



RESEARCH ARTICLE

NUTRITIONAL ANALYSIS OF VALUE ADDED PRODUCT OF BANANA CHIPS ENRICHED WITH SUGAR POWDER, MINT AND TOMATO POWDER

***Singh Suman and Mishra Sunita**

Department of Food Science and Technology, School for Home Sciences, BBAU Lucknow, India

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ABSTRACT

The study was conducted on BBAU central university Lucknow department of food science & technology and there nutritional property conducted on R- frac research institute Lucknow. Knowledge and concerns of the bad health implications of high fat intake in consumers has resulted in a rising demand for low fat foods consequently, the use of various flavour treatment as alternative food souces is gaining attention among producers and consumers. Banana is the common name for herbaceous plants of the genus. Musa and for fruit they produce. It is one of the oldest cultivation plants all parts of the banana plant have medicinal application. Three major products were developed using different composite mint flavour, tomato flavour, and sweet sugar flavour. Developed product was evaluated on various parameters: sensory evaluation & nutritional analysis. Nutritional analysis & percentage of sample T1 protein, carbohydrate, iron, moisture & ash were – 3.25%, 60.80%, 15.77%, 4.26% & 3.57% respectively. In sample T2 protein, carbohydrate, iron, moisture, & ash were- 63.76%, 63.76%, 17.5%, 3.13%, & 4.27% respectively. In sample T3 protein, carbohydrate, iron, moisture, & ash were- 12%, 27.2%, 1.36%, 2.12% & 3.35% respectively. The study is to basically provide an alternative to potato chips. It can be proved to be a good snack for all age group people whose daily requirement of protein is high. Especially to school going children because of their growing period and people working in offices who generally have a habit of skipping there full meal in noon due to hard working hours, snacks made out of banana can come to the rescue for such people. The monotony of banana on regular basis can easily be broken with these innovative products. Thus, the snacks not only provide high amount of energy, protein, carbohydrates etc but they also provide whole range of choices in our plate.

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INTRODUCTION

Banana is giant perennial, herbaceous monocotyledon, propagated vegetative, belonging to the family Musaceae, genus Musa. It flourishes well under tropical, moisture rich, humid, low lying form lands. Edible banana are derived from either Musa acuminate or Musa balbisiana or a combination of both. There are diploids, and tetraploids with chromosomes numbers of 22, 23 and 44, the diploids are usually smaller plants than the triploids and tetraploids and generally have smaller branches and fruits. Banana is originally grown in South and Southeast Asia. It is cultivated in numerous tropical and subtropical countries. Bananas rank second amongst fruits and vegetables that are exported worldwide; the first being citrus fruits, and followed by apples and frozen vegetables.

***Corresponding author: Singh Suman,**

Department of Food Science and Technology, School for Home Sciences, BBAU Lucknow, India.

Bananas are a fascinating fruits in term of their carbohydrates and sugar content. Even through bananas are a fruits that tastes quite sweet when ripe-containing 14-15 grams of total sugar bananas receive a rating of low in their glycaemia index (GI) value. GI measures the impact of a food on our blood sugar. This low GI value for bananas is most likely related to two of their carbohydrate related qualities. First, as mentioned previously, a medium –size banana contains about 3 grams of total fibre. Fibre is a nutrient that helps regulate the speed of digestion, and by keeping digestion well regulated, conversion of carbohydrates to simple sugars and release of simple sugars from digesting foods also stays well - regulated. Within their total fibre. It contains good amount of health benefiting anti oxidant, minerals and vitamins. Banana fruits are composed of soft, easily digestible flash made up of simple sugars like fructose and sucrose that upon consumption instantly replenishes energy and revitalize the body. The fruits hold a good amount of soluble dietary fibre that helps normal bowel movements there by reducing constipation problem. Banana

chips are a crispy snack food similar to potato chips, and there are several types of it e.g. banana figs, savoury banana chips and sweet banana chips. Banana is highly nutritious and easily digestible than many other fruits. Bananas are popular for aroma, texture and easy to peel and eat, besides rich in potassium and calcium and low in sodium content. Banana also is rich in vitamins and minerals. It is considered to be good for the treatment of gastric ulcer and diarrhoea. Because they contain vitamin A, bananas act as an aid to digestion. Due to their high content of B6 vitamin, they help to reduce stress and anxiety. They are also considered beneficial for cancer prevention and heart diseases.

Value added incorporated product

Mint; Mint flavour banana chips are prepared for variation in banana chips use the mint and some spices for variation this is the first variation. Mint is also known as *Mentha*, from Greek Linear B *mi-ta* is a genus of plants in the family *Lamiaceae* (mint family). Mints are aromatic, almost exclusively perennial, rarely annual, herbs. They have wide spreading underground and over ground stolons and erect square branched stems pairs from oblong to lanceolate, often downy and with a serrated margin. Leaf colours range from dark green and gray-green to purple, blue and sometimes pale yellow.

Medicinal Uses: Ayurvedic physicians have used mint for centuries as a tonic and digestive aid and as a treatment for colds, cough, and fever. Medieval German abbess/herbalist Hildegard of Bingen recommended mint for digestion and gout. Shortly after Culpeper wrote about the benefits of mint, peppermint and spearmint were differentiated, and herbalists decided the former was the better digestive aid, cough remedy, and treatment for colds and fever. Spearmint cannot replace peppermint in combined bile and liver or nerve herbal teas even though it is used as stomachic and during carminative. The infusion of the herb has been used for diarrhea and as an emmenagogue. Mint tea eases colic and lifts depression. Black pepper; black pepper is the plant from the *piperaceae* family and used as both a spice and a medicine. The chemical piperine, which is present in black pepper, causes the spiciness; it is native to Kerala, the southern state of India. Since ancient time, black pepper is one of the most widely traded spices in the world. It is not considered a seasonal plant and is therefore available throughout the year. When dried, this plant-derived spice is referred to as a peppercorn, and is the ground into a powder to be put on food to add flavour and spices. Because of its anti bacterial properties, pepper is also used to preserve food. It is a rich source of manganese, iron, potassium, vitamin-C, vitamin-K and dietary fibre. Black pepper is a very good anti inflammatory agent.

Health Benefits of Black Pepper; Pepper increases the hydrochloric acid secretion in the stomach, thereby facilitating digestion. Proper digestion is essential to avoid diarrhoea, constipation and colic.

White Loss: The outer layer of peppercorn assists in the breakdown of fat cells. Therefore, peppery foods are a good way to help you shed weight naturally.

Respiratory Relief: In Ayurvedic practices, pepper is added to tonics for colds and coughs. Pepper also provides relief from sinusitis and nasal congestion.

Antibacterial Quality: The antibacterial property of black pepper helps to fight against infections and insect bites.

Antioxidant Potential: An antioxidant like pepper can prevent or repair the damage caused by the free radicals and thus help to prevent cancer, cardiovascular diseases and liver problems. Free radicals are the by products of cellular metabolism that attack healthy cells and cause their DNA to mutate into cancerous cells. Fennel seed (*Foeniculum vulgare*) is a flowering plant species in the carrot family. It is a highly aromatic and flavorful herb with culinary and medicinal uses and, along with the similar-tasting anise, is one of the primary ingredients of absinthe. Florence fennel or finocchio is a selection with a swollen, bulb-like stem base that is used as a vegetable.

Health Benefits of Fennel seed

Anemia: Iron and histidine, an amino acid found in fennel, are both helpful in treatment of anemia

Indigestion: It is a common practice, particularly on the Indian Subcontinent, to chew fennel seeds after meals. This is done to facilitate digestion and to eliminate bad breath.

Constipation: Fennel seeds, particularly in powdered form, can act as a laxative. The roughage helps clear the bowels, whereas its stimulating effect helps maintain the proper peristaltic motion of the intestines, thereby helping promote proper excretion through the stimulation of gastric juices and bile production.

TOMATO- Tomato (*Lycopersicon esculentum*) is a staple fruit vegetable. Fresh fruits and vegetables are very important source of vitamins and minerals which are essential for human health. Tomato is one of the most important vegetables in the world (Babalola *et al.*, 2010).

The many health benefits of tomatoes can be attributed to their wealth of nutrients and vitamins, including an impressive amount of vitamins A, C, and K, as well as significant amounts of vitamin B6, foliate, and thiamine.

SUGAR- Sugar is the generalized name for sweet, short-chain, soluble carbohydrates, many of which are used in food. They are composed of carbon, hydrogen, and oxygen.

Methodology

Materials

The experiment has been carried out in research laboratory of Food Science and Technology, School for Home Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow. Raw banana, sun dried mint, fennel, black pepper, and salt, sugar, powder. Raw samples were purchased from local market. Sun dried tomato powder.

Preparation of value added banana chips; The basic ingredients used were banana chips

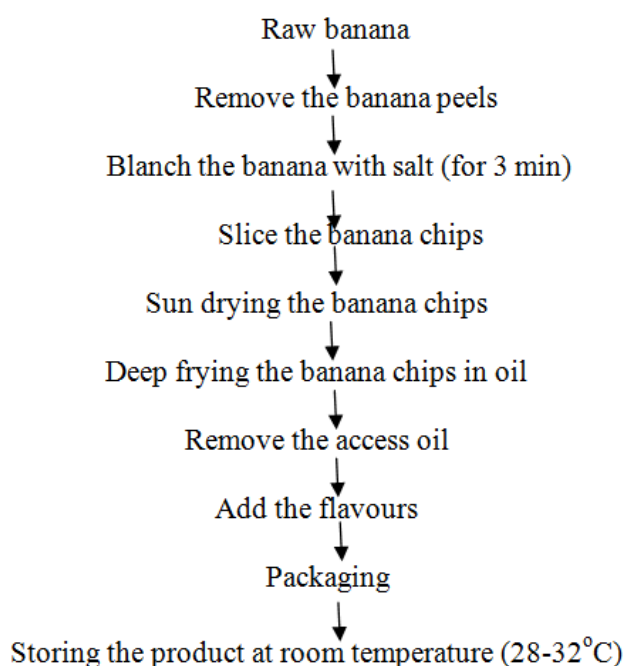


Fig 1. Flow diagram for the preparation of value added banana chips

Nutritional analysis – The tests were determined at the RFRAC (Regional Food Research Analysis Centre) Lucknow. The protein content was determined by AOAC method. The carbohydrate and iron content was determined by SP: 18 method. The moisture and total ash content was determined by IS: 7874-1975.

RESULTS AND DISCUSSION

Table 1 Discuss with the nutritional value of banana chips like protein, carbohydrate and iron.

Table 1. Nutrient content in three prepared value added banana chips

Sample	Protein	Iron	Carbohydrates
T1	3.25%	15.77%	60.80%
T2	63.76%	17.5%	63.76%
T3	12%	1.36%	27.2%

- From the above table the amount of protein is 3.25%, 63.76% and 12% per 100gm of sample T1, T2 and T3 respectively.
- From the above table the amount of carbohydrate is 60.80%, 63.76% and 27.2% per 100 gm of sample T1, T2 and T3 respectively.
- From the above table the amount of iron is 15.77%, 17.5% and 1.36% per 100 gm of sample T1, T2 and T3 respectively.

Fig 2 Discuss with the nutritional value of banana chips like moisture and ash.

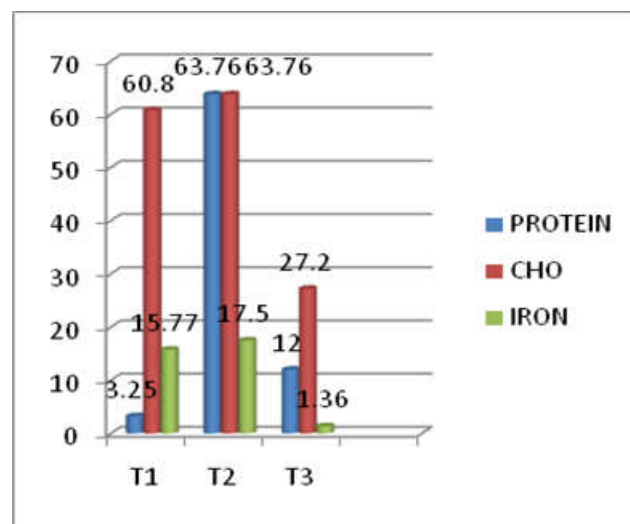


Fig.1. Graphical representation of protein, carbohydrates and iron content

Table 2. Nutrient contents in control and experimental product

Samples	Moisture	Ash
Sample T1	4.26%	3.57%
Sample T2	3.13%	4.27%
Sample T3	2.12%	3.35%

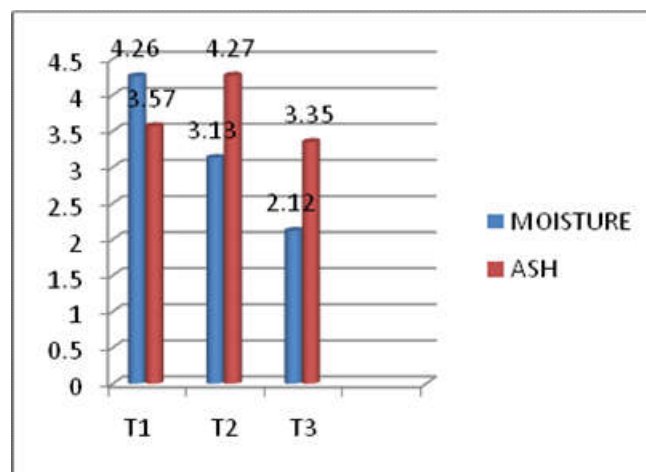


Fig.2. Graphical representation of moisture and ash content

- From the above table the amount of moisture is 4.26%, 3.13% and 2.12% per 100gm of sample T1, T2 and T3 respectively.
- From the above table the amount of ash is 3.57%, 4.27% and 3.35% per 100 gm of sample T1, T2 and T3 respectively.

Conclusion

Nutritive value of banana chips is protein, iron and carbohydrates. In the preparation of banana chips they increased their flavour by using tomato powder, mint powder and sugar powder they all are enhance their taste and also there nutritive value other component also increased but the one factor of banana chips is there sweet flavour are balanced all the taste. Banana chips are a very good snack and banana chips

is also a good source of energy. Nutritive value of banana chips higher than potato chips. Potato chips are more popular but banana chips are also in demand because of their nutritive value.

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