that the Annatto powder

was rich source of ascorbic acid (45.25 mg/100 g),  $\beta$ -carotene (269.25 mg/100 g) and free from carcinogenesis. Therefore, it could have recommended that the extracted powder could be utilized in the food processing industry.

Key words: Color extraction, phytochemical composition, carcinogenesis evaluation, antimicrobial activity.

## **MORPHOLOGICAL, PHYSICOCHEMICAL, NUTRITIONAL, MINERALS AND BIOACTIVE COMPOUNDS ANALYSIS OF FRESH FIGS (FICUS CARICA L.) INDIGENOUS TO BANGLADESH**

M.M. MOLLA, M.G.F. CHOWDHURY, S. PERVIN, A.A. SABUZ, M.H.H. KHAN AND M.H. PATWARY

### **Abstract**

The aim of the present study was to evaluate morphological, physicochemical, nutritional, minerals, color and bioactive compounds of round and oval shape fresh fig fruits (*Ficus carica* L.). The maximum fruit breadth, stem length and stem breadth was noted in oval shape fig fruit as 3.26 cm, 2.40 cm and 0.45 cm respectively. The maximum fruit length was found in round shape fig fruits (3.86 cm). The maximum fruit and seed weight was calculated as 35.34 g and 11.09 g in the oval shape fruit. The lowest fruit and seed weight was found in round shape fruit and calculated as 28.87 g and 10.26 g respectively. The highest edible portion was found in the round shape fruits as 98.35 g with its minimum non-edible portion (1.65 g). The oval shape fig fruits irradiated green-colored than the round shape fig fruits. The moisture content of the fresh fig fruits recorded as  $80.01 \pm 0.78$  % and  $80.50 \pm 1.00$  % respectively. The  $a_w$  of the round and oval shape fresh fig fruits calculated as 0.61 and 0.59 respectively. The highest values of bioactive compounds viz. vitamin-C,  $\beta$ -carotene, TSS and pH were found in fresh oval fig fruits and recorded as  $26.57 \pm 0.47$  mg/100 g,  $7.49 \pm 0.19$  mg/100 g,  $14.15 \pm 0.14$  and  $5.18 \pm 0.05$  respectively. However, the results confirm that oval shape fig fruits retained more morphological, physicochemical, nutritional, minerals, color and bioactive compounds than the round shape fresh fig fruits.

## **PHYSICO-CHEMICAL CHARACTERISTICS OF PLUM IN VARIOUS CONCENTRATIONS OF SODIUM CHLORIDE AND SUCROSE DURING PRESERVATION**

S. PERVIN, M.H.H. KHAN, M.G.F. CHOWDHURY, M. MOLLA AND A. AHMED SABUZ

### **Abstract**

The study was conducted to find out the effect of sucrose-sodium chloride concentrations on plums in order to examine the shelf life of plums under ambient conditions. There were five treatments with different sucrose-sodium chloride solutions for the experiments. The stored plum pH, acidity,  $\beta$ -carotene, vitamin C, TSS and sugar data were analyzed for up to six months; It was found that under ambient conditions the plum pH was decreased but acidity,  $\beta$ -carotene, vitamin C, TSS and sugar content were increased at 5% NaCl treated plum during storage. As the conclusion, when using 5 percent concentrations of sodium chloride in plum; for each quality parameter of the stored plum, a smaller decrease and increase was found than for the other treated sample under ambient conditions.

## **CHANGES IN THE QUALITY CHARACTERISTICS DURING STORAGE OF PLUM JAM AND ITS OPTIMAL PREPARATION CONDITIONS**

S. PERVIN, M.H.H. KHAN, M.G.F. CHOWDHURY, M. MOLLA AND A. AHMED SABUZ

### **Abstract**

The research was evaluated the processing method of plum jam to get the diverse uses of the plum with five treatments. The prepared jam was stored for twelve months in glass container. The pH was increased slightly where the acidity was decreased. The intensity of the light-yellow color of the jam was gradually increased and turned light red in color in storage. No microbial growth of the plum jam was observed for any treatment up to nine months, but an acceptable non-pathogenic germ count was identified in various treated jam after twelve months. The relative sensory assessment of the plum jam is evaluated and resulted in the maximum overall acceptance of 8.0 for treatments T<sub>5</sub> (100% sucrose in plum) followed by treatments T<sub>4</sub> with a rating of 7.0. The results showed that considering various quality parameters of the jam; the best recipe was to use plums with 100% sucrose.

## **EFFECTS OF DIFFERENT SANITIZERS ON THE NUTRITIONAL QUALITY AND SHELF LIFE OF FRESH-CUT MORINGA STICKS**

M.G.F. CHOWDHURY, M.H.H. KHAN, A.A. SABUZ, M.M. MOLLA, M. ALAM

### **Abstract**

This experiment was conducted to evaluate the effects of different sanitizers and storage temperatures on the quality and shelf life of fresh cut moringa sticks. Four different treatments of tap water wash (control), hot water treatment (60°C for 1 min), 0.2% calcium chloride wash and 0.01% calcinated calcium treated fresh-cut moringa sticks with two storage condition of ambient temperature (27±1°C & 75±5% RH) and refrigerated temperature (4±1°C) were selected for the study. Moringa stick were peeled and cut in almost uniform size and shape and then washed with different sanitizer (400-500 g stick/L solution) for five minutes and then preserved in film packet at different storage temperatures for physiochemical quality evaluation. After 3 weeks storage, the hot water treated fresh-cut products exhibited better nutritional quality among the treatments in refrigerated storage temperature. Most of the panelists preferred fresh-cut moringa sticks treated with hot water at 60°C for one minute and stored at refrigerated temperature (4±1°C) more than 3 weeks in terms of appearance (7.60), off flavor (7.20), shrinkage (7.60) and overall acceptability (7.47).

## **DETERMINATION OF MICROBIAL HAZARDS IN FRESH-CUT FRUITS AND SALAD VEGETABLES USED IN STREET FOOD VENDOR, HOTELS AND RESTAURANT AT RAJSHAHI AND KHULNA**

A.A. SABUZ, M.H.H. KHAN, M.G.F. CHOWDHURY, M.M. MOLLA

### **Abstract**

This study was conducted to identify and quantify the hazardous agents (microbial load) in fresh-cut fruits and salad vegetables collected at Rajshahi and Khulna district. Different fresh-cut fruits and salad vegetables such as guava, tomato, cucumber and carrot were collected from various hotels, restaurants and street vendor. All samples were analyzed to detect the existing different microbial agents such as *Salmonella spp.*, *Escherichia coli* (*E. coli*), total plate count (cfu/g), etc. The aims were to find out the microbial agents of fresh-cut fruits and salad vegetables to analyze the fresh-cut fruits/salad vegetables qualities of the restaurants, hotel and street food vendor and also to compare it with different standards to assess the health risk of people. Results indicated that all samples were observed colony forming unit (cfu/g) but *Escherichia coli* (*E. coli*) and *Salmonella spp.* were absent. Our recommendations are therefore, restaurant owners, hotel owners, street vendor should take necessary steps for the maintenance of microbial quality of water and microbial assessments should be done very often to leading a hygienic practice.

## **OPTIMIZATION OF PROCESSING TECHNIQUE FOR ROASTED JACKFRUIT SEED MAINTAINING NUTRITIONAL QUALITY**

A.A.SABUZ, M.G.F. CHOWDHURY, M.H.H. KHAN, M.MIARUDDIN, M.M. MOLLA

### **Abstract**

Mature and full ripe jackfruit was collected from local cultivar to investigate and optimize the roasting time and temperature combination. Full ripe bulbs were first separated from the fruit and seeds were collected from the inside of the bulb. After washing with clean tap water seeds were dried in sun at ambient condition until surface water removed. The experiment was laid out with Complete Randomized Design (CRD). All the seeds were treated as roasted at 150<sup>0</sup> C for 10 minutes (T<sub>1</sub>), roasted at 150<sup>0</sup> C for 20 minutes (T<sub>2</sub>), roasted at 200<sup>0</sup> C for 10 minutes (T<sub>3</sub>), roasted at 200<sup>0</sup> C for 20 minutes (T<sub>4</sub>), roasted at 250<sup>0</sup> C for 10 minutes (T<sub>5</sub>), and roasted at 250<sup>0</sup> C for 20 minutes (T<sub>6</sub>). Roasted seeds were then evaluated by forming ten judgment groups using 9-hedonic scale to determine their optimum time and temperature combination for roasting. According to panel test result T<sub>4</sub> (200<sup>0</sup>C for 20 minutes) scored highest overall acceptability (8.2) and regarded as best considering the quality parameters of roasted jackfruit seed.

**DEVELOPMENT OF VALUE ADDED READY TO SERVE (RTS) SAPOTA POWDER  
THROUGH FORTIFICATION BY ASCORBIC ACID AND  $\beta$ -CAROTENE**

M.H.H. KHAN, M.M. MOLLA, A. A. SABUZ, M.G.F. CHOUDHURY, S. PERVIN, P.C. SARKER AND  
A.K. CHOWDHURY

**Abstract**

This study aimed to develop a process for the development of ready to serve (RTS) sapota powder through fortification. The fortified sapota powder was stored at room temperature for storage stability and further nutritional evaluation. Results obtained from 150 days' studies show that sapota powder fortified with L-ascorbic acid and combination of L-ascorbic acid and  $\beta$ -carotene was excellent with retention of the primary quality attributes of ascorbic acid and  $\beta$ -carotene. The sapota RTS powder fortified with L-ascorbic acid and combination of L-ascorbic acid and  $\beta$ -carotene was acceptable by the sensory evaluation of the panel members in terms of their color, flavor, appearances, sweetness and overall acceptability. No microbial count was recorded up to 120 days (4 months) and 150 days (5 months) of storage. A negligible amount of microbial count was recorded after 150 days of storage but it was within acceptable limit. Therefore, the developed RTS sapota powder could use as an alternative of synthetic TANG health drink for better sustainability school going children.