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STUDY OF THE ANTIOXIDANT ACTIVITIES ON *P. SPICIGERA,C. DACTYLON & E. AUREUM* IN ANIMAL MODELS

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Abstract:

The present study was undertaken to evaluate the effects of antioxidant activity on P. spicigera, C. dactylon & E. aureum. *Antioxidant activity performed by DPPH, Nitric oxide and hydrogen peroxide scavenging methods. DPPH method, most standard and works on the principles of reduction of DPPH (1, 1-Diphenyl –2- picryl hydrazyl) at 517nm absorption. DPPH reacts with antioxidants gives stable free radical and is reduced to the DPHH which gives the color change. Change of color depends on the presences of the antioxidant concentration. In nitric oxide method, contribution of Nitric oxide (NO) to oxidative stress which reacts with superoxide gives anion peroxy-nitrite readily decomposes to give hydroxyl and nitric oxide radicals. Results showed significant results when compared with that of reference group. From the above findings it can be confirmed that P. spicigera,* C. dactylon & E. aureum *has antioxidant activity. However further studies are required to know the exact mechanism of actions.*

Keywords: *DPPH, Hydrogen peroxide, nitric oxide, P. spicigera,* C. dactylon & E. aureum

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INTRODUCTION:

P. spicigera is a commonly known as shami, belongs to the family fabaceae and is native to western Asia and subcontinent India. ranging in height from 3–5 m (9.8–16.4 ft). Leaves are bipinnate, with seven to fourteen leaflets on each of one to three pinnae. Branches are thorned along the internodes [1]. Flowers are small and creamy-yellow, and followed by seeds in pods. The tree is found in extremely arid conditions, with rainfall as low as 15 cm (5.9 in) annually; but is indicative of the presence of a deep water table. it has many medicinal uses. *C. dactylon* is a commonly known as Bermuda grass, belongs to the family poaceae, native of Africa and asian countries. The blades are a grey-green colour and are short, usually 2–15 cm (0.79–5.91 in) long with rough edges. The erect stems can grow 1–30 cm (0.39–11.81 in) tall. The stems are slightly flattened, often tinged purple in colour[4]. The seed heads are produced in a cluster of two to six spikes together at the top of the stem, each spike 2–5 cm (0.79–1.97 in) long. It has a deep root system; in drought situations with penetrable soil, the root system can grow to over 2 metres (6.6 ft) deep, though most of the root mass is less than 60 centimetres (24 in) under the surface. The grass creeps along the ground and roots wherever a node touches the ground, forming a dense mat. *C. dactylon* reproduces through seeds, runners, and rhizomes. *Epipremnum aureum* belongs to a large family- Araceae, a family of monocotyledonous flowering plants in which flowers are born on a type of inflorescence called a spadix, having 110 genera and 2500 species in the world[7] distributed mostly in the tropics and subtropics of both the hemispheres. *E. aureum* commonly known as the Golden Pothos, Devil's lvy, money plant, silver vine, taro vine etc. *E. aureum Epipremnum* comprises 15 species of slender to gigantic root-climbing Iianes. All these herbaceous evergreens are native to South East Asia and Solomon islands. Variegated clones of *E. aureum* are extremely popular as cultivated plants worldwide, perhaps constituting the most commonly cultivated aroid, and the golden variegated form of this species is frequently met with as an escape from horticulture throughout the tropics. Plants used for interiors cape purposes such as pedestal plants, totems, hanging baskets, dish gardens and small desk plants usually have heart- shaped leaves that rarely exceed 6 inches in length. Selected plants having medicinal potential due to presence of chemical constituents so selected for the study.

MATERIALS AND METHODS:

Plant materials were collected and authenticated from the department of Pharmacognosy, GCOP, R.R.Dist. The Leaves of the plants were dried under shade at room temperature, later chopped and grounded into coarse powder. The powdered materials were used for extract preparations [2]. All chemicals and reagents used were analytical grade and procured from approved chemical suppliers.

Experimental

Leaves of alcoholic extracts of *P. spicigera, C. dactylon & E. aureum* were subjected for the antioxidant activity.

DPPH method

This method most standard and works on the principles of reduction of DPPH (1, 1-Diphenyl –2-picryl hydrazyl) at 517nm absorption. DPPH reacts with antioxidants gives stable free radical and is reduced to the DPHH which gives the color change. Change of color depends on the presences of the antioxidant concentration [3-5].

DPPH with methanol solution (150 ml) readily shows absorbance at 517nm for control reading. Ascorbic acid elected as standard and mixed with methanol (up to 150 ml). All sample groups diluted with methanol (3 ml) and DPPH (up to 150 ml). Absorbance of all solutions was taken at 517 nm using UV Visible spectrophotometer. IC50 values for each sample were calculated.

% scavenging = [Absorbance of control - Absorbance of test sample/Absorbance of control] X 100

Nitric oxide method

This contribution of Nitric oxide (NO) to oxidative stress which reacts with superoxide gives anion peroxy-nitrite readily decomposes to give hydroxyl and nitric oxide radicals. Aqueous solution of sodium nitropursside readily generates NO which reacts with oxygen to nitrite ions using griess reagent. Ascorbic acid preferred as standard and mixed with methanol (up to 150 ml). All sample groups diluted with methanol and added sodium nitroprusside (2 ml) in phos. buffer (up to 150 ml) kept for incubation for 150 min. Griess reagent (5 ml) was added to sample solutions including control group [6-8]. Absorbance of all solutions was taken at 546 nm using UV Visible spectrophotometer. IC50 values for each sample were calculated.

% scavenging = [Absorbance of control - Absorbance of test sample/Absorbance of control] X 100

Hydrogen peroxide method

In this method 0.6 ml of hydrogen peroxide (40 mM) buffered with 7.4 pH phos. buffer were added to sample group including control group and kept for 10 min incubation [9-13]. Later specimens were analysed at 230 nm keeping phos. buffer as blank.

% of inhibition = (A1-A2)/A1 x 100

Where A1 -absorbance of the H_2O_2

A2 -absorbance of the reaction mixture with extract

Statistical analysis:

The values Mean±SEM are calculated for each parameter. For determining the significant inter group difference each parameter was analysed separately and one-way analysis of variance was carried out.

RESULTS AND DISCUSSION:

Prosopis spicigera is wonder tree has active principles like Linoleic acid, Methyl 2- methoxy -5hydroxyl Cinnamate, O-Coumaroyl glycerol, Prosogerin A, Prosogerin B, Prosogerin C and 3-benzyl-2-hydroxy-urs-12en-28-oic acid etc. *Cynodon dactylon* is Bermuda grass contains important constituents like *a*pigenin and syringic acid. *Epipremnum aureum* is money plant helps in purifying the air and it contains Edgeworoside *C*, *Edge*worin, Tiliroside, Helichrysoside, Kaempferol, 2, 4-Dihydroxypheny-2-Hydroxy-4-Metho-Xybenzyl-Ketone Ethyl Caffeate Phthalic Acid Bis-(2-Ethyl-Hexyl) Ester and Noreugenin.

DPPH method indicated appreciable high % of inhibition found in extracts of leaves of P. *spicigera, C. dactylon & E. aureum* (table. 1). From the Nitric oxide method, was observed that ethanolic extracts of *L. usitatissimum, P. spicigera, A. marmelos* showed *best* results (table 2). From the hydrogen peroxide method, The alcoholic extracts at 500 µg/ml concentration showed appreciable results when compared with standard 75.11% (table 3).

Extracts of selected plants were inquired for the antioxidant activities like DPPH Method, Nitric oxide scavenging method, Hydrogen peroxide method. By the DPPH Method it was observed that ethanolic extracts showed best results. It was observed that from the nitric oxide method ethanolic extracts showed appreciable results. From the investigational studies by H_2O_2 method reveals that extracts has antioxidant property.

Table 1 Effect of DPPH on Alcoholic extracts

Conc. µg/ml	Ascorbic acid µg/ml	% Antioxidant activity		
		P. spicigera,	*C. dactylon*	*E. aureum*
100	38.95±0.99	28.81±0.21	22.11±0.36	10.83±0.23
150	42.01±041	32.04±0.42	27.89±0.27	15.64±0.47
200	48.24±0.23	37.18±0.65	32.61±0.43	18.97±0.52
250	53.94±0.46	42.18±0.52	37.88±0.32	22.54±0.84
300	59.62±0.54	53.29±0.38	41.65±0.98	28.46±0.28
350	64.75±0.42	58.65±0..83	48.61±0.62	32.01±0.93
400	71.68±0.37	66.47±0.12	52.07±0.36	37.69±0.45
450	78.69±0.68	70.42±0.44	59.61±0.28	41.08±0.27
500	85.47±0.42	75.68±0.63	64.15±0.63	49.16±0.23

Table 2 Effect of NO on alcoholic extracts

Conc. µg/ml	Ascorbic acid µg/ml	% Antioxidant activity		
		P. spicigera,	*C. dactylon*	*E. aureum*
100	37.95±0.98	29.92 ±0.82	23.24 ±0.58	11.92 ±0.72
150	41.01±0.19	31.04 ±0.27	28.64 ±0.42	16.34 ±0.91
200	47.84±0.22	37.12 ±0.18	33.61 ±0.35	18.97 ±0.39
250	52.61±0.91	43.19 ±0.25	37.22 ±0.56	23.54 ±0.38
300	58.61±0.39	54.17 ±0.14	42.12 ±0.75	28.46 ±0.62
350	63.75±0.09	59.64 ±0.23	49.31 ±0.91	33.02 ±0.32
400	70.12±0.12	67.44 ±0.21	53.09 ±0.84	38.15 ±0.18
450	77.69±0.35	71.24 ±0.78	59.32 ±0.23	42.38 ±0.39
500	84.61±0.22	76.32 ±0.29	66.66 ±0.43	50.19 ±0.92

Table 3 Effect of hydroxyl on alcoholic extract

Conc. µg/ml	Ascorbic acid µg/ml	% Antioxidant activity		
		P. spicigera,	*C. dactylon*	*E. aureum*
100	31.25±0.65	22.61±0.54	20.17±0.73	12.22±0.92
150	35.47±0.71	24.11±0.31	24.66±0.62	16.94±0.13
200	41.39±0.53	29.94±0.37	29.64±0.56	19.67±0.54
250	46.31±0.80	34.61±0.78	32.46±0.72	25.99±0.65
300	51.06±0.18	39.97±0.64	38.22±0.12	29.61±0.14
350	58.21±0.87	42.83±0.36	46.37±0.25	35.12±0.24
400	64.97±0.26	49.67±0.67	49.11±0.54	40.36±0.23
450	68.94±0.63	54.37±0.33	52.48±0.63	47.88±0.42
500	75.11±0.47	60.19±0.64	57.99±0.23	52.94±0.58

CONCLUSION:

From the above findings it was confirmed that leaves of alcoholic extracts of P. spicigera, *C. dactylon & E. aureum* has antioxidant activities. However further studies are required to know the exact mechanism of actions.

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