

IMPORTANCE OF BANANA BLOSSOM: A REVIEW

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Abstract: Banana flower is called as heart of banana because they are having huge benefits or use for healthy life and different type of disease and there treatment and life threatening disorder like different type of cancer, different type of preparation and extraction, formulation are used for treatment of disease .banana flower having rich source of nutrient and vitamin A,C,E ,minerals ,potassium ,flavonoids ,saponin ,terponids, glycoside, magnesium fat, carbohydrate, copper protein, calcium ,alkaloids ,essential and non-essential amino acids .large amount of nutrient effective on different kinds of disorders it is also use as anticancer ,antifungal ,antibiotic, antimicrobial, antidiabetic ,antioxidant helping to cure ulcer, helps in treatment of infection ,helps for healthy gastrointestinal, treating anemia condition that's why called as blood banana.

Index Terms-Banana flower,disease,vitamins,source,disorder,nutrients,blood banana.

I. INTRODUCTION:

Banana flower are known as heart of banana an antique fruit crop known as apple of paradise. Banana tree belonging to Musaceae family & banana tree is perennial herb it having wide variety speices throughout world in India having few or limited number of species musa acuminate colla, musa oranta ,musa sapientum, musa balbisiana colla, musa itinerans cheesman,musa nagensium prain,musa aurantiaca,musa flaviflora ,musa cheesman, musaceae family containing 2 genera and 42 species in that 32 belongs to musa genera. 1200 varieties of banana identified now. Banana bud or flower or blossom is component in the inflorescence of banana plant.¹

Banana plants containing both male & female flowers but they come out separately on plant. Upper side digital nodes produce male flower and basal nodes produce or hands produce female flowers. Banana blossom or flower reddish purple in color this hangs on ends of cluster of banana. Maroon petals surrounding covered to banana blossom protect to internal flower part that known as bracts that is removable part maroon banana turns into black when it oxidized and contact with air . Light yellow or slight yellowish part within bracts that is edible. Banana blossom contain source of potassium ,vitamin A, vitamin C ,vitamin E, minerals, flavonoids, tannins ,glycoside, saponin, steroid ,essential & non-essential amino acid, terponids, phenols, tannins ,alkaloids ,carbohydrate, fat ,copper ,protein ,phosphorous ,iron, magnesium, fiber ,calcium, antioxidant& nutritional value .^{1,3,10}

II. NUTRIENT VALUES:

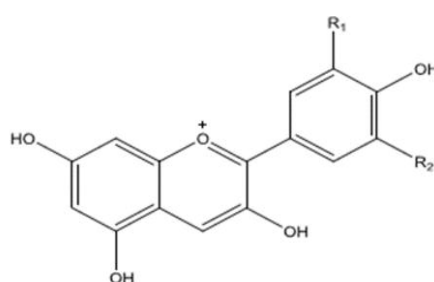
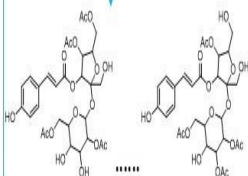
Protein -1.6 gm, iron-56.4 gm, phosphorus -73.3 mg, copper-13 mg, carbohydrate -9.9 gm, potassium-553.3 gm,fiber-57 gm, magnesium -48.7 mg, calcium -56 gm, vitamin E -1.07 mg.fat -9.9 gm, copper -553.3 mg . (3,4)

III. CHEMICAL CONSTITUENTS:



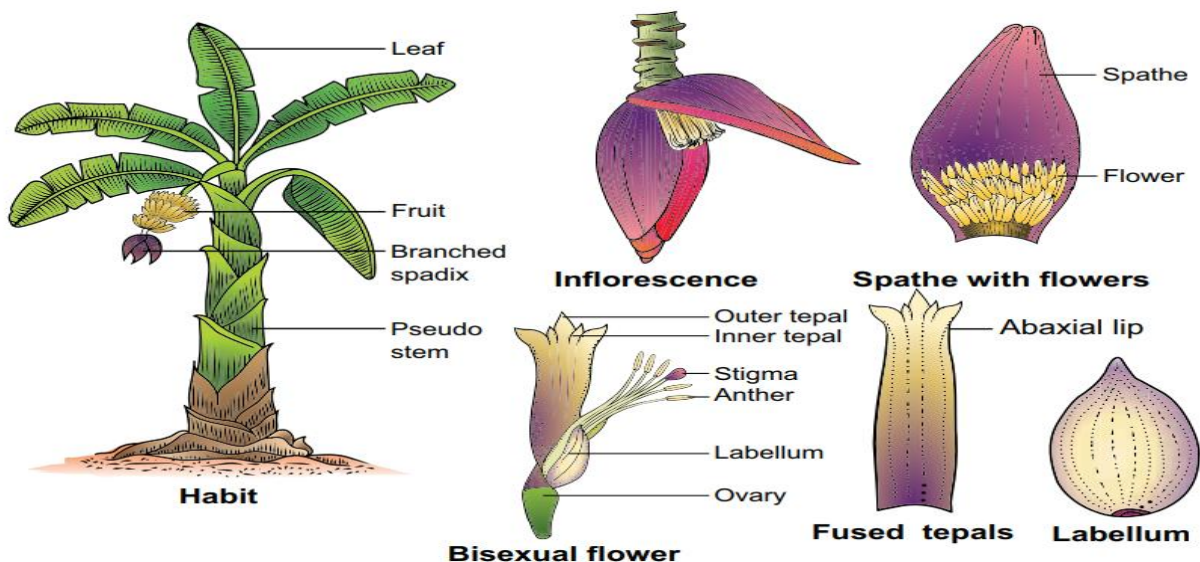
Anti-inflammatory and anti-*T. Cruzi* activities of the bract and the flowers

Identification of sucrose by using UPLC-ESI-QTOF-MS



General Structure of Anthocyanin

Anthocyanidin	R ₁	R ₂
Delphinidin	OH	OH
Pelargonidin	H	H
Peonidin	OCH ₃	H
Malvidin	OCH ₃	OCH ₃



IV. USES OF BANANA BLOSSOM:

- Banana flowers used to treat anemia , diabetes
- Refreshing mood or boosting mood and treating hypertension
- Reducing menstrual bleeding & free radical activity
- Used to cure diarrhea & dysentery
- Banana flower normal dose useful for painful menstruation
- It is good for weak heart
- Banana blossom used fir bronchitis, constipation
- It is used to treat to ulcer problem and stomach disorder
- Used for obesity
- Used as anti-inflammatory & antioxidant
- Banana blossom are having dietary fiber maintain & lower cholesterol level
- Normalize blood glucose & insulin level
- Dietary fibers of banana blossom minimize the risk of colon cancer lower
- Reduce chances of breast cancer
- Prevention diverticulosis and diverticulitis.
- It is used for dehydration also
- Use to treatment for throat cancer
- Treating for eye inflammation and eye affliction
- It is helpful in treatment of vata disease and nervous deabilities.
- Banana blossom inhibit growth of cancer cell because boost immunity against infection.
- Decrease chances of chronic disease and all cardiovascular disease
- Banana blossom used for lower menstrual bleeding.
- It also used lactating women for milk production
- Helps to weight loss
- Banana blossom having high content of potassium is cation abundant in intracellular fluid.
- It maintain electrolyte and pH of body
- Banana Blossom Used for contraction of smooth ,cardiac ,skeletal muscle
- It is used for cervical cancer
- Banana blossom content tannins helpful for urinary tract infection
- Tannin prevent ageing.
- Beneficial in stroke
- Reduce anxiety
- Good for gastrointestinal health
- Used as a antifungal infection As well as antibacterial agent in bacteria bacillus and Escherichia coli.
- In children useful for malarial treatment
- Useful in healing treatment against Bacillus subtilis, Bacillus cereus, and Escherichia coli (Jahan et al., 2010). Along with that the flower extract is also useful in healing wounds especially in children and preventing the malarial parasite, Plasmodium falciparum from growing and developing in the body. Besides fighting against infections, the juice of banana blossom is very helpful in healing the wound and burn faster. ^{1,2,3,4,6,7,8,9,10,12,15,16}

V. DIFFERENT ACTIVITY OF BANANA BLOSSOM:

1. ANTICANCER ACTIVITY:

Banana flower (*Musa paradisiaca*) with ethanolic extract was studied for invitro anticancer activity on cervical cancer cell lines (HeLa, CHO and normal human lymphocytes). Phenol fractionated induce apoptosis in treated HeLa cell more greatly than CHO cell with an IC₅₀ value of 20 µg/mL used for antiproliferative effect. Purification of extract by LS-MS and TLC chromatography. Ethanolic extract of banana flower used as generic medicine treatment of cervical cancer.¹

2. ANTIDIABETIC ACTIVITY:

Musa paradisiaca flower extract showing pharmacological action of antidiabetic activity. In animal induced streptozotocin and alloxan for diabetic studies. Streptozotocin induced same effect like human diabetes mellitus which is cytotoxic to β – cell of pancreas. Flower extract decrease level of blood glucose, glycosylated hemoglobin, urea, uric acid and creatinine. Oral dose is 200 mg/kg body weight for 30 days.¹

3. ANTIOXIDANT ACTIVITY:

This activity is studied on 2 different variety of banana flower (*Musa baxijiao* and *Musa paradisiaca*) in that found inhibition of lipid peroxidation in egg lecithin that's form thiobarbituric acid – reactive substance. Assay used as model per oxidative damage in biomembrane. *Musa baxijiao* variety flower having greater antioxidant activity.¹

4. ANTIMICROBIAL ACTIVITY:

Musa sacuminata flower of methanolic extract seen action fight against pathogenic microorganism like *Escherichia coli*, *Micrococcus sp*, *Staphylococcus aureus*, *Bacillus subtilis*, *Candida albicans*, *Aspergillus niger*, *Salmonella sp* with MIC values range is 1.56 to 12.5 mg/mL, inhibition range 12 mm to 22 mm.

VI. DIFFERENT FORMULATION PREPARED BY BANANA BLOSSOM:

1. EXTRACTION (ANTIDIABETIC STOMACH ULCER):

Banana flower first clean, separate and cutting into small pieces dry at temperature 40°C into an oven. Grinding that dry piece convert into powder using homogenizer stored powder at 4°C. Extraction was done by using Soxhlet apparatus in that solvent use ethanol 95% by hot extraction method. In Soxhlet apparatus take coarse powder of banana blossom add 500 ml of ethanol 95% get filtrate. This filtrate passing under vacuum rotary evaporator. Then calculate yield and total phenol content (TPC).¹

2. PREPARATION (INCORPORATED INTO CHOCOLATE) HIGH NUTRIENT PROVIDER:

Banana blossom first remove cover and clean cut into small piece. For formulation take fresh banana blossom into 3 different concentration 10%, 20%, 30% Normal procedure of 3 different concentration in that take cocoa powder add butter. Composition 3 type of formulation take cocoa powder + whole milk + ground sugar + butter + nuts + banana blossom powder (10%/20%/30%) make different concentration formulation. This formulation high content of nutrient calories, protein, fat, calcium, Iron, potassium, fiber, magnesium.¹³

3. PREPARATION (EXTRACTION HOT AND COLD) ANTIOXIDANT:

Take banana blossom cut into pieces and deep in solvent of citric acid solution (0.2%) for 1 hr. Citric acid solution prevent from brownish pigment because antioxidant property. Then dried that piece and grind into powder form. Take 100 gm dried banana powder put into 1L conical flask with solvent 500 ml ethanol 80%. This mixer put on shaker for 2 days. Shaking and vibration process increase extraction efficiency. This mixer filter by using Whatman filter paper no. 1. This concentrate put on rotary evaporator at 50°C on water bath. Take final weight of crude extract.

COLD EXTRACT:

Take banana powder of *Musa paradisiaca* mix with solution ethanol 95%. Use of rotary shaker for incubation at 80 -120 rpm for 15 days in room temperature. This mixer filter by using Whatman filter paper no. 1. Get concentrated extract put on water bath.⁵

4. DEHYDRATION OR PRESERVATION OF BANANA BLOSSOM:

250 to 260 gm Banana flower sliced into thickness of 3 mm put into 1L citric acid solution 0.2%. Spread that sliced on plastic tray loading density 2.2 kg/m² for drying at 50°C in dehydrator for 6 hr hot air at flow rate of 0.305 m/s. That dehydrated product store into desiccator. This used for food also in curry form.⁶

5. PREPARATION EXTRACTION OF ANTHOCYANIN FROM BANANA BLOSSOM (*MUSA PARADISIACA*) ANTIOXIDANT:

In this extraction used different solvent petroleum ether, chloroform, ethanol, water. Take banana flower, clean and cut it and grind into food processor. Take 10 gm of banana flower bract put into above mentioned any one solvent 100 ml at atmospheric temperature for 24 hr. Vibrate by using mechanical agitator. This concentrated aqueous solution put on water bath 60°C for 2 hr. For drying vacuum used rotary evaporator at temp 40°C. This extract having antioxidant, phytochemical anthocyanin property. Content of reducing sugar, tannin, flavonoid, terpenoid, coumarins, cycloglycoside, phlobotannins, phenol, quinones, anthroquinones, spanonin.⁸

6. BANANA BLOSSOM INCORPORATED FOOD PROCESSING FOR MEDICINAL USE:

Banana blossom (*Musa paradisiaca*) are taken clean and remove outer covering of one, two layer. Then wash banana flower and soaked into with brine solution for 20 minutes. After completion of 20 min this banana blossom steam for time 30 minutes. Completion of steaming grinding this banana blossom by using food processor. then this material mixture spread on tray and placed in to freezer for 45 minutes. after freezing for shape insert that mixture into mould for coating used bread crumb. Lastly fry convert that material yellowish brown.⁵

7. BANANA BLOSSOM IN FOOD PRODUCT FOR MEDICINAL USE (LADDU):

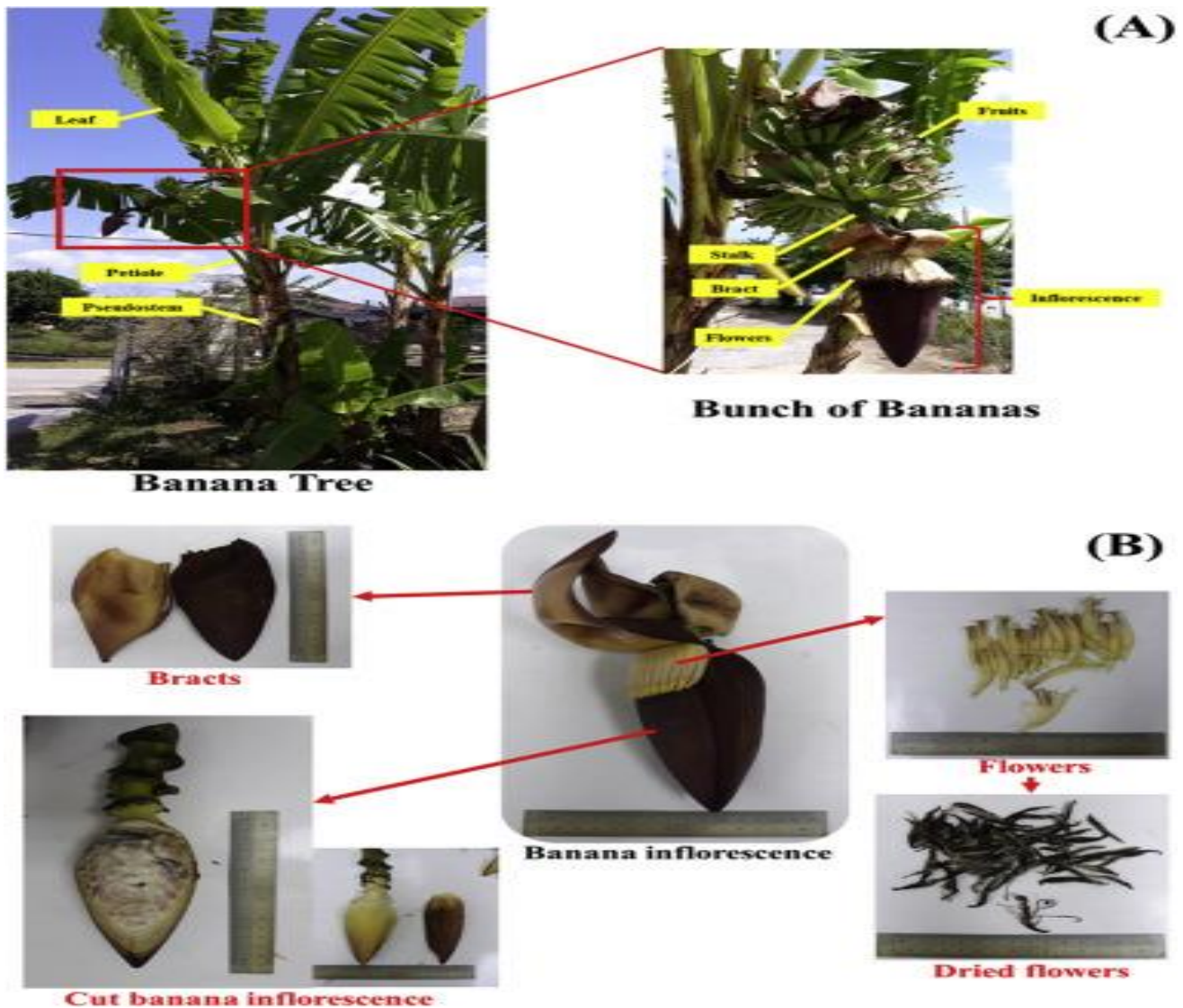
Firstly we take banana blossom powder in concentration 35%, 50%, 65%. then take ghee for binding all flours and powders bengal gram and green gram flour. take one pan add ghee, green gram flour, Bengal Gram, sugar and stir that mixture continuously. then add banana blossom powder. stir it continuously when pasty texture obtained. swith of flame and cooling this mixture. shaping that mixture convert into laddu.¹²

8. IMPROVEMENT OF NUTRITIONAL VALUE BANANA BLOSSOM INCORPORATED INTO SEV:

Take Bengal gram flour, banana blossom, salt, oil, water. Firstly passing Bengal gram flour into sieve then add clean wash banana blossom small piece, some salt, oil. make dough fill that dough in sev machine. Frying that sev till golden brown.¹⁴

9. BANANA BLOSSOM AND INDIAN GOOSEBERRY POWDER TREATING ANEMIA FOR ADOLESCENT GIRLS:

Collect fresh banana from different area dried at temp 50°C for time 6 hours. then dried banana blossom by process of grinding converted into powder. hummus development with incorporated of banana blossom powder with different concentration 18, 20, 25 gm and Indian goose berry powder different concentration 2, 3, 5 gm. In that 20 gm of banana blossom and 3 gm of indian goose berry powder is best concentration given standard result on anemia condition.¹⁰



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CONFLICT OF INTEREST:

We, authors declare that we have no known competing financial interest or personal relationships that could have appeared to influence the work reported in this paper.

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