

**ANTI BACTERIAL ACTIVITY OF  
BARK EXTRACTS OF  
PTEROCARPUS MARSUPIUM  
ROXB.**

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**ABSTRACT**

Anti bacterial activity of ethanol and water extracts of barks of *Pterocarpus marsupium* were tested by cup-plate agar diffusion method against *Staphylococcus aureus*, *Bacillus sterothermophilus* (Gram +ve) and *Eschericia coli*, *Klebsiella pneumoniae* (Gram -ve) bacteria. Ciprofloxacin was used as the standard. It was observed that all extracts have dose dependent inhibitory effect, ethanol extract being most effective.

**Key words:** Antibacterial, *Pterocarpus marsupium*, cup-plate.

*Pterocarpus marsupium* Roxb.(Leguminosae) is also known as Indian Kino tree or Bijasar, is common in the hilly regions of central and peninsular india<sup>1</sup>.The extracts of leaves, flowers and gum obtained from the stem of this tree have been used medicinally in the treatment of diarrhea, toothache, fever, urinary tract and skin infections<sup>2</sup>.The extract of the bark has been regarded as useful in the therapy of diabetes<sup>3</sup>.The aqueous extract of the stem bark was found to reduce the blood glucose level in alloxan - induced diabetic rats<sup>4</sup>. The ethnic uses includes the use of stem bark of this species in treating wounds, fever, stomachache, diabetes and jaundice<sup>5</sup>.The current study was undertaken to evaluate the antibacterial activity of ethanol and water extracts of *Pterocarpus marsupium*

Ethanol and water extracts were tested against *Staphylococcus aureus*, *Bacillus sterothermophilus* (Gram +ve) and *Eschericia coli*, *Klebsiella pneumoniae* (Gram -ve). Ciprofloxacin was used as the standard

## **Materials and Methods**

### **Plant material**

The fresh barks of *Pterocarpus marsupium* Roxb were collected from the Jeddu Ayurveda vanaspathi abivridi parishat, Bantwal Taluk, D.K. District, Karnataka.

### **Extraction of plant material**

The barks were dried under sunny condition at ambient temperature and then ground by using grinder, to coarse powder and the powder was packed in soxhlet column and extracted with ethanol for 24 hrs. Successively drug is boiled for 30min using distilled water. The extracts were concentrated under reduced pressure at 50° C using rotary evaporator to a powder mass, which was then stored at 40° C until used. Crude extract was subjected to preliminary phytochemical screening to characterize the phyto constituents present.

### **Screening for antibacterial activity**

Antibacterial activity was tested by cup-plate agar diffusion method to determine the zone of inhibition of two extracts. The extracts were freshly reconstituted with suitable solvents (H<sub>2</sub>O

/ DMSO) tested at concentration of 800 and 400 µg/ml against all the microorganisms. Ciprofloxacin (Hi-media laboratories, Mumbai,) were separately dissolved in DMSO to give a concentration of Ciprofloxacin 20 µg/ml.

Sterile nutrient agar plates were prepared and 0.1 ml of the inoculums from standardized culture of test organism was spread uniformly. Wells were prepared by using a sterile borer of diameter 10mm and 100µl of the test substance, standard antibiotic and the solvent control were added in each well separately. The plates were placed at 4<sup>0</sup>C for 1 h to allow the diffusion of test solution into the medium and plates were incubated at 37<sup>0</sup>C for 24 h and the zone of inhibition of microbial growth around the well was measured in mm.

### **Result and discussion:**

Preliminary phytochemical studies revealed the presence of tannins, flavonoids and glycosides. From the zone of inhibition produced by the extracts, it was observed that a concentration dependent antibacterial activity was observed with both alcoholic and water extracts. The alcohol

extract was more potent than water extract. The antimicrobial activity may be due to the presence of tannins. Other constituents like flavonoids may also contribute to the activity.

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**RESULTS:**

**Table 1: Anti microbial effect of test drugs by cup plate method**

Extract (mm)	µg/ml		Zone of inhibition in					
	800	400	800	400	800	400	800	400
	<i>S.a</i>		<i>B.s</i>		<i>E.c</i>		<i>K.p</i>	
P M E (Ethanol)	16	12	17	14	16	12	19	13
P M E (Water)	14	11	12	10	14	12	13	11

*S.a* – *Staphylococcus aureus* (NCIM 2079)  
*B.s* – *Bacillus sterothermophilus* (NCIM 2063)  
*E.c* – *Eschericia coli* (NCIM 2065)  
*K.p* – *Klebsiella pneumoniae* (NCIM 2957)  
P M E – *Pterocarpus marsupium* extract

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