Antibacterial activity of *Saraca asoca* Bark

Y. N. SEEṬHARAM*, H. SUJEETH, G. JYOTHISHWARAN, A. BARAD
G. SHARANABASAPPA AND SHABANA PARVEEN
Biosystematics and Medicinal Plants Laboratory, Department of Botany,
Gulbarga University, Gulbarga-585 106.

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Bark extracts of *Saraca asoca* (Roxb.) de Wilde were investigated for *in vitro* antibacterial activity against *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Bacillus aureus* and *Klebsiella pneumoniae* at 4 mg/ml using agar well diffusion method. The ethanol and distilled water extracts showed significant broad spectrum antibacterial activity.

*Saraca asoca* (Roxb.) de Wilde is a medium sized endangered evergreen tree (distributed throughout India), mostly cultivated in gardens. The bark of this plant is used as astringent to the bowels, anthelmintic, for curing diseases of the blood, in fever, dyspepsia, dysentery, burning sensation and leucorrhoea. Flavonoids and sterols have been isolated from this plant. In the light of above information the present investigation was undertaken which deals with the antibacterial activity of petroleum ether, butanol, ethanol and distilled water extracts of bark of *Saraca asoca* (Roxb.) de Wilde against various Gram positive and Gram negative bacteria. The results of which are being reported in the present communication.

The bark of *Saraca asoca* (Roxb.) de Wilde was collected from Lal Bagh, Bangalore, Karnataka in December 1999. The identity of the bark has been confirmed using all official monographic specifications. The shade dried bark was pulverized by a mechanical grinder and passed through a 40 mesh sieve. The powdered bark (500 g) was extracted with petroleum ether (PE, 40-60°), successively butanol (BT), ethanol (EE), and distilled water (DW) using Soxhlet extractor method. The extracts were then distilled separately and condensed to yield solid mass completely free from solvents. (PE-3.22%, BT-8.67%, EE-12.43% and DW-27.43%). The solid mass were redissolved in dimethylformamide (DMF) to evaluate antibacterial efficiency.

Bacterial cultures used for testing included *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Bacillus aureus* and *Klebsiella pneumoniae*. These bacterial cultures were obtained from Department of Microbiology, Gulbarga University, Gulbarga, India. The stock cultures were maintained on nutrient agar medium at 37°.

Antibacterial activity of the above mentioned extracts tested separately using agar well diffusion method. Four

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*For correspondence
E-mail: Suzz@rediffmail.com
### TABLE 1: ANTIBACTERIAL ACTIVITY OF DIFFERENT EXTRACTS OF SARACA ASOCA (ROXB.) DE WILLDE BARK.

<table>
<thead>
<tr>
<th>Organisms</th>
<th>Diameter of the inhibition zone (mm)</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
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<tr>
<td>S. aureus</td>
<td>-</td>
</tr>
<tr>
<td>E. coli</td>
<td>-</td>
</tr>
<tr>
<td>P. aeruginosa</td>
<td>-</td>
</tr>
<tr>
<td>P. vulgaris</td>
<td>-</td>
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<tr>
<td>B. aureus</td>
<td>-</td>
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<tr>
<td>K. pneumoniae</td>
<td>-</td>
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</table>

*All the values are mean±standard deviation of 3 determinations. 1. Petroleum ether extract; 2. Butanol extract; 3. Ethanol extract; 4. Distilled water extract (4 mg/ml of dimethylformamide); Strept.-streptomycin sulphate (1 mg/ml of distilled water); '-' represents that there is no inhibition.*

Milligrams of each extract was dissolved in 1 ml of distilled DMF. DMF and water alone serve as negative controls. Standard streptomycin sulphate (4 mg/ml) was used as a positive control. The plates were incubated at 37°C for 24 h. The assessment of antibacterial activity was based on the measurement of diameter of zone of inhibition (mm) formed around the well.

Table 1 enumerates the effect of different extracts of bark of Saraca asoca (Roxb.) de Wilde. The ethanol and distilled water extracts were tested at 4 mg/ml showed significant activity against all the bacteria, when compared with streptomycin sulphate (1 mg/ml). The distilled water extract was found to be more effective than others. PE extract did not show any activity. The present result support the previous work?, which reveals that methanol and water extracts of Saraca asoca leaves showed antibacterial activity against B. subtilis, P. aeruginosa and S. typhimurium.

### ACKNOWLEDGEMENTS

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### REFERENCES