Antioxidant Activity Of Aqueous Extract Of Plantain Flower Bract

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Abstract:Background: The objective of this study is to find out the antioxidant activity of plantain flower bract of Musa Paradisiaca. Musa paradisiaca is one of the most important fruit crops with some medicinal benefits which is beneficial to cure some diseases like diabetics, dysentery, ulcer etc. and it also have some antioxidant properties.
Method: Oxidation is a process that produces free radicals which damage cells in human beings by inducing oxidative stress so that the antioxidant properties are used to remove or fight against the free radicals. The antioxidant activity was found out by DPPH (1, 1-diphenyl-2-picrylhydrazyl) free radical scavenging method and also, we have seen total antioxidant capacity assay. Results: Because this plantain flowers bract has high content of phenolic compounds and other phyto chemicals which contributes to the antioxidant activity. Conclusion: This DPPH free radical scavenging method was done by using methanol extract and the DPPH assay proved that the bract has potent antioxidant activity and it shows the 168.04 IC50 µg/ml for scavenging activity and 129.29 IC50 µg/ml for total antioxidant capacity assay.
Key Words: Musa paradisiaca, Aqueous Extract, Plantain flower bract, Antioxidant activity, Total Antioxidant capacity assay.

1. INTRODUCTION:

A Compound that inhibits oxidation is generally known as antioxidants. Oxidation is one of the necessary chemical reactions in our body but sometimes it produces free radicles which are harmful to our body because this frees radical damages the cells of organisms. Plants like musa paradisiaca have medicinal values which is also used as medicine from earlier days it has been proved that this plantain flower bract has essential phytochemical compounds which is necessary for human beings. Musa paradisiaca belongs to the family Musaceae and it is one of the monoherbacious plant [1]. The taxonomical classification of musa paradisiaca is Kingdom : Plantae Division : Magnoliophyta Class : Liliopsida Order : Zingiberales Family : Musaceae Genus : Musa Species : Musa paradisiaca, Musa sapient [2].As we know musa species is one the world's leading fruit crop and the FAO (Food and Agriculture Organization) have proved that in the year 2004, 103 million of banana have been produced. Bract, bells, tepals and stigma are the parts of banana flower [3]. The bracts is known as the modified leaf it is typically small but some times larger and brightly colored. Bract is one of the excellent foodswith health benefits because it contains fibers, potassium, Vitamin E and unsaturated fatty acid. Various diseases like ulcers, anemia, high blood pressure, constipation condition can be cured and it also helps in regulating menstrual cycle, include this flower bract in their normal diet as a healthy ingredient because of its nutritional value [4].As I said above during biochemical and metabolic process free radicals and ROS

which means reactive oxygen species are produced in human bodies then these ROS and free radicals stimulates the oxidative stress which cause the various diseases in human beings. One of the best ways to reduce this degenerative disease is by increasing the antioxidant level in the body [5].this antioxidant inhibits the initiation process to scavenge the free radicles and it also break chain propagation and the antioxidants quench superoxide and singlet oxygen, it also reduces the hydrogen peroxide and binds to the metal ion to suppress the formation of free radicles [6].

2. MATERIALS AND METHODS:

Collection of Bracts:

The plantain flower was purchased from the local Tirupattur Market and used its bract for our study.

Preparation of Aqueous Extract:

25g of plantain flower bract was weighed accurately and washed thoroughly with double distilled water. Then the bract was cut into a small piece and allowed to boil in 500ml distilled water at 100℃ for 1hr and then it is cooled and filtered. Then the filtrate can be stored at 4°C and it can be utilized for 1 week for further studies.

Antioxidant Assay:

DPPH Free Radical Scavenging Activity:

After the extraction of sample extract. The extract was taken in different concentration (10µl, 20µl, 30 µl, 40µl & 50µl) and then 50µl of 0.659 mM DPPH was then dissolved in methanol solution then it is made up to 1ml with double distilled water. Then the tubes were incubated at 25℃ for 20 minutes. At last the values absorbed were recorded at 510nm using Shimadzu UV 1800 spectrophotometer. Then again, the same procedure was followed for control without sample.

Total Antioxidant Assay:

The extract was taken in different concentration (10µl, 20µl, 30 µl, 40µl & 50µl) and 1ml of reagent solution was added. The reagent solution was prepared by adding 0.6M Sulphuric acid along with 28 mM Sodium phosphate and 4 mM Ammonium Molybdate. After adding extract and reagent solution the tubes were capped and incubated in thermal block for 90 minutes at 95℃. The tubes were cooled after the time interval at room temperature. Then the absorbance was recorded at 695nm using Shimadzu UV 1800 spectrophotometer.

3. RESULT AND DISCUSSION:

To quench the free radicals, the antioxidant activity is measured by quantifying the antioxidant compounds. It is one of the widely used methods to combat health risk. Redox property plays an essential role in quenching singlet and triplet oxygen, absorbing and neutralizing free radicals and peroxides decomposing. This bract contains some Phytochemical and vitamins such as vitamin C and E so it was expected that this bract must contain antioxidant activity. As antioxidants, the normally occurring plant compounds have the effect of their physiological functions. And our bract has proved that it has potent antioxidant activity.

Antioxidant Activity:

Table 1: Free radical scavenging activities of Plant in Flower Bract Extract determined by DPPH assay (%)

S.No	Extract Concentration (µg/ml)	DPPH Antioxidant Activity		
		Absorbance	% of SCV	IC50 (µg/ml)
1.	50	0.621	26.59	168.04
2.	100	0.519	38.65	
3.	150	0.435	48.10	
4.	200	0.352	58.39	
5.	250	0.265	60.79	
6.	300	0.204	75.88	
7.	**Control**	0.846	-	

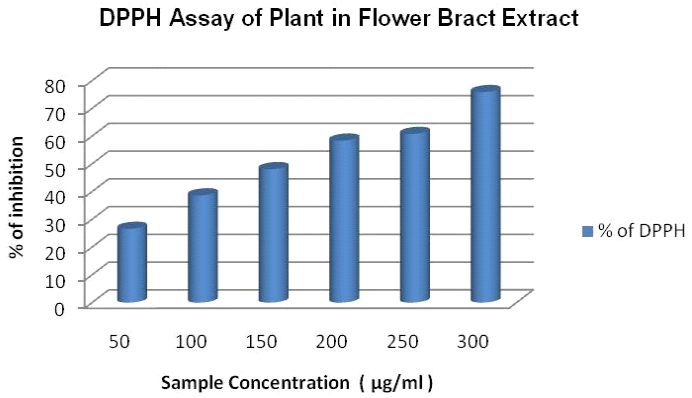

Fig 1: DPPH assay of plant in flower bract Extract

Total Antioxidant Activity:

S.NO	Extract Concentration (µg/ml)	TAC Assaay		
		Absorbance	% of SCV	IC50 (µg/ml)
1.	**50**	**0.384**	**41.75**	**129.29**
2.	**100**	**0.351**	**45.91**	
3.	**150**	**0.316**	**51.30**	
4.	**200**	**0.281**	**56.70**	
5.	**250**	**0.215**	**66.87**	
6.	**300**	**0.145**	**77.65**	
7.	**Control**	**0.649**	**-**	

Table 2: Antioxidant Activity

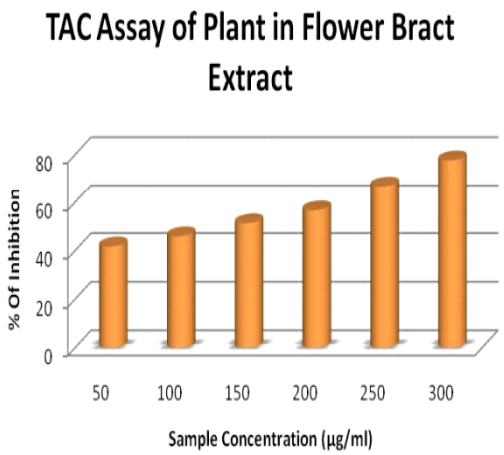

Fig 3: TAC assay of plant in flower bract extract

4. CONCLUSION:

Musa paradisiaca is one of the common and highly valued medicinal plant which is used as diet for diabetic patient and used as medicine. It is said as medicinal plant because it provides some useful drugs for human use from the phyto chemical present in the bract. This bract is the better choice for biological and chemical analysis because the DPPH assay proved that the bract has potent antioxidant activity and it shows the 168.04 IC50 µg/ml for scavenging activity and 129.29 IC50 µg/ml for total antioxidant capacity assay. And it protects against the free radicals

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