

***In-vitro* antioxidant and identification of the antimicrobial fraction in selected traditional foods**

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ABSTRACT

*The current investigation aims to carry out antioxidant studies and the identification of antimicrobial fraction from various extracts of *Setaria italica*, *Panicum sumatrense*, *Drimia indica*, *Bambusa bamboos* seed. Nitric oxide assay was carried out in all the samples so as to detect its antioxidant activity. This study revealed significant antioxidant activity. Antimicrobial studies were carried out to determine the Minimum inhibitory concentration (MIC) of different extracts, which gave significant results.*

Key words: *Setaria italica*, *Panicum sumatrense*, *Drimia indica*, *Bambusa bamboos*, NO assay, MIC

INTRODUCTION

Food is any substance consumed to provide nutritional support for the body. Forests are the repository of variety of foods. Tribals living as part of nature exploited nature to meet their food demands. Some of their foods are uncommon to us and nutritionally superior and can be selectively used for bringing about better varieties. Plants have provided man with all his needs in terms of shelter, clothing, food, flavours and, fragrances [1]. Natural antioxidants can protect the human body from free radicals and retard the progress of many chronic diseases as well as lipid oxidative rancidity in foods[5].Antioxidant activity of the plants is due to the presence of flavones, isoflavones, flavonoids, anthocyanin, coumarin lignans, catechins and isocatechins[2].Many of them have antimicrobial activity also. The antimicrobial activity was checked by disc diffusion method[3]. Millets are high energy, nutritious foods comparable to other cereals and some of them are even better with regard to protein and mineral . Bamboo seeds are nutrient rich , the overall nutritive quality is slightly greater than the rice and wheat. Bamboo is the most marvelous plant in nature. it can be used as roof, floor, walls[4].

MATERIALS AND METHODS

COLLECTION OF SAMPLE

The samples were collected from natural resources from the Nilambur forest Division of Malappuram District and authenticated from the Taxonomy Department of Uwin Life Science, Malappuram. The sample specimen were stored in Uwin Life Science, Malappuram. The collected specimen were then coarsely powdered.

EXTRACTION:

The dried and powdered samples were extracted separately by using absolute alcohol. The extraction was carried out by refluxing method and can be used to check antioxidant activity of the samples. For antimicrobial activity sequential extraction can be done with solvents of varying polarity (petroleum ether, chloroform, ethyl acetate, absolute alcohol, water) by using soxhlets apparatus. The extracts were then concentrated to dryness and dissolved in respective solvents and the concentration was made up to 100 mg/ml. These extracts were used for various assays.

**ANTIOXIDANT ACTIVITY OF THE SAMPLE:****Assay of nitric oxide – scavenging activity**

For the experiment, sodium nitroprusside (10 mM) in phosphate buffered saline, was mixed with different concentration of each extract and incubated at room temperature for 150 min. After the incubation period 1 ml of each incubated extract was taken, to this 0.5 ml of Griess reagent was added. The absorbency of the chromophore formed was read at 546 nm.

ANTIMICROBIAL ACTIVITY:

The given plant extract was transferred in to a pre-weighed beaker and the extract was concentrated by evaporating the solvent at 60°C. The crude extract was weighed and dissolved in a known volume of dimethyl sulphoxide (DMSO), to obtain a final concentration of 20 µg / 5 µl and 50 µg/5 µl. The microbial strains used are *Aspergillus niger*, *Aspergillus flavus*, *Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Proteus vulgaris*. Muller Hinton Agar plates were prepared and the test microorganisms were inoculated by the spread plate method. Filter paper discs approximately 6 mm in diameter were soaked with 1 µl of the plant extract and placed in the previously prepared agar plates. Each disc was pressed down to ensure complete contact with the agar surface. The agar plates were then incubated at 37°C. After 16 to 18 hours of incubation, each plate was examined. The resulting zones of inhibition were uniformly circular with a confluent lawn of growth. The diameters of the zones of complete inhibition were measured, including the diameter of the disc, where the dicloxacillin was used as control.

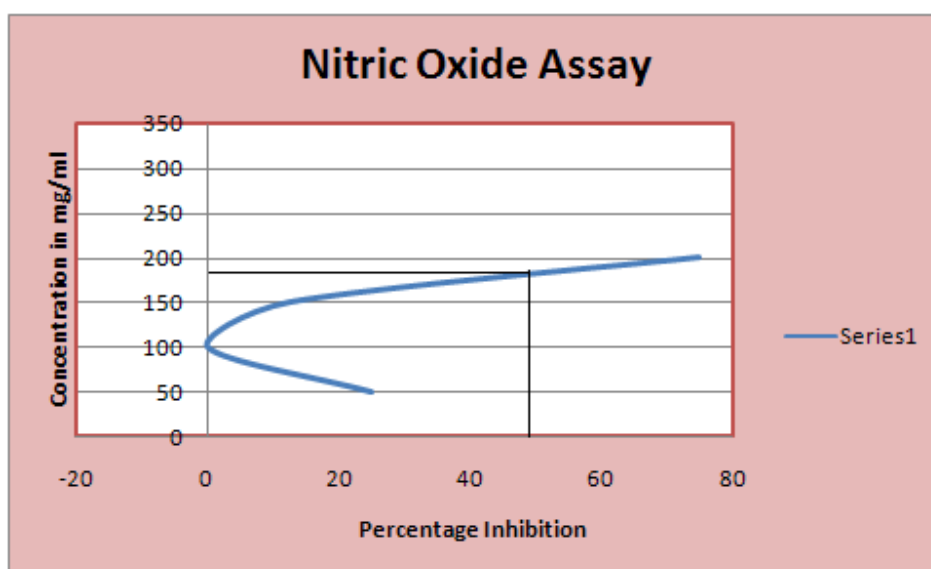
RESULTS**Table :1. Nitric Oxide- scavenging activity of four samples**

Sample	Absorption of the sample after inhibition by the sample at 546nm
<i>Setaria italica</i>	0.69
<i>Panicum sumatrense</i>	0.98
<i>Drimia indica</i>	0.83
<i>Bambusa bamboos</i>	0.40

Table: 2. NO Assay of Bamboo seed.

Concentration in mg/ml	% of inhibition
50	25
100	0
150	12.5
200	75

Fig:1



EC 50 = 180 mg/ml

Antimicrobial activity. The results mentioned were got for the culture of *Staphylococcus aureus*.

Fig:2



Fig:3

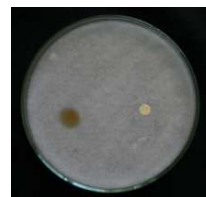


Fig:4

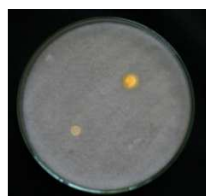


Fig:5



Fig:6

Table: 3 Results for antimicrobial assay.

Sample name.	Extract used.	Concentration.	Diameter of Complete Zone of Inhibition.	Photograph .Number
<i>Setaria italica</i>	Ethyl acetate extract.	4 µg	0.00	NA
		10µg	8.00 mm	2

Table: 4

Sample name.	Extract used.	Cssoncentration.	Diameter of Complete Zone of Inhibition.	Photograph Number .
<i>Panicum sumatrense</i>	Chloroform extract.	4µg	9.00	3
		10µg	10.00	4

Table: 5

Sample name.	Extract used.	Concentration.	Diameter of complete zone of inhibition.	Photograph Number .
Bamboo seed	Chloroform extract.	4µg	14 mm	5
		10µg	18 mm	6

CONCLUSION

Anti-microbial assay for each fraction of all the samples were carried out using Disc Diffusion method. Most plants shows activity against *Staphylococcus aureus*. The most potent anti-microbial fraction was the 10µg Chloroform fraction of the *Bambusa bamboos*. The results shows that three among the samples shows anti-microbial activity even though the tribal are consuming those as foods not as medicines. Among the four foods screened, the seed of *Bambusa bamboos* possess (EC 50 = 180mg/ml) high anti-oxidant and anti-microbial activity which shows the efficacy of the plants.

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