Research Article

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In vitro antioxidant activity of *Sophora interrupta* by ABTS and hydrogen peroxide method

T.Vithya[1]*, Dr.S.Kavimani[2] B.Rajkapoor[3], Alhasjajiju.K[4], K.B.Premakumari[3]
[1.] Al-Ameen College of Pharmacy, Bangalore, Karnataka, India
[2.] Mother Theresa College of Pharmacy, Pondicherry,Tamil Nadu, India
[3.] Dayananda Sagar college of Pharmacy, Bangalore, Karnataka, India
[4.] Strides Arcolab Ltd, Bangalore, Karnataka, India

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ABSTRACT

The aim of the study was to evaluate the antioxidant property of *Sophora interrupta* which belongs to the family Fabaceae. To carry out this study, the methanolic extract of the whole plant was used. The methods used were hydrogen peroxide and ABTS methods. In both methods Ascorbic acid was used as the standard. In Hydrogen peroxide method, the IC_{50} value of the extract was found to be 112µg and the IC_{50} of Ascorbic acid was found to be 37µg. In ABTS method, the IC_{50} of the extract was 135µg and Ascorbic acid was 37µg.

Keywords: *Sophora interrupta*, antioxidant, Hydrogen peroxide, ABTS, *Invitro*

1. INTRODUCTION:

Antioxidants are the essential compounds that are needed to neutralize the free radicals by accepting or donating an electron to eliminate the unpaired condition[1]. A variety of medicinal plants and their constituents have good antioxidant property. One among such medicinal plants is ***Sophora interrupta.***

Sophora interrupta belongs to the family Fabaceae (Leguminaceae, Papilonaceae) which is commonly called as Edwaria madarasapatna[2]. There are more than 200 species belongs to this family which have various pharmacological activities such as anti-cancer, anti-inflammatory, antispasmodic etc.

2.EXPERIMENT

2.1. Plant material

The whole plant of *Sophora interrupta* was collected from Tirupathi, Andhra Pradesh in Feb 2011 and shade dried.

2.2. Extraction

The dried plant was soxhelet extracted with 99% methanol. The extract was concentrated by evaporation to yield a concentrated extract.

2.3. Chemicals

All the chemicals were purchased from S.D.Fine chemicals and were analytical grade.

2.4. Phytochemical studies

From the preliminary phytochemical studies, it showed the presence of alkaloids, glycosides, flavonoids, phenols, carbohydrates, proteins.

2.5. Scavenging of Hydrogen Peroxide[3]

A solution of hydrogen peroxide (20mM) was prepared in phosphate buffered saline (PBS, pH7.4). Various concentrations of 1ml of the extracts or standards in methanol were added to 2ml of hydrogen peroxide solution in PBS. The absorbance was measured at 230nm after 10 minutes against a blank solution that contained extracts in PBS without hydrogen peroxide. The percentage reduction in absorbance was calculated from initial and final absorbance at each level. Concentration of the substance required for 50% reduction in absorbance was calculated from the calibration curve (concentration of extract in µg/ml Vs % of inhibition). The results were tabulated in Table1 and Figure1.

***Corresponding author.**
T.Vithya
Lecturer,
Department of Pharmacy Practice
Al-Ameen College of Pharmacy
Bangalore-27, Karnataka, India.

Table 1: Antioxidant activity by Hydrogen peroxide method

Drug	Absorbance	Concentration (µg/ml) 15.6	31.25	62.5	125	250	500	1000
Ascorbic acid	Initial	0.9848	0.9848	0.9848	0.9848	0.9848	0.9848	0.9848
	Final	0.752	0.665	0.620	0.605	0.558	0.525	0.502
	% of inhibition	30.95	48.09	58.8	62.77	76.48	87.58	96.17
S.interrupta	Final	0.850	0.805	0.691	0.645	0.562	0.536	0.512
	% of inhibition	15.85	22.35	42.51	52.68	75.23	83.73	92.34

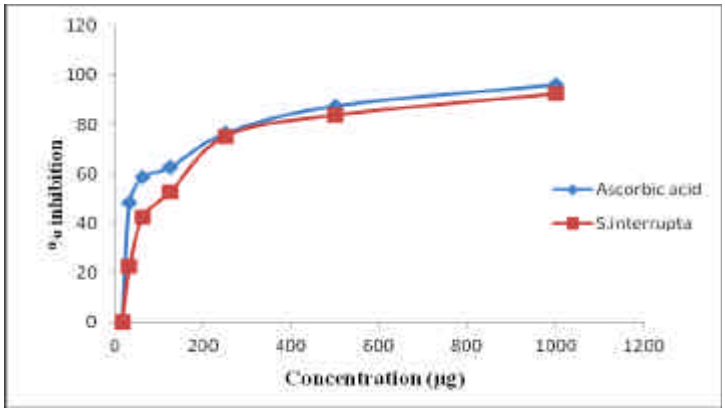

Figure 1: Hydrogen Peroxide Method:

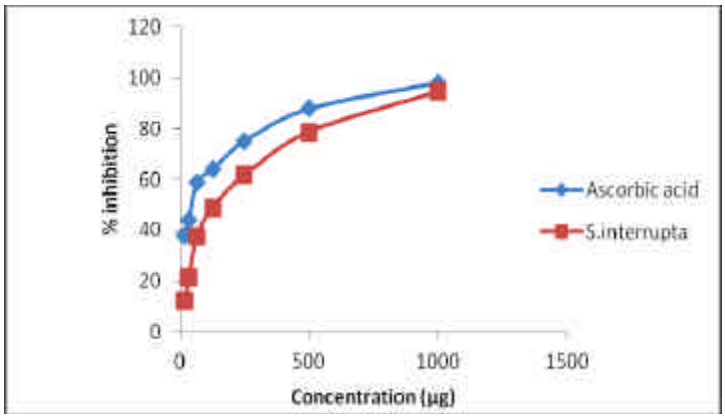

Figure 2: ABTS Method:

2.6. The ABTS scavenging assay[4, 5, 6](2, 2'-azino-bis (3-ethyl benzthiazoline -6-sulphonic acid)

ABTS and Ascorbic acid stock solution was prepared. From the stock solution various dilutions viz 15.6, 32.5, 62.5,125,250,500 and 1000 µg/ml were prepared and used for antioxidant study. ABTS solution 2mM (0.0548g in 50 ml) was prepared in distilled water. Potassium persulphate solution 70mM (0.0189g in 1 ml) was prepared in distilled water. 200 ml of potassium persulphate solution and 50ml of ABTS solution were mixed and used after 2 hrs. This solution is called as ABTS radical cation, which was used for assay. To 0.5 ml of various concentrations of extract 0.3 ml of ABTS radical cation and 1.7 ml of phosphate buffer was added and the same was performed for the standard Ascorbic acid also. The absorbance was measured at 734 nm. The percentage reduction in absorbance was calculated from initial and final absorbance at each level. Concentration of the substance required for 50% reduction in absorbance (IC_{50}) was calculated from the calibration curve (Concentration of extract in µg/ml V_s % of inhibition). The result was tabulated in Table 2 and Figure 2.

Table 2: Antioxidant activity by ABTS method

Drug	Absorbance	Concentration (µg/ml) 15.6	31.25	62.5	125	250	500	1000
Ascorbic acid	Initial	0.9025	0.9025	0.9025	0.9025	0.9025	0.9025	0.9025
	Final	0.655	0.626	0.568	0.550	0.515	0.480	0.455
	% of inhibition	37.78	44.16	58.89	64.09	75.24	88.02	98.35
S.interrupta	Final	0.805	0.743	0.656	0.605	0.558	0.505	0.464
	% of inhibition	12.11	21.46	37.57	49.01	61.73	78.71	94.50

3. RESULTS AND DISCUSSION:

The methanolic extract of whole plant of *Sophora interrupta* was subjected to two various types of antioxidant methods. It showed an IC_{50} value of 112µg and the standard Ascorbic acid showed an IC_{50} value of 37µg in the Hydrogen Peroxide method. In ABTS method, the extract showed an IC_{50} value of 135µg and the standard Ascorbic acid showed the same value of 37µg which is a well known antioxidant.

4. CONCLUSION:

The methanolic extract showed a moderate antioxidant activity when compared with the standard Ascorbic acid. But, the cytotoxic activity of this extract is showing a promising effect.

5. REFERENCES:

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