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Original Research Article

Antioxidant Activity of the Leaves of *Urena lobata* Linn

P. L. Rajagopal[1], K. R. Sreejith[1], K. T. Linsha[1], K. Premaletha[1], Meera B. Nair[1], S. Aneeshia[2]

[1]Department of Pharmacognosy and Phytochemistry, College of Pharmaceutical Sciences, Government Medical College, Kannur, Kerala.
[2]Government Institute of Paramedical Sciences, Government Medical College, Kannur, Kerala.

Corresponding Author: P. L. Rajagopal

ABSTRACT

Plant based treatment are the most popular form of traditional system of medicine. The demand for the herbal health care products including nutraceuticals are now a days increasing worldwide. The aim of the present study was to evaluate the *in vitro* antioxidant studies of the alcoholic extract of the leaves of *Urena lobata* in two models like; reduction of ferric ions by ortho-phenanthroline method and ABTS scavenging activity method. The extract showed remarkable antioxidant activity in both the models. Ascorbic acid was used as the standard during the evaluation.

Keywords: *Urena lobata*, Ortho-phenanthroline, ABTS scavenging

INTRODUCTION

Antioxidants are reducing agents which are added to the drugs or other pharmaceuticals to prevent their oxidation through oxidative processes. The antioxidant usually prevents oxidation of active compound and in place gets oxidised itself. [1] Antioxidants are a class of chemical substances naturally found in our food which can prevent or reduce the oxidative stress of the physiological system. The body is constantly producing free radicals due to regular use of oxygen. These free radicals are responsible for the cell damage in the body and contribute to various kinds of health problems. [2]

Urena lobata is a shrub which belongs to malvaceae family. The plant is commonly known as Caesar weed or Congo jute. The plant is used as diuretic and febrifuge traditionally. The leaf of the plant contains active constituents like alkaloids, flavonoids, saponins, phenolic compounds and tannins. [3-5]

MATERIALS AND METHODS

Plant Material

The fresh leaves were collected from the Government medical college campus of Pariyaram and were authenticated by Dr.V.AbdulJaleel, Asst. Professor, Department of P.G.Studies and Research in Botany, Sir Syed College, Thaliparamba, Kannur, Kerala. Leaves were then shade dried and a specimen bearing voucher NO.APSC/COG/02/2018-2019 has been deposited in the department of Pharmacognosy, College of Pharmaceutical Sciences, Government medical college, Kannur District, Kerala State.

Preparation of the extract

The powdered leaf of *Urena lobata* was exhaustively extracted by Soxhlet apparatus (6 hours) with methanol. The total methanolic extract was then concentrated in vacuo to a syrupy consistency and dried in vacuum desiccators. [6,7]

Antioxidant studies

Reduction of ferric ions by ortho-phenanthroline method.

Ortho substituted phenolic compounds are found more active than unsubstituted phenol. Hence, these compounds may exert pro-oxidant effect by interacting with iron. In the presence of scavenger, reduction of ferric ions will occur which can be measured at 510 nm. The reaction mixture consisting of 1ml ortho-phenanthroline, 2 ml ferric chloride 200 mM and 2 ml of various concentrations of the alcoholic extract of the leaves of *Urenalobata* were incubated at ambient temperature for 10 min. The absorbance of the same was measured at 510 nm. The experiment was performed in triplicate. [8]

$$\% \text{ Scavenging} = \frac{\text{Control} - \text{Test}}{\text{Control}} \times 100$$

ABTS scavenging activity

ABTS is chemically 2, 2 – Azinobis (3-ethyl BenzoThiazoline–6–Sulphonic acid). The reduction of free radicals by the test compound using ABTS can be measured at 734 nm. ABTS 2mM was prepared in distilled water. Potassium per sulphate 70mM was prepared in distilled water. 200ml of potassium per sulphate and 50 ml of ABTS were mixed and used after 2 hrs. The solution thus obtained is called as ABTS radical cation, which can be used for the assay.To 0.5 ml of various concentrations of the alcoholic extract of the leaves of *Urenalobata*, 0.3 ml of ABTS radical cation and 1.7 ml of phosphate buffer, pH 7.4 were added. For control, instead of extract, methanol is used and the absorbance was measured at 734 nm. The experiment was performed in triplicate. [9]

$$\% \text{ Scavenging} = \frac{\text{Control} - \text{Test}}{\text{Control}} \times 100$$

RESULTS AND DISCUSSION

The methanolic extract of the plant produced remarkable antioxidant activity in both the models like; reduction of ferric ions by ortho-phenanthroline method and ABTS scavenging activity method. The plant constituents which possess antioxidant properties acts as radical scavengers and converts them to less reactive species. Fruits and vegetables are the most common source of antioxidants and regular consumption of them will decrease the chances of chronic diseases.Natural antioxidants can be found in all plant parts and they include carotenoids, vitamins, phenols, and flavonoids. [10] The antioxidant activity of the leaves of *Urenalobata* could be due to the presence of these constituents. Flavonoids are well documented to have potent antioxidant and free radical scavenging activity. [11] Polyphenolics and tannins are proven good natural antioxidants. [12]

Table 1 Effect of alcoholic extract of *Urenalobata* on ABTS scavenging

Sl.No.	Conc.in µg/ml	Alcoholic extract of *Urenalobata*		Ascorbic acid (Standard)	
		Absorbance	% scavenging	Absorbance	%Scavenging
1	50	0.537	49.39	0.659	77.34
2	100	0.299	65.22	0.527	81.25
3	250	0.267	87.29	0.465	89.02
4	500	0.219	99.10	0.086	93.40
5	1000	0.123	114.25	0.059	97.65
6	Control	0.875		0.935	

Table 2 Effect of alcoholic extract of *Urenalobata* on Fe^{++} reduction

Sl.No.	Conc.inµg/ml	Alcoholic extract of *Urenalobata*		Ascorbic acid (Standard)	
		Absorbance	% scavenging	Absorbance	%Scavenging
1	50	0.099	69.23	0.088	80.39
2	100	0.182	74.67	0.125	89.14
3	250	0.191	85.22	0.198	95.22
4	500	0.299	97.45	0.283	99.30
5	1000	0.328	99.93	0.467	114.32
6	Control	0.028		0.021	

So in conclusion, we can say that without consumption of antioxidants rich food stuffs many of us are prone to get infectious diseases. Even though human

body can produce its own antioxidants, it is necessary to boost various defence systems by consuming fruits and vegetables that contain antioxidants. Studies have also shown that antioxidants can protect our body from certain type of cancers, heart diseases and even premature ageing. Antioxidants can render protection of our body against the free radicals which are usually formed as a part of metabolism. Exposure to polluted environment and ultraviolet rays can increase the production of free radicals in our body. If it is not checked properly, that may lead to serious conditions. [13]

Hence for a healthy life consumption of food stuffs rich in antioxidants are very essential and at the same time more research is needed in to the role of antioxidants in disease prevention.

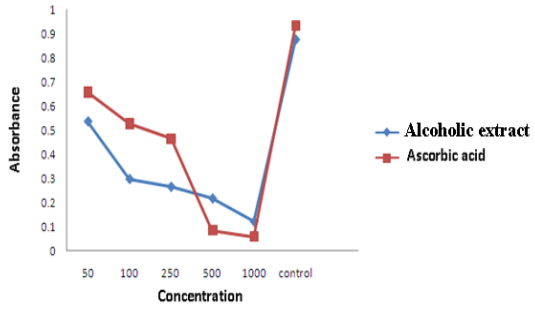

Fig. 1 Effect of alcoholic extract of *Urenalobata* on ABTS scavenging

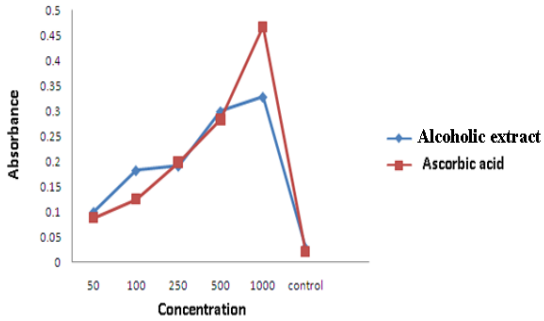

Fig. 2 Effect of alcoholic extract of *Urenalobata* on Fe^{++} reduction

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