ANTIBACTERIAL AND PHYTOCHEMICAL STUDIES OF PSIDIUM GUAIJAVA LEAF EXTRACT

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ABSTRACT

The pharmacological studies of the hydro-methanolic leaves extract of Psidium guajava was undertaken using Disk diffusion method. The secondary metabolites such as alkaloids, phenols, saponins, and tannins were present in Psidium guava extract in phytochemical screening, it also showed antibacterial activities. The study is important because different part of Psidium guava is used for treatment of various ailments in traditional medicine.

Keywords: Antibacterial, Photochemical, Psidium Guajava

1. INTRODUCTION

The roots, bark, and leaves extract of Guava or Psidium guajava are used to treat various ailments in folk medicine. Morton (1987). The fruits of Psidium guajava contain vitamin C, vitamin A, iron, calcium and phosphorus Iwu (1993). It has 5 times richer in vitamin C than oranges Conway (2001). Manganese, phosphoric, oxalic and malic acids are also present in the fruit of Guava Nadkarni and Nadkarni (1999). The guava extract was reported antimicrobial activity against different bacteria strains Iwu (1993), Gnan and Demello (1999), Pranee (1999). The leaves have antiseptic properties Hernandez (1971), anti-inflammatory and analgesic activities Muruganandan et al. (2000). The ripe fruit is mildly laxative and the unripe fruit is indigestible Conway (2001). It is the remedy for diarrhea in folk medicine Wei et al. (2000).

2. MATERIALS AND METHODS

2.1. EXTRACTION PROCESS

Procedure

The Psidium gujava leaves were collected from the local area of Satna, cleaned and dried for few days in shade. Then powder was made with the help of grinder.50 gms of leaves powder was taken in a separating funnel and added 50% methanol, then mixed it gently. After every 24 hours extract was collected in a beaker till the solvent appeared colorless. The final extract was pooled together and powder was made at 40o C in water bath. The total weight of dried powder was weighed. The desired amount of powder was dissolved in double distilled water before the final administration. Phytochemical screening was undertaken as per method reported by Agrawal, RC, 2021.
2.2. ANTIBACTERIAL ACTIVITY

Microorganisms used
The test organisms were obtained from the Department of Research, PBCRI Satna (M.P.). Antibacterial screening was undertaken at different concentration of 50% methanolic extract of *Psidium guajava leaves* the paper disc having the same diameter absorbed the concentration of extract as per method described by Kirby-Bauer (Disc diffusion method). The detail method is described in our published paper Agrawal (2021).

3. RESULTS

1) Phytochemical screening

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Test for Carbohydrates and reducing sugars</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Test for Phenolic compound’s</td>
<td>+</td>
</tr>
<tr>
<td>3.</td>
<td>Test for Tannins</td>
<td>+</td>
</tr>
<tr>
<td>4.</td>
<td>Test for Proteins</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Test for Saponins</td>
<td>+</td>
</tr>
<tr>
<td>6.</td>
<td>Test for Alkaloids</td>
<td>+</td>
</tr>
</tbody>
</table>

+ indicate present, - indicate absent.

2) Antibacterial Activity

*Psidium guajava* exhibited antibacterial activity against *S.aureus*, *Klebsellia*, *Ps.auregosa* and *E. coli* at the extract of leaves of at the different concentration

<table>
<thead>
<tr>
<th>Name of microorganisms</th>
<th>% Concentration of Extract / [zone of inhibition(mm)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25</td>
</tr>
<tr>
<td><em>S.aureus</em></td>
<td>12</td>
</tr>
<tr>
<td><em>Klebsellia</em></td>
<td>15</td>
</tr>
<tr>
<td><em>Ps.auregosa</em></td>
<td>11</td>
</tr>
<tr>
<td><em>E. coli</em></td>
<td>10</td>
</tr>
</tbody>
</table>

Figure 1 showed A, B, C and D showed the zone of inhibitions.
4. DISCUSSION AND CONCLUSION

Recent scientific research has established the presence of many active compounds in this plant that are known to possess specific pharmacological properties. Present study showed that Psidium guajava leaves extract caused antimicrobial activity against gram positive and gram-negative bacteria. These results support the findings of Egharevba et al. (2010) and Biwas et al. (2013) which also reported the antibacterial effect of guava leaves extracts and found that they inhibited the growth of S. aureus. However, the ethanolic extract showed stronger inhibition than the aqueous extract against the organisms. Phenols, saponins, Tannins and Alkaloids were present in the 50 % methanolic extract of Psidium extract. *Psidium Gujava* may be used for development of modern drugs for various ailments.

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REFERENCES


