Evaluation of Antimicrobial activity of stem bark of *Ficus bengalensis* Linn. Collected from different geographical regions

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**INTRODUCTION**

*Ficus bengalensis* is an indigenous plant belonging to family Moraceae possessing varied pharmacological properties like antidiabetic, antimicrobial, antioxidant, antiseptic, gonorrhoea and also tender ends of hanging roots are prescribed to stop vomiting. The quality of medicinal plant depends on the geographical origin, time and stage of growth when collection has been done and post harvest handling. In this direction we collected the stem bark of *F. bengalensis* and planned our work to evaluate and compare antimicrobial activity of *Ficus bengalensis* Linn. by cup and plate method using Ofloxacin as standard for microbial assay.

**MATERIAL AND METHODS**

**Plant material**

The stem barks of *F. bengalensis* Linn. Were collected from New Delhi (FB/DL), Gujarat (FB/GJ) and Uttaranchal (FB/UA) in the month of May 2008. The age of plant was found to be in the range of 25-30 years as enquired from local person. The specimen of collected bark was given for authantification in Raw Material and Laboratory of National Institute of Science Communication and Information Resources (NISCAIR), New Delhi (voucher no. NISCAIR/Consult/RHMD/2008-09/1010/41).

The stem barks of FB/DL, FB/GJ and FB/UA were washed and dried in an electric oven at a temperature 40°C for 48 hours.

**Preparation of the extracts**

Dried barks are coarsely powdered and defatted with petroleum ether by soxhlet apparatus. Defatted drug than exhaustively extracted with 95% ethanol in soxhlet apparatus. The extract was concentrated under reduced pressure to get dark brown mass. The viscous dark brown mass is than dried in air as dried powdered extract. (Sgrawat, H.et al. 2007, Edwin E. 2008). The percentage yield of ethanol extracts of stem barks of FB/DL, FB/GJ and FB/UA was found to be 6.6 %, 9.56 % and 7.0 % respectively. The Phytochemical screening of all the extracts was carried out for the presence of Alkaloids, Proteins & Amino acids, Carbohydrates, Flavonoids, Phenolic group, Glycosides, Saponins, Tannins, Steroids, Triterpenoids. (Cromwell B.T. et al. 1955, Kokate, C.K. et al. 1996, Finar I. L. 1975, Peach K. and Tracey M.V.1955, Geinssman T.A. et al. 1955, Trease, G.E. and Evans, W.C 1989) It was found that proteins and amino acids, carbohydrates, flavonoids, Phenolic groups, glycosides, saponins, tannins, steroids and triterpenoids were present and alkaloids were absent in all the extracts.

**Abstract**

The stem bark of *Ficus bengalensis* is reported to have antimicrobial activity, we planned our work as to evaluate and compare antimicrobial activity of alcoholic extracts of stem bark of *F. bengalensis* by cup and plate method collected from three different geographical regions viz. Delhi, Gujarat and Uttaranchal. The activity of all the extracts at the dose level 1000 μg/ml, 500 μg/ml and 100 μg/ml were found to be quiet different and all the extracts showed that activity is varied as geography and environmental conditions are changed.

**Keywords:** *Ficus bengalensis*, stem bark, antimicrobial activity.

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Test organism and inoculums

Escherichia coli (NCTC-6571) and Staphylococcus aureus (NCTC-10418) were obtained from the Department of Pharmaceutics (Microbiology), B.M.Shah college of Pharmaceutical Education and Research, Modasa. Ofloxacin was taken as standard 25 mg/ml (Gupta K.C., Viswanathan R., 1956) obtained from the Megh Pharmaceuticals, Modasa.

Dehydrated nutrient agar media was prepared in distilled deionized water. Test organisms were prepared and cup and plate method was used for microbial assay. (Indian Pharmacopoeia 1996). Three doses of all the drugs (1000 μg/ml, 500 μg/ml and 100 μg/ml) were taken and effects were compared against the zone of inhibition.

RESULT AND DISCUSSION

All the extracts showed antimicrobial activity against E. coli and S. Aureus though the geography is different but FB/UA shows more antibacterial activity against E. coli at the concentration of 500 μg/ml and 1000 μg/ml while FB/GJ shows more antibacterial activity against S. aureus at the concentration of 500 μg/ml and 1000 μg/ml. Antibacterial activity were not shown at the concentration

![Figure 1: Antimicrobial activity against E.coli at 1000 μg/ml conc.](image1)

![Figure 2: Antimicrobial activity against S.aureus at 1000 μg/ml conc.](image2)

![Figure 3: Antimicrobial activity against E.coli at 500 μg/ml conc.](image3)

![Figure 4: Antimicrobial activity against S.aureus at 500 μg/ml conc.](image4)

![Figure 5: Antimicrobial activity against E.coli at 100 μg/ml conc.](image5)
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Table 1.1: Antimicrobial activity of stem barks of *Ficus bengalensis*

<table>
<thead>
<tr>
<th>Drug</th>
<th>Sample Code</th>
<th>Sample Conc. (µg/ml)</th>
<th>Zone of Inhibition (mm) E.coli</th>
<th>Zone of Inhibition (mm) S.aureus</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB/DL</td>
<td>A</td>
<td>1000</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>500</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FB/GJ</td>
<td>A</td>
<td>1000</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>500</td>
<td>4</td>
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<tr>
<td></td>
<td>C</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FB/UA</td>
<td>A</td>
<td>1000</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>B</td>
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<td>4</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>100</td>
<td>0</td>
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</tr>
<tr>
<td>Ofloxacin</td>
<td>Std</td>
<td>Standard</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td>Control</td>
<td>Co.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Figure 6: Antimicrobial activity against *S.aureus* at 100 µg/ml conc.

Of 100 µg/ml by all extracts. Results are given in table 1.1 and figures 1-6.

REFERENCES:


Figure 6: Antimicrobial activity against *S.aureus* at 100 µg/ml conc.