Antioxidant Activity of Methanolic extract of *Eclipta Prostrata* (L.)L.

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**Abstract**  
*Eclipta Prostrata* (L.)L is used traditionally in ayurvedic system of medicine in India for the treatment of liver diseases and also used as a liver tonic. The herb posses many phytochemical marked for its remarkable properties such as antioxidant, antiviral, antifungal, antibacterial, and antihepatotoxic activity. Though the above properties are markedly remarkable, my study is subjected to investigate antioxidant properties of *Eclipta Prostrata* (L.)L in methanol extract. The study confirmed that *Eclipta Prostrata* (L.)L extract has good antioxidant property was assessed by 2, 2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging method.  
**Keywords:** *Eclipta Prostrata* (L.)L – Antioxidant activity, free radicals, antihepatotoxic

**1. Introduction**

*Eclipta Prostrata* (L.)L (family, Asteraceae) is popularly known as false daisy or Bhingaraj. It is a creeping and moisture loving herb commonly distributed on roadsides and wastelands throughout India. The plant has been reported to contain phytosterol, β-amyrin, triterpenes such as ecalbalt, echinocystic acid, flavones such as luteolin and coumarin such as wedelolactone[1]. The whole plant is used as a stimulant. The flowers are used for their analgesic, antispasmodic, fungicidal, digestive, bactericidal and vulnerary properties. The plant is known to have some important pharmacological activities such as hepatoprotective, antimicrobial, antioxidant, anti-inflamatory, antiviral, immunomodulatory and analgesic activity[2]. Morbidity and mortality resulting from liver diseases (such as hepatitis) is a major public health problem worldwide, especially in developing countries, the major abnormalities associated with hepatitis are lipidepation, peroxidation and loss of plasma membrane integrity. The plant derived natural products of many herbs includes my herb of interest such as Flavanoids, Terpenoid, and steroids posses many pharmacological properties includes antioxidant activity too[3].

Antioxidants are compounds that help to inhibit many oxidation reactions caused by free radicals, which damage to the cells and tissues. As antioxidants play an important role in inhibiting and scavenging radicals thereby providing protection to humans against infection and the degenerative diseases[4]. However, there is a need for isolation and characterization of natural antioxidant having less or no side effects, for medicinal materials to replace synthetic antioxidant[5]. In the present investigation aimed to study of the Methanolic extracts of *Eclipta Prostrata* (L.)L subjected to analyze the antioxidant activity by using 2, 2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging method.
2. Materials & Methods

2.1 Collection and preparation of plant materials

_Eclipta Prostrata (L.)L._ (Fig.1) were collected from Trichy, Tamilnadu, India and confirmed by Dr. S. John Britto, The Rapinat Herbarium, ST. Joseph’s college, Tiruchirappalli. The leaves were thoroughly washed thoroughly and the leaves were shade dried and coarsely powdered in a grinder.

![Eclipta Prostrata (L.)L](image)

2.2 Extract preparation

Shade dried powder was extracted with methanol (1:3 w/v). Methanol extract was prepared by cold percolation and it is concentrated under reduced pressure using rotatary evaporator at 4°C. Finally crude extract was obtained. The crude extract was stored at 4°C until further use.

2.3 Antioxidant activity

DPPH Radical scavenging Assay

The scavenging effects of samples for DPPH radical were monitored according to the method described by Yen and Chen. Briefly, 2.5 ml of test sample was added to 2.5 ml of 0.18 mM DPPH methanol solution. The mixture was then vortexes for 1 minute and then left to stand at room temperature for 30 minute in the dark and its absorbance was read at 520 nm. The ability to scavenge the DPPH radical was calculated using the formula given by Duan et al[2]. Synthetic antioxidants ascorbic acid used as positive controls.

2.4 Statistical analysis:

Tests were carried out in triplicates. The mean values were calculated from the triplicate values are expressed as the mean ± SD and the differences between groups were considered to be significant if p<0.03. The percentage of inhibition for antioxidant was calculated using the following formula.

\[
\text{% of inhibition} \ H \ O = \frac{[D0] - [A1]}{[D0]} \times 100
\]

Where, (A0-Absorbance of control; A1- Absorbance of sample)

3. Results

The results representing significant antioxidant activity of Methanolic extract of _Eclipta Prostrata (L.)L_ plant products. However there are certain photochemical that are not soluble in water such as condensed tannins, flavones, coumarin etc. As the result shows, aqueous extract doesn’t indicate the presence of tannin. Methanol is also a good solvent, due to its high polarity. Methanol was found easier to penetrate the cellular membrane to extract the intracellular ingredients from the plant material. But the methanol extract of the weed showed the alkaloid and steroid. This is may be due to trace amount of these metabolites in the extract. ROS produced in vitro include superoxide radical, hydrogen peroxide and hypochlorous acid. Hydrogen peroxide and superoxide can interact in the presence of certain transition metal ions to yield a highly-reactive oxidizing species, the hydroxyl radical. _Eclipta Prostrata (L.)L_ extracts of methanol as well as aqueous represented in the (Table-1)
4. Discussion
On the basis of our results of the present study, it is concluded that the methanol extracts of Eclipta Prostrata (L.)L is presented Table-2, have significant antioxidant activity. Hydrogen peroxide and super oxide can interact in the presence of certain transition metal ions to yield a highly reactive oxidizing species, the hydroxyl radical. The antioxidants react with the stable free radical DPPH (deep violet color) and convert it to 1,1-diphenyl-2-picryl hydrazine with decolouration. The scavenging effects of extract increased with their concentrations to similar extend. Eclipta Prostrata (L.)L (80.13%) showed potent DPPH radical scavenging activity (Table-2) at the concentration of 100ug/ml than compared to standard ascorbic acid. This discussion clearly mentioned about the DPPH radical, this radical is one of the best antioxidant and also suitable for the prevention of human diseases such as liver disorders.

Table -1: Total antioxidant capacity in the methanol as well as aqueous extracts of Eclipta Prostrata (L.)L

<table>
<thead>
<tr>
<th>Phytochemicals</th>
<th>Methanolic extract</th>
<th>Aqueous extract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkaloids</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Flavonoids</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Steroids</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Terpenoids</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Tannins</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Phenols</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

(+) It shows that presence (-) It shows that Absence

Table-2: Scavenging effects of methanol extracts of represented in the (Table-1) and standard ascorbic acid on DPPH radical

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Sample concentration (µg /ml)</th>
<th>Percentage of inhibition</th>
<th>Eclipta Prostrata</th>
<th>Ascorbic acid(control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>20</td>
<td>31.63±2.00z</td>
<td>36.43+1.01z</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>40</td>
<td>48.04±0.03z</td>
<td>51.19±0.04z</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>60</td>
<td>67.19±0.06z</td>
<td>70.41±0.06z</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>80</td>
<td>74.12±1.46z</td>
<td>74.13+1.61z</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>100</td>
<td>80.13±2.02z</td>
<td>80.31+0.03z</td>
<td></td>
</tr>
</tbody>
</table>

Results are expressed as mean ±SD of the three parallel measurements.
SD values followed by common superscript letter (z) are significant

5. Conclusion
On the basis of our results it represents the methanol extract of Eclipta Prostrata (L.)L has the significant reaction in antioxidant activity. The reactive oxygen species or oxidants, which are formed in the human body due to exogenous and endogenous factors, are found to be responsible for many diseases, Day by Day, a lot of research works have shown the potential of phytochemical antioxidants as health benefactors because of their ability to neutralize free radicals activity, reactive oxygen species, or oxidants responsible for the cell damage. From the above, the activity of Eclipta Prostrata (L.)L assayed that, the best antioxidant activity in DPPH radical scavenging activity from the above antioxidant parameters. It should be considered for the antioxidant properties and also beneficial role in their prevention of human diseases.

References


