EVALUATION OF ANTIOXIDANT PROPERTIES OF OCIMUM AMERICANUM L. SEEDS

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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 less1. 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 simul 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 ether2. 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 oil3, leaves possess hepatoprotective activity4 and essential oil has anaesthetic activity5 antimicrobial activity of essential oil6.

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.: About1kg of 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 rotavapor7.

Drugs/Chemicals

DPPH 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 25°C for 30 min. A control without the extracts but with equivalent concentrations 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-naphthyl ethylene diamine dihydrochloride was measured at 546 nm and percentage scavenging activity was measured with reference standard8.

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% scavenge = [(Absorbance of control–Absorbance of test sample) / (Absorbance of control)] × 100

%inhibition = (1-A1/A0) × 100

A calibration curve was plotted from the absorbance and concentration of the DPPH standards. From this curve, the IC50 of the extracts was calculated as the concentration of the sample at which 50% scavenging of the DPPH radical was observed.

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

Table No.1 Nitric oxide method

<table>
<thead>
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<th>Sample</th>
<th>Concentration (ug/ml)</th>
<th>Absorbance</th>
<th>% inhibition</th>
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<tr>
<td>Methanolic extract</td>
<td>100</td>
<td>1.1314</td>
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<tr>
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<td>200</td>
<td>0.9613</td>
<td>52.94</td>
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<td>300</td>
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<td></td>
<td>500</td>
<td>0.7294</td>
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<tr>
<td>Ascorbic acid</td>
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<td>48.25</td>
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<td>200</td>
<td>0.9144</td>
<td>51.18</td>
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Table No. 2 DPPH method

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<th>Absorbance</th>
<th>% inhibition</th>
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<tr>
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<td>500</td>
<td>0.8945</td>
<td>50.88</td>
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<tr>
<td>Ascorbic acid</td>
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<tr>
<td></td>
<td>500</td>
<td>0.6234</td>
<td>65.85</td>
</tr>
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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.

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