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Free radical scavenging activity of the flower and fruit extracts of *Alstonia scholaris*

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ABSTRACT

The invitro antioxidant activity of flower and fruit extracts of *Alstonia scholaris* has been investigated by DPPH (1, 1-diphenyl, 2-picryl-hydrazyl) free radical and superoxide radical scavenging activity. The methanolic extracts of *Alstonia scholaris* flower and fruit showed significant antioxidant activity by inhibiting DPPH and Superoxide production and were evaluated by comparing with standard gallic acid. Free radical scavenging activity might be due to the presence of flavonoid.

Key words: *Alstonia Scholaris*, antioxidant activity, free radical.

A free radical has been defined as any species capable of independent existence that contains one or more unpaired electrons, which makes it energetically unstable. It was quickly pair with an electron in the surrounding molecules to give it stability. This oxidizes the surrounding molecule and leads to oxidation of another surrounding molecule and a chain reaction will set in generating and regenerating free radicals[1], thus destroying large number of cell components and have been implicated in human diseases such as lung disease, heart failure, hepatotoxicity, nephrotoxicity, inflammation and diabetes[2]. It has been suggested that there is an inverse relation ship between dietary intake of antioxidant rich food and the incidence of human disease. Therefore research for the determination of the natural anti oxidant source is important[3]. In our present investigation we have attempted to investigate antioxidant activity of Alstonia scholaris flower and fruit extracts.

Plant material

The flowers and fruits of *A. scholaris*[4-7] were collected from Aditya garden, Surampalem, E.G.Dist., A.P, and authenticated from Department of Botany Andhra University, Visakhapatnam.

DPPH Radical Scavenging Activity

DPPH (1, 1-diphenyl, 2-picryl-hydrazyl) free radical scavenging activity of the test compounds was determined by the method of lamaison et.al, which depends on scavenging of coloured free radical (DPPH) in methanol solution by the test drugs. The reaction mixture contains DPPH and test drug in a final concentration of 3 ml. Absorption of DPPH at its absorption maximum at 516 nm is inversely propotional to the concentration of the scavenger (test drug). The activity was expressed inhibitory concentration 50(K_{50}) i.e. the concentration of the test solution required to give 50% reduction in absorbance of the test solution as compared to that of blank solution.

Superoxide scavenging activity

This was determined by the NBT reduction method of Mccord and Fridovich. The assay was based on the capacity of the sample to inhibit blue formazan formation by scavenging the superoxide radical generated in riboflavin-light-NBT system[8].

The reaction mixture contained different concentrations of test drug and EDTA (6 µM containing 3 µg NaCN), NBT (50 µM), riboflavin (2 µM) and phosphate buffer (pH 7.8) to give a total volume of 3 ml. The tubes were uniformly illuminated for 15 mts and there after the absorbance were measured at 560 nm. The percentage inhibition by the test drugs of superoxide production was evaluated by comparing the absorbance values of control and experimental tubes.

The extracts showed promising free radical scavenging activity and also superoxide radical scavenging activity. In between alstonia scholaris flower and fruit extracts, *alstonia scholaris* flower extract showed much higher activity than alstonia scholaris fruit extract. A maximum

Table 1: Antioxidant activity of methanolic extracts of flower and fruits of *Alstonia scholaris* by DPPH and NBT method

Type of Extract	Conc. mcg/ml	Percent redn. in absorbance DPPH	NBT	IC50 (mcg/ml) DPPH	NBT
A. scholaris Flower extract	50	7.50	9.26		
	100	16.40	20.10	3.90.52	348.60
	250	26.70	28.76		
A. scholaris Fruit extract	50	6.72	8.24		
	100	15.85	19.32	380.66	322.44
	250	28.72	24.74		
Standard	**Product used as standard (Solubility)**	**Doseμg/ml**	**Percentage inhibition**	**IC50**	
Standard 1	Gallic acid (D.water)	0.5	15.60		
		1	27.82	1.5	
		2.5	69.16		

percentage inhibition of 26.70 and 28.72 was showed with alstonia scholaris flower extract at dose of 250 µg/ml. by DPPH method similarly the maximum percentage inhibition of 28.76 and 24.74 was showed by NBT method. The IC50 (mcg/ml) for alstonia scholaris flower extract is found to be 390.52 and 348.60 obtained by DPPH and NBT methods respectively.

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