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## Development and nutritional evaluation of banana blossom incorporated sev

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### Abstract

Banana Blossom is a large dark purple-red Blossom that grows from the end of a bunch of bananas. It is a leafy maroon colored cone with cream colored florets layered inside. These florets need to be cleaned well before they can be used in food products. It rich in iron, protein, calcium, potassium, and phosphorus. Supplemented Banana Blossom product was standardized and analyzed for their sensory evaluation. Sensory evaluation of products was made in term of their color, appearance, aroma, taste, texture, over all acceptability using nine point hedonic scales. The recipes for the preparation of various products from Banana Blossom were standardized by the use of various percent (10%, 20%, and 30%) The sensory evaluation of supplemented products was significantly different compared to those control, all supplement products were desirable or moderately desirable in all terms. The aim or objective of this work is to develop a good nutritional sev with the incorporating of Banana Blossom, were analyzed according to the method of Association of Official Analytical Chemists (AOAC) and Lindsey norwell. Banana Blossom sev analyzed moisture, crude protein, crude fat, crude fiber, ash and also minerals like iron, calcium, magnesium, potassium. The proximate composition and minerals supplemented sev much better than control sev.

**Keywords:** Banana Blossom, sensory and nutritional quality, sev.

### Introduction

The banana plant which is often referred to as a 'tree' is the largest herbaceous flowering plant. The most of the trees are of around 5m (16ft) tall. The leaves are spirally arranged and may grow up to 2.7 meters (8.9ft) long and 60 cm (2.0ft) wide Marikkar J.M. *et al.* (2016). The Banana fruit belongs to the family 'Musaccae'. The banana (*Musa paradisiaca*) grows best in a sticky humid environment with an optimal temperature 27°C during the day and minimum temperature should not below 13°C. The banana fruits developed from the banana heart in a large bunch and are made up of tiers (called "hands") with up to 20 fruits to a single tier. India is the world's largest producer of banana with 13.90 million tons followed by Uganda (10.14 million tons). Within the country, Banana ranks first in the production and third in the area (after mango and citrus fruits) among all the fruit crops. Occupying about 13% of the total area under fruit crops in India, Banana fruit crop is being grown almost in every



state. All India average of the Banana fruit crop is 34.30 metric tons per hectare. The Banana Blossom is a large dark purple-red blossom that grows from the end of a bunch of bananas. It is a leafy maroon colored cone with cream colored florets layered inside. These florets need to be cleaned well before they can be cooked as a vegetable (Elaveniya *et al*, 2014). The flower has been used in making several traditional medicines for the treatment of bronchitis constipation. Plantain blossom is generally helps to cure stomach ulcers and also useful in treating throat ulcers. It can cure redness of eyes and eye itching/afflictions. It can also help in treating nervous debilities to cure from breathing and blood flow problems. The Blossoms boost our immunity power against infection and to reduce the growth of cancer cells. They also have antioxidant activities and so can reduce our risk of chronic diseases including cardiovascular diseases and diabetes. It also helps in ease of menstrual bleeding. The extracts of Banana Blossoms have antioxidant properties that can prevent free radicals and control cell and tissue damages (Sharmila *et al*, 2013). The flavor of the same is a little starchy and bitter. Being consumed Banana Blossom can also be made into various products such as dehydrated vegetables, pickles and canned foods. (Sharmila *et al*, 2013).

### Nutritional value of banana blossom

Banana Blossom have great nutritional values which are similar to banana fruits. They are excellent source of vitamins, certain minerals, good source of fibre and protein. The Banana Blossom are also good source of minerals such as magnesium, iron and copper. It contains high quality protein because of its well balanced essential amino acids in addition to high dietary fiber. The nutritional information of Banana Blossom are as follows (per 100g) - (Sharmila *et al*, 2013).

Table-1

Banana Blossom Nutritional facts			
Calories - 51 Kcal	Protein - 1.6gm	Fat- 0.27gm	Fiber- 5.7gm
Calcium - 56.0 mg	Iron - 56.17 mg	Potassium- 553.3 mg	Magnesium-48.7mg

### Material and methods

#### 3.1.1 Procurement of material:

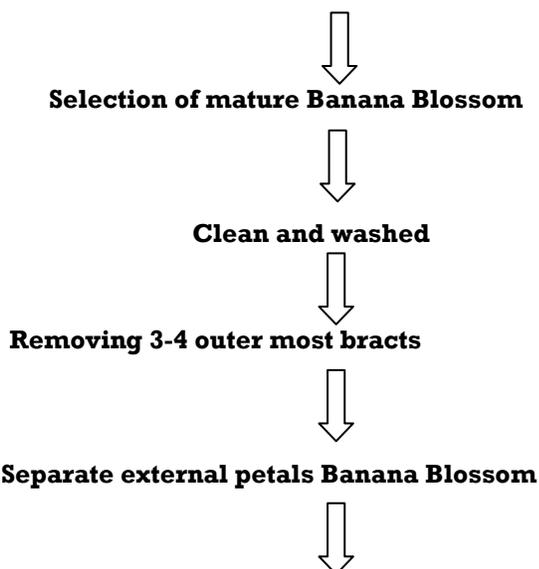
The Banana Blossom which is easily available in the local areas with free of cost was collected in BPS Mahila Vishwavidyalaya Khanpur Kalan (Sonipat). The remaining ingredients namely oil and other condiments were purchased from local market.



### Sample preparation:

The sample preparation was conducted in the Food Science or Nutrition Laboratory BPS institute of higher learning Khanpur Kalan (Sonipat). *Musa paradisiaca* is the more popular Banana Blossoms were collected in BPSM University. The Banana Blossom 3-4 outer leaves were removed purple Blossom Then will be washed (to remove micro-organism and dirt) and cut into small pieces. Banana Blossoms were used for the incorporation of Banana Blossom sev, For preparation of Banana Blossom incorporated in sev were as follows:

#### Processing of Banana Blossom



Cut into fine chopped

### Standardization of recipes:

The recipes for the preparation of various product processed Banana Blossom were standardized making use of various levels (10 g, 20 g and 30 g). The processed Banana Blossom incorporated sev were prepared.

Ingredients	Control	I	II	III
Bengal gram flour (g)	100	90	80	70
Banana blossom (g)	-	10	20	30
Salt (g)	2	2	2	2
Oil (ml)	For frying			



#### Method:

- Sieved bengal gram flour and add Banana Blossom.
- Added salted and a table spoon oil.
- Made stiff dough using water.
- Filled dough in *sev* machine and pressed to make thin *sev* from dough directly over *karahi* containing hot oil.
- Fried on low flame till golden brown.

#### 4.1. organoleptic evaluation:

Organoleptic evaluation was done using 9- point hedonic scale by semi trained members.

#### Statistical analysis:

Statistical analysis of data was done using complete design and all work was done in triplicates along with the data presented usually are necessarily mean  $\pm$  S.E. The data obtained in the experiments were recorded and subjected to statistical analysis using standard procedure.

#### Result discussion:

#### Sensory evaluation of Banana Blossom *sev*

**Sev:** *Sev* prepared without use of Banana Blossom (control) were moderately 'desirable' in all attributes. *Sev* which were prepared by incorporating 10% Banana Blossom were 'moderately desirable' in color, appearance, aroma, texture, taste, and overall acceptability. However, the *sev*, prepared by incorporating 20% of Banana Blossom were 'desirable' in color, and appearance and 'moderately desirable' in aroma, texture, taste, and over acceptability. Addition of 20% Banana Blossom were score increase in color, appearance, texture, and over all acceptability. Addition of 30% Banana Blossom were 'moderately desirable' in all attributes. *Sev* prepared by 20% was better accepted as compared with control, 10% and 30 % incorporated.

**Table 1.1: Mean scores of various characteristics of Banana Blossom**

*Sev*

Products	Color	Appearance	Aroma	Texture	Taste	Over all acceptability
<b>Sev 0 Days</b>						
Control	7.50 $\pm$ 0.17 <sup>ba</sup>	7.33 $\pm$ 0.17 <sup>bb</sup>	7.66 $\pm$ 0.21 <sup>aa</sup>	7.33 $\pm$ 0.21 <sup>aa</sup>	7.33 $\pm$ 0.21 <sup>ba</sup>	7.43 $\pm$ 12 <sup>b</sup>
Type I	7.83 $\pm$ 0.17 <sup>ba</sup>	7.83 $\pm$ 0.17 <sup>ba</sup>	7.66 $\pm$ 0.21 <sup>aa</sup>	7.66 $\pm$ 0.21 <sup>aa</sup>	7.66 $\pm$ 0.21 <sup>ba</sup>	7.73 $\pm$ 12 <sup>b</sup>



Type II	8.00±0.00 <sup>aa</sup>	8.00±0.00 <sup>aa</sup>	7.83±0.17 <sup>aa</sup>	7.83±0.17 <sup>aa</sup>	7.83±0.17 <sup>aa</sup>	7.90±0.04 <sup>a</sup>
Type III	7.33±0.21 <sup>bb</sup>	7.33±0.21 <sup>bb</sup>	7.66±0.21 <sup>a</sup>	7.33±0.21 <sup>a</sup>	7.16±0.17 <sup>b</sup>	7.37±0.03 <sup>c</sup>
CD(P<0.05)	0.51	0.50	0.59	0.59	0.56	0.26
Control=100% Bengal gram flour I=90% BB +10 % BB II=80% BB+20 % BB III=70 % BB +30 % BB						

Values are mean ± SE of six panelists

Values with same superscripts do not differ significantly CD (P≤0.05)

### Proximate composition

#### Nutritional evaluation of Banana Blossom Sev

For nutritional evaluation, the organoleptically products were ground in mixer- grinder and dried in oven at 60°C to constant weight. Dried samples were packed in polyethylene bags and analyzed for the following parameters:

**Moisture:** The moisture content of control sev was 4.65% while it was 6.78% in supplemented sev prepared with addition of Banana Blossom Increased moisture supplemented as comparison to control.

**Protein:** The protein content of supplemented sev 14.54% which was more as compared to the control one 14.52% Protein content increase in supplemented sev as compared to control.

**Fat:** The supplemented sev contained 14.11% fat whereas the value of fat in control sev was 15.66% fat content are decreased in supplemented sev as compared to control.

**Crude fibre:** The fibre content of control sev was 0.76%. which was increased in supplemented sev was 6.38%. fiber content increase in supplemented sev as compared to control.

**Ash:** The ash content was 3.33% in control sample and it was increased to 3.53% in supplemented sev.

**Table 1.2: Proximate composition Banana Blossom products**

Product	Moisture%	Crude protein%	Crude fat%	Crude fiber%	Ash%
<b>Sev</b>					
Control	4.65±0.00	14.52±0.02	15.66±0.01	0.76±0.01	3.33±0.01
Supplement 0%	6.78±0.01	14.54±0.01	14.11±0.02	6.38±0.03	3.53±0.03
<b>CD(P&lt;0.05)</b>	0.04*	0.14*	0.02*	0.09*	0.5*

Values are mean ±S.E of three independent determinations.



### Mineral Composition:

The food product were analyzed for iron, calcium, magnesium, potassium content are results has been shown in table 1.3 respectively.

**Iron:** The iron content of control *sev* was 3.49 mg/100gm, which was significant more in incorporated Banana Blossom that was *sev* 8.78mg/100 gm.

**Calcium:** The control *sev* contained 20.88 mg/100 gm calcium whereas the value of calcium in supplemented *sev* was 24.39.mg/100 gm. There was significantly increase in calcium content in supplemented *sev*, as compared to control one.

**Magnesium:** The magnesium content of control *sev* was 0.26 mg/100 gm, while it was 5.10 mg/100 gm in supplemented *sev*.

**Potassium:** The Table 1.3 that shows increase in potassium content of supplemented *sev* 0.98 mg/100 gm as compared to the control one 56.21 mg/100 gm.

**Table 1.3: Mineral composition Banana Blossom products**

Product	Iron mg	Calcium mg	Magnesium mg	Potassium mg
<i>Sev</i>				
Control	3.49±0.01	20.88±0.05	0.26±0.3	0.98±0.05
Type II	8.78±0.03	24.39±0.05	5.10±0.01	56.21±0.03
<b>CD(P&lt;0.05)</b>	0.12*	1.06*	0.66*	0.09*

Values are mean ±S.E of three independent determinations

### Conclusion:

Present investigation reveals out the effect of different treatment on Banana Blossom and its utilization into product *sev*. The sensory characteristics of the product were analyzed by 9 point hedonic scale. Quality of the *sev* could be improved by the Banana Blossom. Banana Blossom were desirable in terms of color, taste, texture. The result of sensory evaluation showed that the incorporation of Banana Blossom up to 20% was found to be most acceptable to obtain *sev* with improved nutritional quality and good sensorial attributes. Banana Blossom product are very beneficial for our health and cures many disease like diabetes, cancer, etc.



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