Evaluation of Antimicrobial Activity of Cedrela toona Roxb. Fruit Extracts

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INTRODUCTION

Literature survey reveals that Cedrela toona Roxb. is medium sized to large deciduous tree with brown to grey scaly bark. Leaves 15 – 45 cm long usually paripinnate but sometimes with a terminal leaflet in juvenile growth, leaflets mostly 8-20, ± ovate, often falcate, 4-15 cm long, 15-50 mm wide, apex acuminate, base strongly asymmetric, margins entire, mostly glabrous, domatia present as small hair – tufts; petiole 4-13 cm long, petiolules 5-12 mm long, Peticiles 20-40 cm long. Petals 5-6 mm long, white. Capsule ellipsoid, 10-20 mm long, 6-8 mm diameter; seeds winged at both ends.1,2,3,4 Traditionally the bark is astringent, antisynergic, antiperiodic.5 Flowers are emmenagogue, leaf is spasmolytic, hypoglycaemic and antiprotozoal.6 Bark and heartwood yielded tetraterpenoids, including toonacillin. Heartwood also gave a coumarin geranyl gernalol as its fatty esters. Toonaccillin and its 6 – hydroxyl derivatives are antifeedant.5 Literature review suggests that the antimicrobial activity of the fruit of Cedrela toona Roxb. has not been studied and hence in the present study the same was investigated for methanic extracts of fruits of Cedrela toona Roxb.

MATERIALS AND METHOD:7,8,9,10

Preparation of extract:

Methanolic extracts of fruits prepared by successive solvent extraction method in a Soxhlet extractor were used for the screening of antimicrobial activity.

Microorganisms used:

The test microorganisms used for the antimicrobial activity were four bacterial species (two Gram positive and two Gram negative) – Bacillus subtilis, Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli. The test microorganisms used for the antimicrobial activity were four bacterial species (two Gram +ve and two Gram -ve) Bacillus subtilis, Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli.

Keywords: Cedrela toona

Abstract

Evaluation of antimicrobial activity was performed by cup-plate method. The test microorganisms used for the antimicrobial activity were four bacterial species (two Gram positive and two Gram negative) – Bacillus subtilis, Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli. The test microorganisms used for the antimicrobial activity were four bacterial species (two Gram +ve and two Gram -ve) Bacillus subtilis, Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli.

Statistical analysis:

The values are represented as Mean ± S.E.M. for triplicate sets of experiments and the statistical significance was evaluated by One-way analysis of variance (ANOVA) followed by Dunnett’s t-test.

RESULT AND DISCUSSION:

The results of antibacterial activity are shown in Table 1 and Figure 1.
Table 1: Antimicrobial activity of methanol extracts of fruits of Cedrela toona Roxb.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Conc.</th>
<th>Mean ± SEM of diameter of zone of inhibition (in mm)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Gram positive bacteria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B. subtilis</td>
</tr>
<tr>
<td>Methanolic extract (a)</td>
<td>1.25 mg/disc</td>
<td>6.5±0.12</td>
</tr>
<tr>
<td>Methanol extract (b)</td>
<td>2.5 mg/disc</td>
<td>16.3±0.26</td>
</tr>
<tr>
<td>Methanol extract (c)</td>
<td>5 mg/disc</td>
<td>20.0±0.38</td>
</tr>
<tr>
<td>Streptomycin (d)</td>
<td>10 µg/disc</td>
<td>24.7±0.11</td>
</tr>
</tbody>
</table>

Values are expressed as Mean ± S.E.M. of triplicate measurements. A value of P<0.05 was considered statistically significant (By one way ANOVA, followed by Dunnett’s t-test).

Methanolic extract of plant shows antimicrobial activity against multiple gram positive and gram negative strains.

Figure 1: Antibacterial activity of methanol extracts of fruits of Cedrela toona Roxb. with Gram positive bacteria and Gram negative bacteria

REFERENCES