Ascorbic Acid Contents from Some Medicinal Tree Species of the Sikar District of Rajasthan

B.B.S. Kapoor, Rajuram Prajapat and Raksha Mishra
Herbal Research laboratory, P.G. Department of Botany, Dungar College, Bikaner - 334001-India

Correspondence should be addressed to B.B.S. Kapoor; bbskapoor@rediffmail.com

Received 30 March 2014; Accepted 07 April 2014; Published 08 April 2014

Copyright: © 2014 Kapoor et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract
Evaluation of Ascorbic acid contents of stems, leaves and fruits from three selected medicinal trees growing in Sikar district of Rajasthan was carried out. Tree species like Ailanthus excelsa, Pongamia pinnata and Salvadora oleoides were collected from three different sites of study area for analysis. Among all the three tree species the maximum (86.28 mg/100 g.d.w.) amount of ascorbic acid was found in fruits of Salvadora oleoides collected from Danta Ramgarh area, while the stems of Ailanthus excelsa had minimum concentration (52.02 mg/100 g.d.w.) collected from Neem Ka Thana area.

Keywords: Ascorbic acid contents, Medicinal tree species, Sikar district, Rajasthan

Introduction
The medicinal tree species of growing in Sikar district of Rajasthan are good and potential source of nutritionally and phytochemically important compounds so these can be considered as livestock feed. Ascorbic acid, also called as anti-scorbutic (Vitamin C), is an important primary product and well known for its property as an electron donor in photophosphorylation.

The present investigation deals with evaluation of free endogenous ascorbic acid contents of stems, leaves and fruits from three selected medicinal trees growing in Sikar district of Rajasthan like Ailanthus excelsa, Pongamia pinnata and Salvadora oleoides. The role of ascorbic acid in plant growth and metabolism has been worked out by various workers[1-4]. Free endogenous ascorbic acid has been recently reported from some arid zone plant species [5-13].

Materials and Methods
The stems, leaves and fruits of all the three selected tree species taken for present investigation were collected from Danta Ramgarh, Fatehpur and Neem Ka Thana areas of Sikar district.

Plant parts of Ailanthus excelsa, Pongamia pinnata and Salvadora oleoides were collected in polythene bags. The samples were dried, powdered and then used for the estimation of free endogenous ascorbic acid. Fresh and healthy stems, leaves and fruits of selected plants collected from study areas were dried and homogenized in a mortar with 2% metaphosphoric acid (MPA)(10 mg powder: 100 ml MPA) and allow to macerate for one hour. The mixtures were centrifuged
at low speed (2500 rpm) and supernatants were used for estimation of ascorbic acid following the colorimetric method [14]. Absorbancy of each of the sample was measured on a spectronic-20 colorimeter (Bausch & Lamb) set at 546nm against blank. Values are expressed in mg / 100 g.d.w

Results and Discussion

Concentration of the ascorbic acid in the various parts (stems, leaves and fruits) of all the tree species i.e. *Ailanthus excelsa, Pongamia pinnata* and *Salvadora oleoides* were collected from three different sites i.e. Danta Ramgarh, Fatehpur and Neem Ka Thana areas of Sikar district are presented in Table- 1.

**Table 1:** Ascorbic acid contents (mg / 100 g.d.w) of various parts of selected tree species

<table>
<thead>
<tr>
<th>Plants</th>
<th>Stems</th>
<th></th>
<th></th>
<th></th>
<th>Leaves</th>
<th></th>
<th></th>
<th></th>
<th>Fruits</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>I</td>
<td>II</td>
<td>III</td>
</tr>
<tr>
<td><em>Ailanthus excelsa</em></td>
<td>52.02</td>
<td>61.20</td>
<td>54.82</td>
<td>57.48</td>
<td>64.02</td>
<td>59.30</td>
<td>74.27</td>
<td>67.10</td>
<td>71.28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pongamia pinnata</em></td>
<td>59.81</td>
<td>60.33</td>
<td>61.38</td>
<td>60.47</td>
<td>65.34</td>
<td>70.08</td>
<td>64.67</td>
<td>69.20</td>
<td>82.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Salvadora oleoides</em></td>
<td>71.30</td>
<td>68.30</td>
<td>58.12</td>
<td>73.72</td>
<td>72.50</td>
<td>64.43</td>
<td>86.28</td>
<td>77.12</td>
<td>79.16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I - Danta Ramgarh    II - Fatehpur    III - Neem Ka Thana

In *Ailanthus excelsa* maximum (74.27 mg/100 g.d.w.) ascorbic acid contents was found in fruits collected from Danta Ramgarh area while minimum (52.02 mg/100 g.d.w.) in the stems collected from same area.

In *Pongamia pinnata* maximum (82.44 mg/100 g.d.w.) ascorbic acid contents was found in fruits collected from Neem Ka Thana area while minimum (59.81 mg/100 g.d.w.) in stems collected from Danta Ramgarh area.

In *Salvadora oleoides* maximum (86.28 mg/100 g.d.w.) ascorbic acid contents was found in the fruits collected from Danta Ramgarh area, while minimum (58.12 mg/100 g.d.w.) in the stems collected from the Neem Ka Thana area.

Among all the three tree species the maximum (86.28 mg/100 g.d.w.) amount of ascorbic acid was found in fruits of *Salvadora oleoides* collected from Danta Ramgarh area, while the stems of *Ailanthus excelsa* had minimum concentration (52.02 mg/100 g.d.w.) collected from Neem Ka Thana area.

Conclusion

The present investigation shows that increasing amount of ascorbic acid contents in various plant parts of all selected tree species is directly proportional to growth of an arid zone plant in the direction of rooting to fruiting stages.

The present study thus indicates that medicinal tree species of this region of Rajasthan are good source of
ascorbic acid (Vitamin C) so these can be used as livestock feed.

**Acknowledgement**

The authors wish to acknowledge the UGC, Bhopal for providing the financial assistance for the project.

**References**