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**Short Communication**

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# Preliminary Investigation of Antimicrobial Property of *Acacia leucophloea* Leaves Extract

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## Abstract

Leaves of indigenous plant *Acacia leucophloea* have been successively extracted using different solvents like hexane, methanol and water. Extract was evaluated for its antibacterial activity using two assay method Kirby bauer disc diffusion and tube dilution assay. Results of the given study revealed that the methanolic extract is potential antibacterial agent specifically for *E coli* & & *S aureus*.

**Key words:** *Solanum americanum*,medicinal plant, anti-inflammation, carrageenan

## Introduction

*Acacia leucophloea* commonly known as reonja, a tree of moderate size, family fabaceae, a very characteristic indigenous plant of the dry region of India. Leaves of *acacia leucophloea* have been evaluated for its chemical composition and total phenols in *Acacia leucophloea* leaves were found to be 54. Mature *Acacia leucophloea* leaves were toxic to brine shrimp, but not mould, but new leaves had not detectable toxicity[1]. The chemical constituents found are nHexacosanol, beta- Amyrin, beta-Sitosterol and Tannin, diterpenoids in *Acacia leucophloea* plant[2-4].

Literature data reveals that the extract containing phenolic derivatives should exhibit antibacterial activity[5]. So keeping this matter in mind, we have evaluated antimicrobial activity of the methanolic extract of the leaves of *Acacia leucophloea*.

## Material & Method

### Collection & Authentification of Plant Material

Dried leaves of *Acacia leucophloea* was collected and were authenticated by Dr. S.N. Sharma, Technical Officer, Department of plant Sciences, Indian Institute of Integrative medicine, Jammu. A voucher specimen (specimen No. 21853) was deposited in the herbarium of Indian Institute of Integrative medicine, Jammu.

### Preparation of Extracts

The dried leaves were coarsely powdered and extracted successively with different solvents by increasing their polarity, in a Soxhlet extractor. The plant extracts were filtered through Whatman No. 1 filter paper into beaker. The filtrates were dried until a constant dry weight of each extracts was obtained. The residues were stored at 4°C for further use. The methanolic extract have been used as specimen for the antimicrobial activity.

### Test Organisms

All the microbial cultures, used for antimicrobial screening were procured from National Centre for Industrial Microorganisms (NCIM), Pune, India. The test organisms used are *Eschericia coli, Bacillus subtilis, Pseudomonas aeruginosa & Staphylococcus aureus*

### Evaluation of Antimicrobial Activity

#### *Kirby Baur Agar diffusion Method*

Leaves extract(50-250 µg) was tested for antibacterial activity against the variety of test organisms Bacillus Subtilis, *Escherichia coli*, *Pseudomonas aeruginosa* and *Staphylococcus aureus (COPS)* by using disc diffusion methods on the Nutrient agar medium using Ciprofloxacin(5-200 µg) as the standard drug[6].

#### *Tube Dilution Method*

The minimum inhibitory concentration for leaves extract against the same microorganisms used in the preliminary screening was carried out using microdilution susceptibility method. Ciprofloxacin was used as standard drugs[7-9].

## Results & Discussion

Successive extraction of leaves of *Acacia leucophloea* have been successively done using hexane, methanol, and water and get extract of 1.1, 6.0 & 4.3 % yield respectively.

MIC and ZOI of leaves extract on gram positive and negative bacteria at different concentrations, by disc diffusion method, was determined to access their antimicrobial effect. The leaves were active (weak to moderate) against all the microbes tested. It produced a mean zone diameter of 23.7 mm at a dose of 250 mg/ml on *E. coli* and lowest zone of growth inhibition was observed on *P. aeruginosa*, which gave a zone of inhibition measuring 8.6 mm. The lowest minimum inhibitory concentration (MIC) was calculated for *E. coli* at 25 mg/ml while the highest MIC calculated was for *P. aeruginosa* & *B. subtilis* (75 mg/ml). The antibacterial properties suggest that the phytoconstituents present in leaves extract are potential for eliciting antibacterial activity, and also corroborate the use of plant in traditional medicine for itch and, common skin problems.

**Table 1 Effect of disc diffusion and MIC antimicrobial bioassay. The results are the mean values of triplicate tests repeated three times after every 72 hours of inhibition at 37°C; data statistically significant at $p < 0.05$; MIC minimum inhibitory concentration.**

| Zone of inhibition (mm) | | | | |
|---|---|---|---|---|
| **Microorganisms Dose** | ***E. coli*** | ***B. subtilis*** | ***S. aureus*** | ***P. aeruginosa*** |
| **Leaves extract** | | | | |
| 50 mg/disc | 3.6 | 0.0 | 0.0 | 0.0 |
| 100 mg/disc | 8.4 | 0.0 | 4.3 | 0.0 |
| 150 mg/disc | 16.3 | 5.2 | 9.2 | 3.1 |
| 200 mg/disc | 20.4 | 8.5 | 13.5 | 5.8 |
| 250 mg/disc | 23.7 | 12.4 | 17.5 | 8.6 |
| **MIC (mg/ml)** | **25** | **75** | **50** | **75** |
| **Ciprofloxacin** | | | | |
| 5 µg/disc | 20.3 | 14.3 | 18.5 | 10.3 |
| 25 µg/disc | 27.4 | 23.7 | 20.6 | 18.5 |
| 50 µg/disc | 36.8 | 33.5 | 31.9 | 25.7 |
| 100 µg/disc | 42.1 | 41.5 | 36.4 | 30.2 |
| 200 µg/disc | 45.7 | 48.4 | 41.7 | 38.5 |
| **MIC (µg/ ml)** | **0.31** | **0.62** | **0.31** | **1.25** |

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