Journal of Pharmaceutical and Scientific Innovation

www.jpsionline.com (ISSN : 2277 -4572)

Research Article

EVALUATION OF ANTIOXIDANT PROPERTIES OF *OCIMUM AMERICANUM* L. SEEDS

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DOI: 10.7897/2277-4572.06670

Received on: 15/12/17 Revised on: 28/12/17 Accepted on: 15/01/18

ABSTRACT

The present study was aimed at the evaluation of antioxidant activity of methanolic extract of seeds of *Ocimum americanum* L. The methanolic extract of *Ocimum americanum* L. showed antioxidant properties by scavenging the free radicals by nitric oxide method and DPPH (1, 1-diphenyl-2-picryl-hydrazyl) method and showed maximum percentage of inhibition when compared to the standard drug, Ascorbic acid. It is concluded that the seeds of *Ocimum americanum* L. possess significant antioxidant properties by effective scavenging properties. As it was found useful in reducing infections, more studies may be performed to bring it in to the market as a formulation after proper clinical trials.

Key Words: Antioxidant activity, *Ocimum americanum* L., DPPH method, methanolic extract.

INTRODUCTION

Nature has provided a vast number of resources to the mankind. Among them, plants with their valuable chemical constituents play a major role in the protection of human beings from various infections. Antioxidants functions by reducing the rate of initiation reactions in the free-radical chain reactions and are functional at very low concentrations 0.01% or less[1]. So, the present study was aimed at the evaluation of antioxidant properties of seeds of *Ocimum americanum* L.

Ocimum americanum L., synonym *Ocimum africanum* Lour, *Ocimum canum* Sims, *Ocimum pilosum* Willd, *Ocimum simile* N.E.Br. It is commonly known as American basil, hoary basil, and/or sweet basil. It is used as a pot-herb. The chemical constituents are predominantly citral, linalool and chavicol methyl ether[2]. The plant is carminative, diaphoretic and stimulant; used in cold, coughs, catarrh and bronchitis, Leaf juice is used for dysentery and as a mouth-wash for relieving toothache; poured into nostrils for migraine. Decoction of the leaf is used for checking nose bleeding and malarial fever. Leaf paste is used as a cure for parasitical skin diseases. Tea or infusion of the leaf is used in fever, indigestion and diarrhoea.

The past reported activities of this plant were anti-inflammatory properties of essential oil[3], leaves possess hepatoprotective activity[4] and essential oil has anaesthetic activity[5] antimicrobial activity of essential oil[6].

MATERIALS AND METHODS

Collection of Plant Material

The plant was collected from the surroundings of Karimnagar in Andhra Pradesh. It was authenticated by Dr. E. Narsimha Murthy, botanist from Karimnagar, Telangana, India. A voucher specimen is preserved in the laboratory herbarium with No. OCI 005.

Preparation of the extract

Methanolic extract of *Ocimum americanum* L.: About1kgof seeds were collected and dried under shade at room temperature. The seeds were first extracted with petroleum ether to remove fatty substances and the residue was then macerated with methanol for seven days, followed by filtration. The filtrate obtained was dried using rotavapor[7].

Drugs/Chemicals

DPHH kit was bought from Hi Media Laboratories, Secunderabad, Telangana, India. All other chemicals used for this study were of analytical grade.

METHOD OF EVALUATION

Nitric oxide scavenging activity

Briefly, 5mM sodium nitroprusside was prepared in phosphate buffered saline and mixed with different concentrations of extracts (50,100 and 150 µg/ml) followed by incubation at 25ºC for 30 min. A control without the extracts but with equivalent amounts of solvents was taken. After 30 min, 1.5 ml of incubated solution was pipette out and diluted with 1.5 ml of Griess reagent (sulphanilic acid reagent (0.33%i in 20% glacial acetic acid) and will be allowed to stand for 5 min for completing diazotization. The absorbance of the chromophore formed during diazotization of the nitrite with sulphanilamide and subsequent coupling with N-1-napthyl ethylene diamine dihydrochloride was measured at 546 nm and percentage scavenging activity was measured with reference standard[8].

% scavenged = [(Absorbance of control–Absorbance of test sample)/ (Absorbance of control)] × 100
%inhibition = (1-A1/A0) × 100A1control is the absorbance of the control reaction mixture. A0
Test is the absorbance of sample of the extracts at different concentrations.

DPPH radical scavenging activity was done by serial dilution by taking diluted methanol (1:20) as standard. A volume of 2 mL of a methanolic or aqueous methanolic stock solution of the extracts was put into test tubes and 2 mL of 1mM DPPH solution was added and shaken. Then, incubated for 10 min at room temperature. Absorbance of test and reference standard, ascorbic acid was measured at 517 nm. The amount of DPPH scavenging was calculated by using the followingformula[8, 9]

% DPPH radical scavenging = [(Absorbance of control– Absorbance of test sample)/ (Absorbance of control)] ×100

DPPH (1, 1-diphenyl-2-picryl-hydrazyl) radical scavenging activity

Table No.1 Nitric oxide method

Sample	Concentration (ug/ml)	Absorbance	% inhibition	IC50 (ug/ml)
Methanolic extract	100	1.1314	50.85	
	200	0.9613	52.94	
	300	0.9415	54.68	274
	400	0.9062	59.39	
	500	0.7294	63.87	
Ascorbic acid	100	0.9983	48.25	
	200	0.9144	51.18	
	300	0.8567	56.38	235
	400	0.8121	60.00	
	500	0.6234	68.95	

Table No. 2 DPHH method

Sample	Concentration (ug/ml)	Absorbance	% inhibition	IC50 (ug/ml)
Methanolic extract	100	1.1324	44.50	
	200	0.9935	46.90	
	300	0.9618	47.78	298
	400	0.9036	49.34	
	500	0.8945	50.88	
Ascorbic acid	100	0.9983	52.86	
	200	0.9144	55.28	
	300	0.8567	57.35	254
	400	0.8121	63.45	
	500	0.6234	65.85	

RESULTS AND DISCUSSIONS

The methanolic extract of *Ocimum americanum* L. seeds showed antioxidant properties by scavenging the free radicals. This was proved by nitric oxide method and DPPH method. The results are tabulated in Table 1 and Table 2.

CONCLUSION

It is concluded that the seeds of *Ocimum americanum* L. possess significant antioxidant properties by effective scavenging properties. As it was found useful in reducing infections, more studies may be performed to bring it in to the market as a formulation after proper clinical trials.

ACKNOWLEDGEMENTS

I am very much thankful to my husband for inspirational and moral support.

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How to cite this article:
K. Sunitha and Ch. Naga Rani. Evaluation of antioxidant properties of *Ocimum americanum* L. seeds. J Pharm Sci Innov. 2017;6(6): 128-130.
http://dx.doi.org/10.7897/2277-4572.06670

Source of support: Nil, Conflict of interest: None Declared