



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2019; 8(5): 470-472
Received: 14-07-2019
Accepted: 16-08-2019

Sharma Shubham
Indore Institute of Pharmacy,
Indore, Madhya Pradesh, India

Sontakke Rupali
Indore Institute of Pharmacy,
Indore, Madhya Pradesh, India

Sharma Nayany
Indore Institute of Pharmacy,
Indore, Madhya Pradesh, India

Pancholi Neetu
Indore Institute of Pharmacy,
Indore, Madhya Pradesh, India

Kamalpuria Neha
Indore Institute of Pharmacy,
Indore, Madhya Pradesh, India

Imminent composition of *Musa paradisiaca* Blossom of Indian origin: A review

**Sharma Shubham, Sontakke Rupali, Sharma Nayany, Pancholi Neetu and
Kamalpuria Neha**

Abstract

Musa paradisiaca species of banana is majorly grown in India. It contains high amount of fibre which has very high nutritional value. It contains plethora of phytoconstituents as alkaloids, glycosides, terpenoids, saponins, steroids, vitamins in it. The flowers of banana blossom are of tremendous nutritional importance as it contains (moisture, ash, fiber, protein and carbohydrate). As per the different elementary studies, it also contains some macro (Ca, K, Cl, S) and micro (Mn, Zn, Cu) elements and contains vitamin E and high amount of flavanoids. The extracts of blossom with ethanol and water are mainly used due to its anti-inflammatory activity, antimicrobial activity, antioxidant activity, pancreatic lipase inhibitory activity and contain a number of flavonoids, vitamin E in it.

Keywords: *Musa paradisiaca*, macro and micro elements, anti-inflammatory, vitamin E

Introduction

It is of tremendous importance in traditional medicine in the treatment of bronchitis, constipation, ulcer problems and menstrual bleeding [1, 13]. The extracts of banana blossom have antioxidant properties that prevent free radicals and control cell and tissue damage [2]. It is used as a vegetable in a variety of Medicinal plants with significant pharmacological importance are used to treat different diseases as it is mentioned in many cultures and various system of medicine. This endemic knowledge, is transferred from generations. This review focuses on the species of banana blossom which is widely grown in India, its imminent composition and its uses infact different pharmacological studies were carried out to validate the traditional uses of *M. paradisiaca* which is used to prevent and cure different types of disease and used as food and vegetable [14, 15]. The banana blossom is a large, dark purple-red blossom grows at the end of a bunch of bananas as shown in fig 1 [3]. The banana plant starts to spread in India by about 600 BC and after that it starts spreading all over the tropical world. It is considered as worlds oldest cultivated crop. One of such plant family which is of medicinal importance is Musaceae. It consists of 2 genera and has 42 different species and in that 42 species, 32 species belongs to musa species it is one of the largest known herbaceous flowering plant in the world [4]. Banana and superannuated fruit known as "Apple of the Paradise". India is considered as world's largest producer of banana and it is grown almost in every state [5]. Banana blossom is having tremendous nutritional value and has various health benefits. The flower raw form and sometimes it is consumed in cooked form by some Asians. The nutritional properties and health benefits of banana blossom are less focused by researchers, taking note on all these factors the present study was done to analyze the nutritional composition and antioxidant properties.



Fig 1: The banana blossom is a large, dark purple-red blossom grows at the end of a bunch of bananas

Correspondence
Sharma Shubham
Indore Institute of Pharmacy,
Indore, Madhya Pradesh, India

Materials and methods

Imminent analysis of banana blossom

Banana flower samples were taken and analyzed for their imminent composition (moisture, protein, fat, ash and total dietary fiber) by following the methods standardized by Association of Official Analytical Chemists (AOAC, 1995) [6]. The sample was dried in an oven at 105°C until it attains constant weight. Moisture content was determined by gravimetric analysis. Protein was determined by Kjeldahl method (Kjeldahl, 1883) [7]. Crude fat was evaluated by the Soxhlet extraction method. The ash value was determined by gravimetric measurement of the sample in the furnace at 550 °C until the constant weight was achieved. Crude fiber was determined according to the AOAC enzymatic gravimetric method (1995).

Preparation of Banana Blossom Powder (BBP): The blossoms were chopped up to the thickness of 5mm, thereafter it is directly treated with 0.5% citric acid solution to minimize enzymatic browning, keep the slices in immersed state for 30 mins for 12 hrs, grinded in a mixer grinder upto the particle size of 40 mesh, packed in polyethylene bags and then stored at 50C prior to further analysis.

Imminent Analysis of Banana Blossom Powder: Banana blossom powder was analyzed for its imminent composition (moisture, protein, fat, ash and crude fiber) by following the standard methods published by Association of Official Analytical Chemists (AOAC, 1995).

Preparation of Banana Blossom Extract (BBE): Banana blossom extracts were prepared by using two different solvents-Water and Ethanol. 50 gm of BBP was shaken with the solvent medium (water or ethanol) for 6 h in a shaker. After shaking, these prepared extracts of water and ethanol were filtered by using a whatman filter paper. The obtained residues after filtration were dried overnight and were extracted twice with the solvent medium (Water or ethanol) by shaking for 1 h. The extracts were concentrated by evaporating the solvent in a rotary evaporator. The obtained extracts were stored in amber colored air-tight containers at -4 °C, until further use.

Phytoconstituent present in banana blossom

Generally, banana blossom powder contains (moisture, protein, fat, ash and total dietary fiber) in it. It contains very high amount of moisture that is almost above 90% indicating its short shelf life. It contains significantly very high amount of protein and very less amount of fat in it. It contains various macro and microelements and therefore it shows high ash value. The banana blossoms are such a good source of minerals like magnesium, manganese, iron and copper. It contains very high quality protein because of its well-balanced essential amino acid. As it also contains high amount of fibre and because of that it can also be consumed as dietary fibre supplements. Because of all these components it is considered as powder of nutritional importance. Ethanol and water extracts of banana blossom contain phenolics, flavanoid compounds, and vitamin E. These phenolics and flavanoids compounds are responsible for the antioxidant activity. Phenolics are plant secondary metabolites and they are the most common water soluble antioxidant compounds. They form chelates with active metal ions, and prevents the conversion of hydro peroxides in to reactive oxyradicals. Flavonoids also fall in the category of antioxidants. Vitamin E

which is also chemically known as tocopherol and its majorly acts as an antioxidant Vitamin E acts by protecting the fatty acids chain from the free radical reactions that can result in cellular damage infact it is protective against almost 85 diseases, such as cardiovascular diseases, cancer [8]. The blossoms also contains saponins which act by lowering the LDL or bad cholesterol, strengthen our immune system against several infections and also considered as growth inhibitors for cancer cells [9].

Nutritional composition of banana blossom powder: Table 1

The 100g of banana blossom generally contains, 51 kcal of energy, 1.6g of Protein, 0.6g of Fat, 9.9g Carbohydrate, 5.7g of Fiber, 56mg of Calcium, 73.3mg of Phosphorous, 56.4mg of Iron, 13mg of Copper, 553.3 mg of Potassium, 48.7mg of Magnesium, 34mg of Vitamin-E and it also contains 137mg of flavonoids especially quercetin [10].

Table 1: Nutritional composition of banana blossom powder

Moisture content	Very high
Protein content	High
Fat content	Very low
Ash value	High
Total dietary fibre	High
Mg, Cu, Fe, Mn, Ca, Cl	Low

Table 2: Banana blossom extract contents

Phenolic content	High
Flavonoids	High
Vitamin E	Low
Saponins	Low

Table 3: Pharmacological activity shown by banana blossom extract

Antiinflammatory activity
Antimicrobial activity
Antioxidant activity
Pancreatic lipase inhibitory activity
Antibacterial activity
Antimalarial activity

Antibacterial activity: Banana blossoms extract has been found to be very efficacious for treating the infection in a natural way. During a research on antimicrobial activity of ananda blossom extract, it was concluded that certain bioactive compounds extracted from banana blossoms purport antibacterial activity against bacteria *Bacillus* [16]. The research also mentions that the bioactive compound malic acid found in blossom purport a stronger antibacterial activity against *Bacillus subtilis*, *Bacillus cereus*, and *Escherichia coli* [17].

Antimalarial activity: The flower extract is also very useful in healing wounds especially in children and preventing the malarial parasite, *Plasmodium falciparum* from growing as well as developing in the body, (<http://www.parentinghealthybabies.com/health-benefits-of-banana-flower-for-children>).

Rich in antioxidants and other phytochemicals: Earlier researches have shown banana blossom shows significant antibacterial and antioxidant properties [18]. Since the banana blossoms are rich in phytochemicals like vitamins, flavonoids and protein therefore for this reason the blossoms can be used for the treatment of bronchitis, constipation and peptic ulcer

[19]. It has been found that banana blossom is of industrial importance extracts due to its high phenolic contents and flavonoids [11]. Infact it has been found that the best antioxidant activity can be achieved when the extraction is done at 60 degrees centigrade with ethanol concentration of 50 percent for the time of 30 minutes and stirring extraction without the use of ultrasound [20].

Traditional importance of banana blossom

The flower is of tremendous importance in traditional medicine in the treatment of bronchitis, constipation and ulcer problems. It regulates menstrual bleeding [13]. The extracts of banana blossom have antioxidant properties. It is used as a vegetable in raw form and sometimes it is consumed in cooked form by some Asians. Plantain blossom helps to cure severe stomach ulcers and also useful in the treatment of ulcers of throat. It can cure in case of inflammation of eyes as well. It can also help in treating vata diseases and nervous debilities [5, 7].

Conclusion: Taking into consideration with the presence of various phytochemicals in the flower of *M. paradisiaca*, antioxidant activity in the plant extracts can be attributed to at least one of the compounds. These findings confirmed that the flower may have potential use in pharmaceutical, cosmetic, and food products. Therefore, the findings are of the great impact in going further in research relevance.

References

- Jahan *et al.* Journal of Chemical and Pharmaceutical Research; Concentration influence on film, 2010.
- Pari L. Antihyperglycaemic activity of *Musa sapientum* flowers: effect on lipid peroxidation in alloxan diabetic rats. *Phytotherapy Research*, 2000.
- Nelson SC, Ploetz RC, Kepler AK. *Musa* species (bananas and plantains), ver. 2. In: Elevation, C.R. *Species Profiles for Pacific Island Agroforestry*, 2006.
- Nuengchamnon N, Lokkembol AH, Ing Kaniyan H. Separation and detection of the antioxidant flavonoids, rutin and quercetin, using HPLC coupled on-line with colorimetric detection of antioxidant activity. *Naresuan University J.* 2004; 12(2):25-37.
- Trease and Evans *Pharmacognosy*, Sixteenth ed. Saunders, New York.
- AOAC. *Official methods of analysis* (16th ed.). Arlington VA, USA: Association of Official Analytical Chemists, 1995.
- Kjeldahl J. Determination of protein nitrogen in food products. *Encyclopedia Food Science*, 1883, 439-441
- Gey KF, Puska P, Jordan P, Moser UK. Inverse correlation between plasma vitamin E and mortality from ischemic heart disease in cross-cultural epidemiology. *Am. J Clin. Nutr.* 1992; 53:326-334.
- Nataraj Loganayaki *et al.* Food and Science Biotechnology; Antioxidant capacity and phenolic content of different solvent extracts from banana (*Musa paradisiaca*) and mustai (*Rivea hypocrateriformis*), 2010.
- Qiang Jin *et al.* Investigation of dietary fiber, protein, vitamin E and other nutritional compounds of banana flower of two cultivars grown in China *African Journal of Biotechnology*. 2010; 9(25):3888-3895.
- Bouktaib M *et al.* Regio- and stereoselective synthesis of the major metabolite of quercetin, quercetin-3-O-b-D-glucuronide. *Tetrahedron Letters*. 2002; 43:6263-6266.
- Mumtaz antimicrobial activity of banana blossom extract incorporated chitosan-polyethylene glycol (CS-PEG) blended, 2010.
- Yunchalad M, Thavesook K, Hiraga C, Stonsaovapak S, Teangpook C, Jatujiranont N *et al.* Processing of canned banana flower and heart of pseudostem. *Nat. Sci.* 1995; 29:55-63
- Walker A. Le bananier plantain au GABON. *Rec Bot Appl Agr Trop.* 1931; 11:18-27.
- Wickramarachchi KS, Ranamukhaarachchi SL. Preservation of fiber-rich banana blossom as a dehydrated vegetable. *Sci. Asia.* 2005; 31:265-271.
- Mokbel MS, Hashinaga F. Antibacterial and antioxidant activities of banana (*Musa*, AAA cv. Cavendish) fruit peel. *Am. J Biochem. Biotechnol.* 2005; 1:126-132.
- Jahan M, Warsi MK, Khatoon F. Concentration influence on antimicrobial activity of banana blossom extract incorporated chitosan-polyethylene glycol (CS-PEG) blended film Jahan M, Warsi MK, Khatoon F. Concentration influence on antimicrobial activity of banana blossom extract incorporated chitosan-polyethylene glycol (CS-PEG) blended film. *J Chem. Pharm. Res.* 2010; 2(5):373-378.
- Padma BS, Tin HS, Chye FY, Abdullah MI. Antibacterial and antioxidative activities of the various solvent extracts of banana (*Musa paradisiaca* cv. Mysore) inflorescences. *Biological Sciences.* 2012; 12(2):62-73.
- Timsina B, Nadumane VK. Anti-cancer potential of banana flower extract: An *in vitro* study. *Bangladesh J Pharmacology.* 2014; 9(4):628-635.
- Schmidt MM, Prestes RC, Kubota EH, Scapin G, Mazutti MA. Evaluation of antioxidant activity of extracts of banana inflorescences (*Musa cavendishii*). *CYTA- J Food.* 2015; 13(4):498-505. Retrieved from <http://www.tandfonline.com/doi/full/10.1080/19476337.2015.1007532>