INTRODUCTION

Ficus glomerata is a species of plant in the Moraceae family. Popularity known as the Cluster Fig Tree or Goolar (Gular), this is native to Australia, South-East Asia and the Indian Subcontinent. It is unusual in that its figs grow on or close to the tree trunk. In India, the tree and its fruit are called Gular in the north and Atti in the south. The fruits are a favourite staple of the common Indian macaque. Medicinally it has been various pharmacological activities astringent, antiulcer, antihypertensive, antiviral, antioxidant, anti-inflammatory, hepatoprotective, antidiabetic, antileukemic, anti-coagulant, anti-pyretic, antiulcerogenic, and anti-ulcerogenic. The powdered bark is used as an antitussive and antipyretic.

**Plant Description**

*Ficus glomerata* is evergreen tree 50-60 ft. high; young shoot glabrous, pubescent or scaberulous. Leaves 3-6 by 1.25-2.5 in. long, glabrous; stipules 0.75 in. long, ovate- lanceolate, scarious, pubescent. Peceptacle shortly pendunculate, on short peduncle, male, female and gall flowers together in one receptacle, the male flower forming a zone near the mouth, the fertile female flowers forming a layers near the walls of the receptacle, and the gall flowers a more internal layer. Fruit ripe at different time of the year. Roots are useful in treating dysentery, diarrhea, in hydrophobia and the sap of root used in diabetes. Leaves are used in bronchitis, bilious affliction, haemorrhage. Bark is used as astringent, antidiabetic, refrigerant, also useful in asthma and piles. The urine is acid, astringent to bowels, tonic, styptic, alyss thist, and blood diseases. Latex used in piles and diarrhea, aphrodisiac and its administered in haemorrhoids. Extract of leaves when used locally is found efficacious in inflammation, lymphadenitis, in sprains and fibrosis. A decoction of leaves is a good wash for wound and ulcer.

**Agro climatic Requirements**

This species grows in moist tropical and subtropical climate with annual rainfall from 500mm to 2000mm preferring warm and moist sites, avoiding dry cold places. The maximum temperature in its natural range of its distribution touches about 45°C and minimum seldom drops below the freezing point. It is a light demander, but seedlings to some extent tolerate shade in early stages and are drought resistant and frost hardy. It grows on a variety of soils; good growth is seen on alluvial soils along ravines. Growth is stunted on rocky hill slopes. It can be propagated both by seeds as well as vegetative means.

**KEYWORDS:** *Ficus glomerata*, Antimicrobial activity.

ABSTRACT

*Ficus glomerata* Linn. (Moraceae), commonly known as *Ficus racemosa*. A large deciduous tree distributed all over India and Ceylon, found throughout the year, grows in evergreen forest, moist localities, along the sides of ravines and banks of streams. Gular (*Ficus glomerata* Linn.) is well known, commonly used plant in various disorders. It has been traditionally claimed to be useful in asthma and piles. The unripe fruit is antidiuretic, antidiabetic, refrigerant, antiasthmatic, antioxidant, and antihyperglycemic. The powdered bark is used as an antitussive and antipyretic. Methanolic extract showed good activity as compared to petroleum ether extract. Methanolic extract is more potent towards gram - positive bacteria. The antimicrobial activities of the extracts were compared with standard antibiotics.

**MATERIALS & METHODS**

**Collection of plant material**

*Ficus glomerata* bark was collected, authenticated and then air dried. The barks were collected from Raigad (Maharashtra), India. The herbarium of the plant specimen has been deposited at B.S.I. Pune, and the Voucher Specimen No. FICGOL5 with reference number BSI/WRC/Tech/2010. Air dried bark were processed for size reduction by using cutter mill (Portable Mixer). Crushed material was passed through 40# sieve (Coarse powder) for uniform particle size, which gave efficient extraction & yield of extract.

**Extraction of plant material**

The powdered *Ficus glomerata* Linn. were successively extracted by soxhlet extraction with solvents of increasing polarity beginning with Petroleum ether (60-80°C), Methanol (90-100°C). The solvents were removed under reduced pressure in rotary evaporator until it become completely dry. The percentage yields for each extracts were determined. All the crude extracts were subjected to antimicrobial assay.

**Antimicrobial activity**

An anti-microbial is a substance that kills or inhibits the growth of microorganisms—such as bacteria, fungi or protozoans. Antimicrobial drugs either kill microbes (microbicidal) or prevent the growth of microbes (microbiostatic).

**Antimicrobial Activity Investigation Methods**

There are three types of method for Investigation of antimicrobial activity.

1) Broth Dilution technique
2) Cup-plate Diffusion Method
3) Turbidimetric assay

Cup plate Diffusion methods are mostly used for investigation of antimicrobial activity of plant extracts. Cup plate method is easy to note the result and need small amount of extract.
Cup Plate Diffusion Method
All the glassware and the petri plates were sterilized by dry heat in an oven at 160°C for one hour. Nutrient agar was prepared in distilled water. The Nutrient agar was poured in sterile petri plates aseptically and allowed to solidify at room temperature. All the petri plates were aseptically flooded with 0.1ml of the standardized culture. The holes of 7mm were bored aseptically using sterile cork borer. The agar plugs were taken out carefully so as not to disturb the surrounding medium. The holes were filled completely with desired extract and kept in incubator at 30°C for 48 hours. After this the petri plates were observed for the antimicrobial activity and zone of inhibition was measured. The solvent effect was neutralized.

Preparation of inoculums
The suspension of all organisms were prepared by inoculating one colony of nutrient broth in colony of strain in 15ml of nutrient broth in conical flask and incubated at 37°C for 24 hours to activate the strain

Bacterial Culture: Bacilli subtilis (ATCC 441) Gram-positive
Escherichia coli (ATCC 25922) Gram-negative

Composition of nutrient agar media
Yeast/meat/beef extract - 10 gm
Peptone - 10 gm
Sodium chloride - 5 gm
Agar - 20 gm
Distilled water - 1000 ml

Procedure for performing the Cup Plate Diffusion Method
Plates are prepared with nutrient agar media medium of about 4mm layer. Different dilution of petroleum ether extract (25mg/ml - 200mg/ml) and methanolic extract (25mg/ml - 250mg/ml) were carried out. Blank readings of both the extracts were taken.
Sterile non-toxic cotton swab on a wooden applicator dipped in prepared inoculum and rotated soaked swab firmly against the upper inside wall of the test tube. Streak the entire agar surface of the plate with the swab two to three times, turning plate at 60° angle between each streaking. The inoculum allowed drying for 5-15 minutes with lid in place. Properly bored the plate with borer and disc is applied for standard drug. Chloramphenicol (30mcg/disc) was used for standard antibiotics for activity. Methanolic extract shows good antimicrobial activity at 100 mg/ml concentration where Chloramphenicol was used for standard antibiotics for activity. Methanolic extract is more potent towards gram-positive bacteria.

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REFERENCES
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Table 1: Amount and appearance of different of Ficus glomerata bark

<table>
<thead>
<tr>
<th>Extract</th>
<th>% (w/w) of extract obtained</th>
<th>Odour of Extract</th>
<th>Colour of Extract</th>
<th>Consistency</th>
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</thead>
<tbody>
<tr>
<td>Petroleum ether</td>
<td>1.95 %</td>
<td>Characteristic</td>
<td>Greenish yellow</td>
<td>Sticky</td>
</tr>
<tr>
<td>Methanol</td>
<td>8.96 %</td>
<td>Characteristic</td>
<td>Reddish</td>
<td>Sticky</td>
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Table -2: Zone of inhibition of Pet.ether extract of Ficus glomerata bark and standard against bacteria

<table>
<thead>
<tr>
<th>Extract (mg/ml)</th>
<th>Zone of inhibition (mm of Diameter)</th>
<th>B. substilis</th>
<th>E.coli</th>
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</thead>
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<tr>
<td>Petroleum ether extract</td>
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<tr>
<td>Chloramphenicol (Standard)</td>
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<td>20</td>
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</tbody>
</table>

A. Zone of inhibition of Petroleum Ether extract on Bacilli substilis.

B. Zone of inhibition of Petroleum Ether extract on E.coli.

Table -3: Zone of inhibition of Methanol extract of Ficus glomerata bark and standard against bacteria

<table>
<thead>
<tr>
<th>Extract(mg/ml)</th>
<th>Zone of inhibition (mm of Diameter)</th>
<th>B. substilis</th>
<th>E.coli</th>
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<tbody>
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<tr>
<td>Chloramphenicol (Standard)</td>
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<td>20</td>
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</tbody>
</table>
C. Zone of inhibition of Methanolic extract on *Bacilli subtilis*.

D. Zone of inhibition of Methanolic extract on *E.coli*.

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