Anticandidal Activity of Asparagus racemosus

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Abstract: The in vivo anticandidal activity of Asparagus racemosus roots and tubers extract was investigated against Candida albicans, Candida tropicalis, Candida krusei, Candida guillermondii, Candida parapsilosis and Candida stellatoida, which are isolated from vaginal thrush patients. The extract of Asparagus racemosus showed high degree of activity against all the Candida strains. The inhibitory effect of the extract against all the Candida tested was found comparable with that of standard antibiotics used.

Keywords: Asparagus racemosus, Anticandidal activity, Candida albicans

Asparagus racemosus. Willd (Liliaceae) which is also known a Shatavari, is a herb employed in traditional medicine in many parts of the world. In India, Asparagus racemosus was most commonly used in Indigenous medicine[1]. Asparagus racemosus is recommended in Ayurvedic texts for prevention and treatment of gastric ulcers, dyspepsia and as a galactotogogue[2]. It is also used successfully for nervous disorders, inflammation, liver diseases and certain infectious diseases. The juice of fresh root of Asparagus racemosus has curative effect in patients with duodenal ulcers. Oral administration of decoction of powered root enhances the immuno-modulatory effect[3]. The present study was undertaken to evaluate the antifungal activity of Asparagus racemosus extract against Candida species.

The roots and tubers of Asparagus racemosus was collected in and around Chidambaram, Tamilnadu, India during January, 2005 and authenticated at the Herbarium, Department of Botany, Annamalai University, Annamalai Nagar. The roots and tubers were shade dried and powered. 25 g of powered plant samples were loaded in a Soxhelt apparatus and extracted in 125 ml of methanol. The extract so obtained was evaporated to dryness at 40-50° under vacuum. Candida strains were isolated from vaginal thrush patients, attending Obstetrics and Gynecology Department, Rajah Muthiah Medical College and Hospital, Annamalai Nagar, Tamilnadu, India and the species were identified using conventional tests.

The disc diffusion method was followed for antifungal susceptibility tests[4]. The 6 mm discs were impregnated with 20 µl of the extracts dissolved in 5% dimethylsulphoxide (DMSO) at the concentration of 25 mg/ml and placed on to inoculated Sabouraud’s dextrose agar (SDA). Fluconazole discs at a concentration of 10 µg/disc were used as a positive control and 5% DMSO impregnated disc were used as negative control.

The two-fold serial dilution technique[5] with yeast nitrogen base was followed (5 to 0.312 mg/ml) for the determination of the minimum inhibitory concentration (MIC). The minimum fungicidal concentration (MFC) of the extracts was determined by plating 100 µl samples from each of MIC assay tube with growth inhibition into freshly prepared SDA plate. The plates were then incubated at 28° for 24-48 h. The MFC was recorded as the lowest concentration that did not permit any visible fungal colony growth on the agar plate after the period of incubation.

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Diameter of Zone of Inhibition (mm)</th>
<th>Methanol Extract mg/ml</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Fluconazole MIC</td>
<td>Fluconazole MFC</td>
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<tr>
<td>Candida albicans</td>
<td>16</td>
<td>0.312</td>
</tr>
<tr>
<td>Candida tropicalis</td>
<td>16</td>
<td>0.625</td>
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<tr>
<td>Candida krusei</td>
<td>16</td>
<td>0.625</td>
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<tr>
<td>Candida guillermondii</td>
<td>16</td>
<td>0.625</td>
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<tr>
<td>Candida parapsilosis</td>
<td>14</td>
<td>0.625</td>
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<tr>
<td>Candida stellatoida</td>
<td>13</td>
<td>0.625</td>
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Results of screening of antifungal activity of *Asparagus racemosus* extract are summered in Table 1. It is evident from the results, that the methanol extracts shows high anticandidal activity against all the *Candida* tested. The zone of inhibition ranged from 13 to 16 mm. The MIC values were between 2.5 to 0.312 mg/ml, while MFC values were between 5 to 0.625 mg/ml. The detailed chemical nature of the active principle(s) responsible for the antifungal activity is not known however, the preliminary screening has shown the presence of glycosides, steroids, saponins and flavonoids.

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**REFERENCES**


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**Antimicrobial Activity of Essential Oil from *Perovskia abrotanoides* Karel and its Main Components**

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In Iranian folk medicine, *Perovskia abrotanoides* is used for treatment of leishmaniasis. These patients may develop secondary infections with opportunistic microorganisms. Therefore, the antimicrobial activity of essential oil from aerial part of *P. abrotanoides* and its main components was evaluated against different microorganisms. Disc diffusion and broth micro dilution assays were used for in vitro antimicrobial screening. The antibacterial activity of this oil and main components on viability of *S. aureus* was determined. The oil showed antimicrobial activity against *Candida albicans* and Gram positive bacteria especially *Staphylococcus aureus* with zone inhibitions and minimal inhibitory concentration values in the range of 7.6 to 29 mm and 2 to 8 μl/ml respectively, whereas the least susceptible were *Aspergillus niger* and Gram negative bacteria. In viability test, the results showed that the antimicrobial activity of 1,8-cineole was more than that of α-pinene and camphor but after 60 min this effect gradually decreased only for 1,8-cineole and ultimately the antibacterial activity of camphor was more than that of α-pinene. 1,8-cineole had weak antimicrobial activity against all of the tested microorganisms. Hence the use of *P. abrotanoides* oil could be useful in fighting secondary infections in leishmaniasis especially against *S. aureus*.

**Key words:** α-pinene, camphor, 1,8-cineole, *Perovskia abrotanoides*, antimicrobial activity

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