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Research Article

Evaluvation of Anti-Oxidant Activity of Ethanolic Extract of *Desmostachya Bipinnata* by Using *In-vitro* Methods

Purini Sai Charitha*, P. Sailaja, C. Madhavi Latha, Y. Prapurna Chandra

Department of Pharmacology, Ratnam Institute of Pharmacy, Pidathapolur (V&P), Muthukur (M), SPSR Nellore District – 524 346

ABSTRACT

Peptic ulcer and other acidic symptom affect up to ten percentages of the humans with sufficient severity to prompt victims to seek medical attention. The more significant disease condition requiring medical focus is ulcer and gastro esophageal disease. In our study *Desmostachya bipinnata* plant extracts its phytochemical investigation will be a useful tool for the identification and authentication of the plant for industrial and further research purpose, which will be related to the antioxidant activity. Antioxidants, which can scavenge free radicals, have an important role in pharmacological systems. Antioxidants are emerging as prophylactic and therapeutic agents. Hence, antioxidant was also evaluated for the potent extract. And now I have under taken the study of evaluation anti-oxidant and antiulcer activity of *Desmostachya bipinnata* plant extracts by using in-vitro methods. The results analyzed from the present study have indicate that AEDB possesses antioxidant and antiulcer effect on aspirin induced ulcers. The preliminary phytochemical screening of whole plant extracts indicate in presence of flavonoid, alkaloid, proteins, amino acids and terpenoids, fixed oil and glycosides The antioxidant screening shows that it showed reducing power to DPPH radicals. But the efficiency showed that far below from Vitamin C. The concentration of the AEDB needed to scavenge 50% superoxide anion (IC50) equal to that of standard hence the plant extract have the significant antioxidant activity The antiulcer effect is screened in ethanol extract of *Desmostachya bipinnata* on NSAID induced anti-ulcer study. The results get from these study have been shown that ethanol extract of *Desmostachya bipinnata* produce antiulcer effect. In aspirin induced model, there is reduction in ulcer index, total acidity, total volume of gastric contents, total protein concentration and higher concentration of glutathione content and pH of gastric secretion they compared with control group.

Keywords: *Desmostachya bipinnata*, DPPH, Anti-oxidant

Article Info

***Corresponding Author**
Purini Sai Charitha
Department of Pharmacology,
Ratnam Institute of Pharmacy,
Pidathapolur (V&P), Muthukur (M), SPSR Nellore District – 524 346

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CONTENTS

1. Introduction

Plants since the antediluvian times have played a most important role in development of modern medicine. It has evolved through various forms like the complementary methods of Siddha, Ayurveda, Unani etc. to cure variety of diseases[1,2]. Nature endures its ways in supporting human activities in producing these medicinal compounds. They produce compounds called as the secondary metabolites that emulate a vital role in drug discovery. These compounds of plants were found as a curative for most disorders, apart from which they are well known for their tremendous effects of biological activities like antifungal, antibacterial, anticancer etc. which escalate the interest of human beings to ameliorate their studies in this field [3]. Their safe, nontoxic and dependable nature has drawn the attention of researchers [4,5] and *Desmostachya bipinnata* is one such medicinal plants that has been rarely studied but has shown its evident role in DNA damage protection activity[6]. *Desmostachya bipinnata* hails from the *Poaceae* family and is well sighted for the most important role throughout the Ayurvedic Pharmacopeia for its use against on dysuria, jaundice, skin disorders etc and is also called by its common name as the sacrificial grass [7-9].

2. Methodology

Collection and Authentication of Plant

Desmostachya bipinnata plant was procured from Tirumala Hills and was authenticated by Dr. K. Madhava Chetty, Asst. Professor, Department of Botany, S V University, Tirupati.

Extraction Procedure [10]

Preparation of *Desmostachya bipinnata* whole plant extract:

The plants were initially collected from the soil body and rinsed with distilled water and shade dried and then homogenized into fine powder and stored in air tight bottles. A total of 10 g of air dried powder was weighed and was placed in 100 mL of organic solvents (methanol and ethanol) in a conical flask and then kept in a rotary shaker at 190-220 rpm for 24 h. And then it was filtered with the help of muslin cloth and the solvent was evaporated by solvent distillation apparatus to make the final volume of one-fourth of the original volume, giving a concentration of 40 mg/mL. It was stored at 40 °C in air tight bottles for further studies.

***In Vitro* Antioxidant Activities**

Superoxide Radical Scavenging Activity[11]

Procedure: The reaction mixture contained EDTA (0.1 M), 0.3mM NaCN, Vitamin C (0.12mM), NBT (1.5 n moles), Phosphate buffer (67mM, pH 7.8) and various concentrations of the alcoholic extract in a final volume of 3ml. The tubes were illuminated under incandescent lamp for 15min. The optical density at 560 nm was measured before and after illumination. The inhibition of superoxide radical generation was determined by comparing the absorbance values of the control with that of alcoholic extract and fraction-IV. Vitamin C was used as positive control. The concentration of fraction-IV required to scavenge 50% superoxide anion (IC_{50} value) was then calculated.

DPPH Radical Reducing Activity[12]

Procedure:

Freshly prepared DPPH (187 µl) was taken in different test tubes protected from sunlight. To this solution added different concentrations (0, 25, 50, 75,100,150,200µg/ml) of alcoholic extract and fraction-IV. The volume was made up to 1ml with methanol. Keep the tubes in dark and after 20 min absorbance was measured at 515nm. Methanol was used as blank and vitamin C was used as positive control. The concentration of test materials to scavenge 50% DPPH radical (IC_{50} value) was calculated from the graph plotted with % inhibition against Concentration.

3. Results and Discussion

Table: 1 Qualitative phyto chemical screening of AEDB

Plant constituent	Inference
	Ethanol Extract
Carbohydrate	-
Alkaloids	+
Flavonoids	+
Proteins and amino acids	+
Glycosides	+
fixed oil	+
Terpenoids	+
Volatile oil	-

Tannins	-

Table No.2: Effect of AEDB on Superoxide in vitro Radical Scavenging Activity

Concentration (µg/ml)	Absorbance		Percentage inhibition	
	Ethanol extract	Vitamin C	Ethanol extract	Vitamin C
0	0.78±1.22	0.78±1.5	0±0.00	0±0.00
2	0.72±2.31	0.54±3.5	7.6±1.35	30.76±0.71
4	0.65±3.1	0.41±0.78	16.6±4.71	47.43±1.79
6	0.58±1.27	0.36±1.55	25.64±3.6	53.84±2.53
8	0.54±1.72	0.28±2.3	30.76±1.55	61.94±4.22
10	0.47±5.5	0.19±3.6	39.47±2.44	75.64±1.67
12	0.41±3.7	0.14±2.3	47.43±3.39	82.05±2.36
14	0.35±1.78	0.11±3.2	55.12±0.67	85.89±0.37

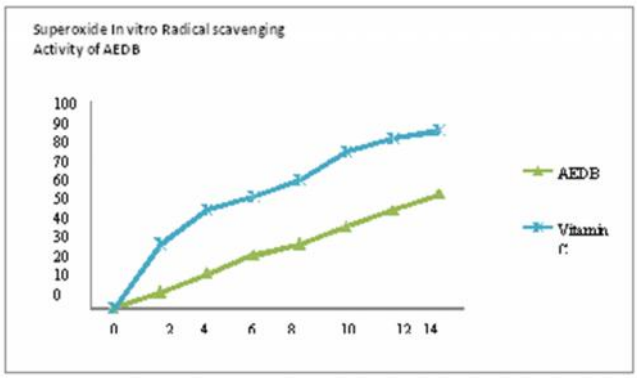

Fig. No: 1: Effect of AEDB on Superoxide *in vitro* Radical Scavenging Activity

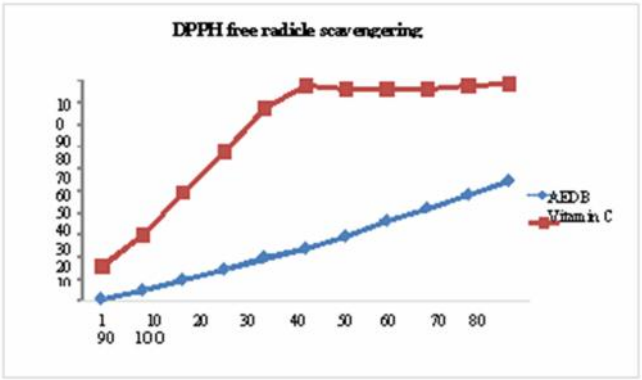

Fig. No:2 :DPPH radical reducing activity of AEDB and vitamin C.

Table No.3: Effect of AEDB on DPPH radical reducing activity

Concentration (µL/ml)	Absorbance		Percentage inhibition	
	Ethanol extract	VitaminC	Ethanol Extract	VitaminC
1	0.694±0.21	0.58±1.23	0.5±0.71	15.8±2.3
10	0.676±1.31	0.487±3.5	4.35±.56	29.9±2.9
20	0.640±3.22	0.361±1.23	9.03±0.78	49±5.6
30	0.60±1.52	0.121±1.5	14.2±1.3	67.8±4.9
40	0.566±4.35	0.101±3.2	19.2±1.27	87.3±4.3
50	0.530±2.33	0.046±4.2	23.4±1.32	97.3±4.2
60	0.461±3.5	0.06±4.9	29.2±.79	96.1±3.2
70	0.459±3.6	0.05±4.1	36.3±0.96	96.2±4.56
80	0.40±4.6	0.05±0.22	41.9±0.95	96.2±4.32
90	0.36±2.5	0.04±0.3	48.13±1.32	97.5±3.78
1OO	0.327±3.72	0.03±.52	54.23±1.56	98.3±3.96

4. Conclusion

The present study is evaluated the antioxidant potential and antiulcer effect of AEDB. The results analysed from the present study have indicate that AEDB possesses antioxidant activity. The preliminary phytochemical screening of whole plant extracts indicate in presence of flavonoid, alkaloid, proteins,amino acids and terpenoids, fixed oil and glycosides. The antioxidant screening shows that it showed reducing power to DPPH radicals. But the efficiency showed that far below from Vitamin C. The concentration of the AEDB needed to scavenge 50%

superoxide anion (IC_{50}) equal to that of standard hence the plant extract have the significant antioxidant activity.

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