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ANTIOXIDANT ACTIVITY OF EXTRACTS OF *LATHYRUS APHACA* LINN

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ABSTARCT

Lathyrus aphaca Linn belongs to family Leguminosae, which is commonly known as "Jangali Matar" in Hindi. It is widely distributed in India on road sides and in parks. Its ripe seeds are used as a narcotic. The present paper incorporates antioxidant activity of the extracts of the stems of this plant. The extracts of the stems of the plant showed good results.

KEYWORDS: *Lathyrus aphaca* Linn., DPPH radical, Ascorbic acid, Leguminosae, stems, antioxidant activity.

INTRODUCTION

Lathyrus aphaca Linn Cunn.[1] belongs to family Leguminosae, which is commonly known as "Jangali Matar" in Hindi. It is found in Punjab, Uttar Pradesh, Bengal and Madhya Pradesh. It is annual plant species with scrambling or trailing stems upto 100 cm long. Mature leaves of the plant have no leaflets. Flowers are 7-13 mm long. The corolla is bright yellow or cream. Legumes are glabrous, straight or incurred with 6-8 seeds. Its ripe seeds are used as a narcotic. Earlier workers,[2-4] have reported various active constituents from this plant. Antioxidant activity of extracts of stems of the plant has been reported in this paper.

Experimental

General experimental procedure

The plant extract was concentrated under reduced pressure by rotary vacuum evaporator (R/178). UV spectra were recorded on Systronics-2201 UV/Vis Double Beam spectrophotometer in MeOH.

Plant material

The stems of the plant were collected locally around Sagar region and were taxonomically authenticated by Taxonomist, Department of Botany, Dr. H. S. Gour Central University, Sagar (M.P.) India. A voucher specimen has been deposited in the Natural Products Laboratory, Department of Chemistry of this university.

Preparation of extracts

Air shade dried and finely powdered stems (450gm) of the plant was extracted with measured volumes of various solvents like acetone, ethanol, methanol and distilled water. Various extracts of the stems of the plant was concentrated under reduced pressure to give 0.430,0.350,0.520,0.275 gm of viscous mass of each solvent extract. Different concentration of each extract were prepared for the DPPH assays.

Antioxidant Activity

The free radical scavenging activity of all the extracts of the stems of plant were carried out by using DPPH method.4 ml of methanolic solution of DPPH (0.1mM) was mixed with 5 ml of each extract (5–100 µg/ml) and allowed to incubate for 35 minutes at dark place. After 35 minutes the reaction mixtures were then placed in the cuvette holder of the spectrophotometer (Systronics-2201 UV/Vis Double Beam spectrophotometer) and measured at 517 nm against the blank. 95% methanol was served as blank. Control sample solution was prepared by same volume of DPPH without any extract and reference drug (ascorbic acid) which contain the only DPPH. Ascorbic acid was used as the standard. % scavenging of the DPPH free radical of each extracts was measured by using the following equation

% scavenging of the DPPH free radical = $(A_o - A_S / A_o) \times 100$

Where Ao is the absorbance of the control and A_s is the absorbance of the sample.

Absorbance of control = 0.623

Table 01: Antioxidant Activity of acetone extract

Concentration µg/ml	Absorbance of acetone extract	% Inhibition of acetone extract
5	0.523	16.05136
10	0.402	35.47352
25	0.326	47.67255
50	0.212	65.97111
100	0.054	91.33226

Table 02: Antioxidant Activity of Ethanolic extract.

Concentration µg/ml	Absorbance of Ethanolic extract	% Inhibition of Ethanolic extract
5	0.543	12.84109
10	0.421	32.42376
25	0.343	44.94382
50	0.189	69.66292
100	0.064	89.72713

Table 03: Antioxidant Activity of methanolic extract.

Concentration µg/ml	Absorbance of methanolic extract	% Inhibition of methanolic extract
5	0.508	18.45907
10	0.421	32.42376
25	0.358	42.53612
50	0.223	64.20546
100	0.121	80.57785

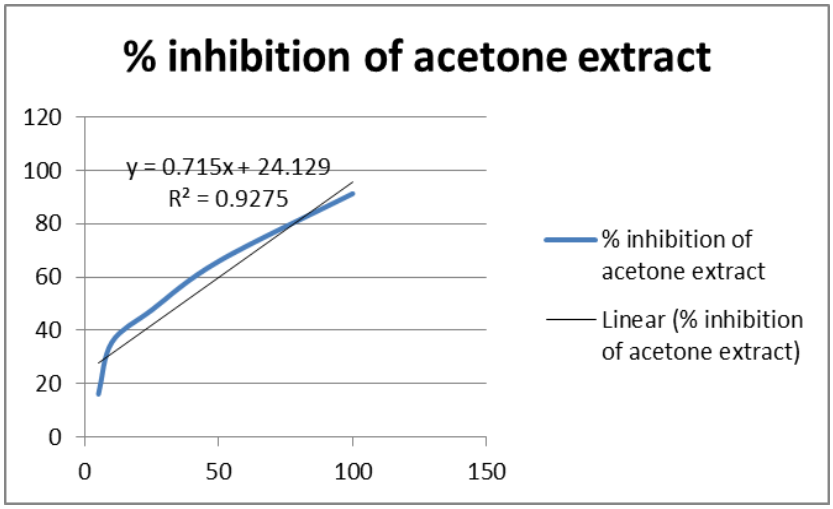
Table 04: Antioxidant Activity of water extract.

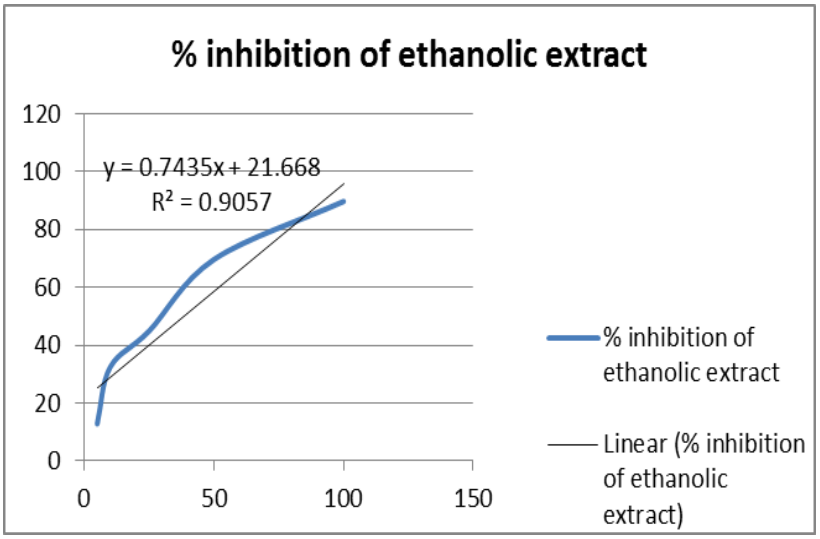
Concentration µg/ml	Absorbance of water extract	% Inhibition of water extract
5	0.523	16.05136
10	0.502	19.42215
25	0.45	27.76886
50	0.358	42.53612
100	0.043	93.09791

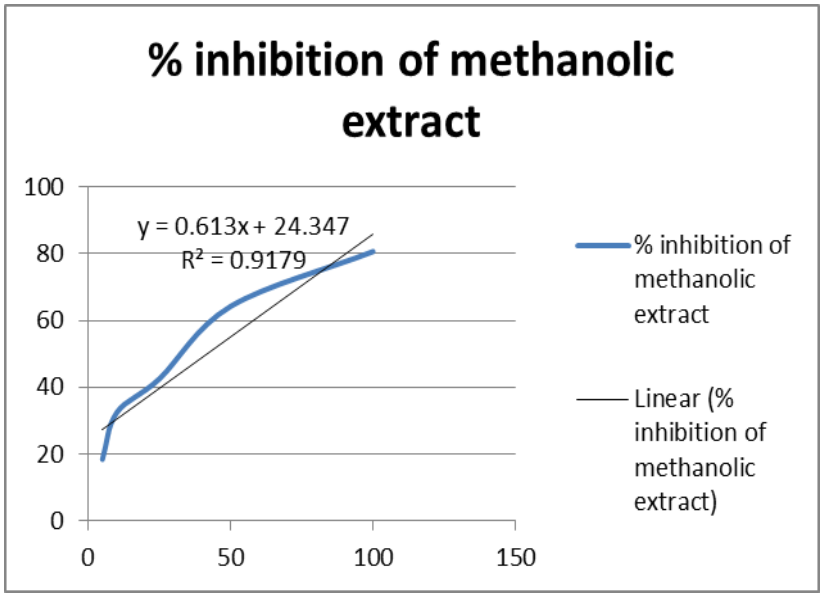
Table 05: Antioxidant Activity of ascorbic acid.

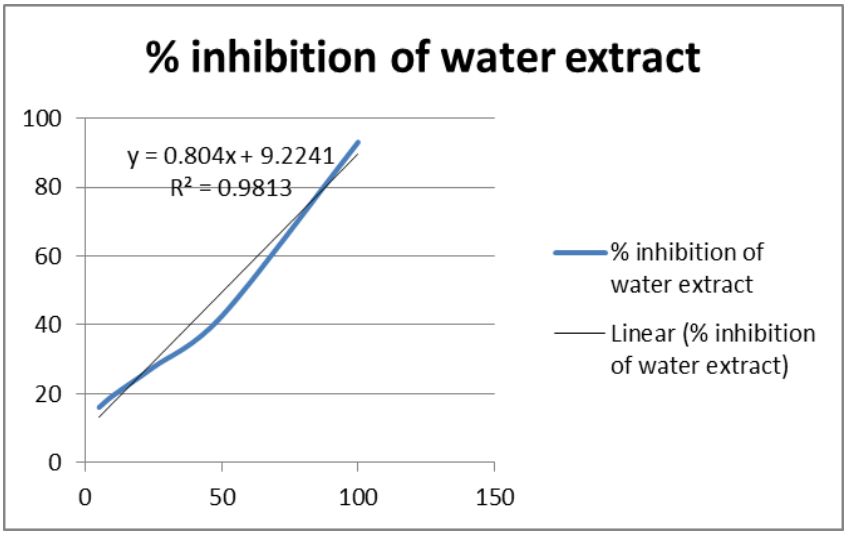
Concentration µg/ml	Absorbance of ascorbic acid	% Inhibition of ascorbic acid
5	0.601	3.5313
10	0.527	15.40931
25	0.488	21.66934
50	0.35	43.82022
100	0.051	91.8138

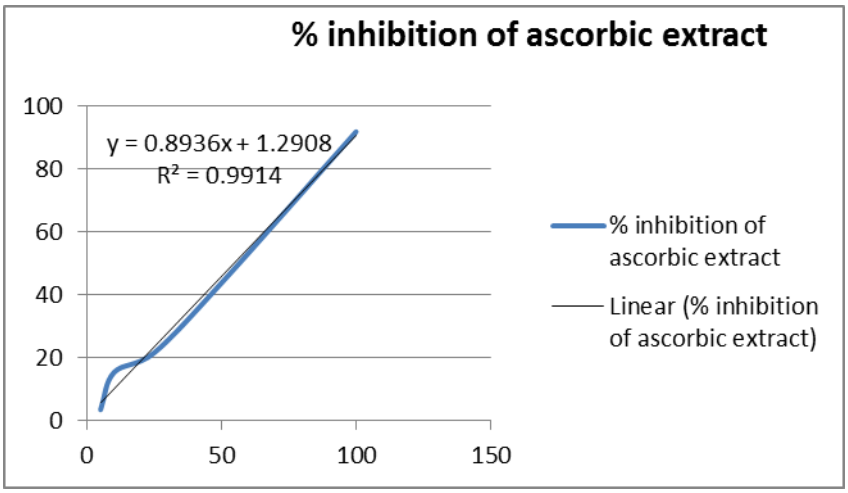
IC_{50} Values of different extracts have been measured by following graph between % inhibition and concentration of each extracts which have been given in following Table 01 to 05.


% inhibition of acetone extract
y = 0.715x + 24.129
R² = 0.9275
120
100
80
60
40
20
0
0
50
100
150
% inhibition of acetone extract
Linear (% inhibition of acetone extract)


% inhibition of ethanolic extract
y = 0.7435x + 21.668
R² = 0.9057
120
100
80
60
40
20
0
0
50
100
150
% inhibition of ethanolic extract
Linear (% inhibition of ethanolic extract)


% inhibition of methanolic extract
y = 0.613x + 24.347
R² = 0.9179
100
80
60
40
20
0
0
50
100
150
% inhibition of methanolic extract
Linear (% inhibition of methanolic extract)





IC50 Values of different extracts

Extracts	IC 50
Acetone extract	36.183
Ethanol extract	38.106
Methanol extract	41.848
Water extract	50.716
Ascorbic acid	54.508

RESULTS AND DISCUSSION

Antioxidant activities of freshly prepared extracts in various solvents of the dried stems of the plant were carried out by DPPH free radical scavenging activity methods using UV- VIS spectrophotometer. From experimental findings, it was concluded that acetone, ethanol, methanol and water extract of stems of plant showed better antioxidant potential by DPPH radical scavenging method when compared to standard ascorbic acid. IC_{50} values of all the

extracts of the stems of the plant were found to be 36.183, 38.106, 41.848, 50.716 and 54.508 µg/ml respectively.

CONCLUSION

The conclusions drawn from experimental findings showed that acetone extract has lower IC_{50} value as compared to IC_{50} values of other extracts. Therefore acetone extract of the stems of the plant shows highest radical scavenging activity so it may be used as antioxidant agent.

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