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REFERENCES


Antimicrobial activity of Dioscorea bulbifera bulbils

Y. N. SEETHARAM*, G. JYOTHISHWARAN, H. SUJEETH, A. BARAD, G. SHARANABASAPPA AND D. SHIVKUMAR.

Bio-systematics and Medicinal Plants Laboratory,
Department of Botany, Gulbarga University, Gulbarga-585 106.

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The successive extracts of Dioscorea bulbifera (bulbils) has been investigated for in vitro antimicrobial activity against Klebsiella pneumoniae, Escherichia coli, Bacillus aureus, Proteus vulgaris, Staphylococcus aureus, Aspergillus niger, Aspergillus flavus, Aspergillus fumigatus and Rhizopus nigricans. The petroleum ether and chloroform extracts showed significant activity against A. fumigatus and R. nigricans. The petroleum ether and distilled water extract showed good activity against K. pneumoniae. The chloroform extract showed feeble activity against S. aureus.

Dioscorea bulbifera L. (Dioscoreaceae) is a climber widely distributed in India, Ceylon, Malay peninsula, Australia, E. Africa and Brazil. D. bulbifera is one of the major Indian medicinal plants used in the three indigenous systems of medicine. Traces of diosgenin (4%) are present in D. bulbifera. D. bulbifera has diuretic and antiinflammatory activity. Sterols and diterpenoids have been reported from this plant. This communication reports the antimicrobial activity of bulbils of D. bulbifera.

The plant was collected from Gulbarga University Campus, Gulbarga in January 2001 and authenticated at the Botany Department, Gulbarga University with the help of Flora of Gulbarga District where a voucher specimen is deposited (Voucher No. HGUG-785). The bulbils were cut, shade dried and coarsely powdered. The powdered plant material was subjected for successive extraction with petroleum ether, chloroform, ethanol (95%) and distilled water using Soxhlet extractor. The extracts were concentrated to dryness in vacuo. Four milligrams of each extract is dissolved in 1 ml of distilled dimethylformamide. The antimicrobial activity was assayed by agar well diffusion method. The in vitro screening was carried out using Klebsiella pneumoniae, Escherichia coli, Bacillus aureus, Proteus vulgaris, Staphylococcus aureus, Aspergillus niger, Aspergillus flavus, Aspergillus fumigatus and Rhizopus nigricans.

Streptomycin sulphate (4 mg/ml of distilled water) and nystatin (4 mg/ml of distilled water) was used as a standard for bacteria and fungi respectively. The petroleum ether extract showed significant activity against A. fumigatus (16.5

*For correspondence
E-mail: shwaran@rediffmail.com

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TABLE 1: IN VITRO ANTIMICROBIAL ACTIVITY OF DIOSCOREA BULBIFERA BULBS

<table>
<thead>
<tr>
<th>Organisms</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klebsiella pneumoniae</td>
<td>15.0±1.0</td>
<td>12.0±0.3</td>
<td>12.0±0.2</td>
<td>15.0±0.2</td>
<td>16.0±0.1</td>
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<tr>
<td>Escharchia coli</td>
<td>11.5±0.5</td>
<td>12.5±0.2</td>
<td>12.5±0.3</td>
<td>11.0±0.5</td>
<td>16.0±1.5</td>
<td>ND</td>
</tr>
<tr>
<td>Bacillus aureus</td>
<td>15.0±1.0</td>
<td>13.5±0.4</td>
<td>13.5±0.1</td>
<td>15.5±0.3</td>
<td>18.0±0.4</td>
<td>ND</td>
</tr>
<tr>
<td>Proteus vulgaris</td>
<td>13.5±0.5</td>
<td>13.0±0.3</td>
<td>12.5±0.4</td>
<td>14.0±0.5</td>
<td>16.5±0.3</td>
<td>ND</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>12.5±31</td>
<td>8.0±0.3</td>
<td>13.5±0.3</td>
<td>12.5±40</td>
<td>16.5±50</td>
<td>ND</td>
</tr>
<tr>
<td>Aspergillus niger</td>
<td>14.5±20</td>
<td>15.0±0.2</td>
<td>12.5±0.3</td>
<td>13.5±0.2</td>
<td>ND</td>
<td>16.0±02</td>
</tr>
<tr>
<td>Aspergillus flavus</td>
<td>13.0±10</td>
<td>15.0±0.5</td>
<td>17.0±0.5</td>
<td>13.0±1.0</td>
<td>ND</td>
<td>20.0±20</td>
</tr>
<tr>
<td>Aspergillus fumigatus</td>
<td>16.5±30</td>
<td>16.0±40</td>
<td>11.5±31</td>
<td>12.0±40</td>
<td>ND</td>
<td>16.0±03</td>
</tr>
<tr>
<td>Rhizopus nigricans</td>
<td>20.5±20</td>
<td>21.5±10</td>
<td>14.5±10</td>
<td>18.5±31</td>
<td>ND</td>
<td>20.0±05</td>
</tr>
</tbody>
</table>

*All the values are mean±standard deviation of 3 determinations. 1. Petroleum ether extract; 2. Chloroform extract; 3. Ethanoic extract; 4. Distilled water extract (4 mg/ml dimethylformamide); 5. Strept-streptomycin sulphate (1 mg/ml of distilled water); 6. Nyst-nystatin (1 mg/ml of distilled water); ND, Not done.

mm) and R. nigricans (20.5 mm). The chloroform extract showed marked activity against A. fumigatus (16.0 mm) and R. nigricans (21.5 mm) equating to the standard. Petroleum ether and distilled water showed good activity against K. pneumoniae (15.0 mm and 15.0 mm, respectively). The chloroform extract showed feeble activity against S. aureus (8.0 mm). In spite of tremendous development in the field of synthetic drugs during recent era, higher plants still hold their own place as a source of several effective drugs in place of synthetics, which have severe side effects. Therefore, a systematic approach should be made to find out the efficacy of plants against pathogenic microorganisms so as to exploit them as herbal antimicrobial agents.

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REFERENCES