

Antibacterial Activity of Leaves of *Bunchosia glandulifera* (Jacq.) Kunth

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ABSTRACT: Antibacterial activity of aqueous and ethanol leaf extracts of *Bunchosia glandulifera* was evaluated by cup plate method against bacterial strains such as *Staphylococcus aureus* and *Escherichia coli*. The ethanol extract of the leaves demonstrated a high degree of activity against both microorganisms. whereas the aqueous extract of the leaves showed moderate activity against *E. coli*.

KEYWORDS: Antimicrobial activity, *Bunchosia glandulifera* (Jacq.) Kunth, disc diffusion method, pathogenic organisms

I. INTRODUCTION

Bunchosia glandulifera grows as an evergreen shrub or small tree up to about 7–8 meters high. The bark is grayish-brown, smooth to slightly rough or nodular. The leaves are lightly sericeous (hairy) and have wavy edges. Lamina of the larger leaves is 11-18 cm long, 7-10 cm wide, elliptical or ovate, rounded and often slightly attenuate at the base, undulate and crispate at the margin, acuminate and often cuspidate at the apex, bearing 0-2 glands near the base by the midrib and several distally in 1-3 rows, sparsely sericeous to glabrate above, persistently sericeous below, the hairs short, straight, sessile or subsessile, abundant but not so dense. Petiole 6-8 mm long, sericeous to glabrate, eglandular, stipules 1-1.5 mm long, borne on the base of the petiole. Flowers are style free; positioned opposite; petal margin glandulosa. Fruit is a drupe trilobular, drupe colour orange to red, 20-28 mm long, 15-20 mm in diameter, globose or ellipsoid, very sparsely sericeous to glabrate, the wall smooth. Stem is loosely sericeous to glabrate. Flowers are compact axillary racemose inflorescences, 8-15 cm long, carrying numerous yellow hermaphrodite flowers.[1]

Bunchosia glandulifera commonly known as peanut butter fruit, is a species of

flowering plant belonging to Malpighiaceae. Both the skin and pulp of the Peanut Butter fruit are edible. This study was aimed to evaluate the inhibitory effect of aqueous and alcoholic extracts of leaves of *Bunchosia glandulifera* against certain bacterial strains.[2]



Bunchosia glandulifera (peanut butter fruit)

II. MATERIAL AND METHOD

Leaves of *Bunchosia glandulifera* were collected from NIT Calicut campus Kozhikode District. The herb was identified and authenticated by botanist Dr. V.S Hareesh. Junior Scientist KSCSTE MBGIPS and the voucher specimen number 7661 has been submitted to the Malabar Botanical Garden and Institute for Plant Sciences (MBGH)[3]. Leaves were shade dried, pulverized into 40 # mesh size. Powdered leaves (50 g) were subjected to exhaustive extraction with 200 ml of alcohol in a soxhlet apparatus. Solvent was removed under vacuum and concentrated to a semisolid residue (yield 7.04% w/w). The marc obtained from the above extraction was subjected to maceration with distilled water for 24 h. It was then evaporated to dryness to get a semisolid residue (yield 8% w/w). Phytochemical screenings of aqueous and alcoholic extracts were carried out[4].

Staphylococcus aureus and *Escherichia coli* were subcultured from the stock culture 24 h prior to the experiment in nutrient agar media and used for the study.

Aqueous and alcoholic extracts of the leaves of *Bunchosia glandulifera* were tested for antibacterial activity by cup plate method[5-7]. Nutrient agar media are prepared and sterilized in an autoclave and 10 ml transferred to previously sterilized petriplates. After solidification petriplates were inoculated with *Staphylococcus aureus* and *Escherichia coli* under aseptic conditions. Ciprofloxacin was used as standard drug at a concentration of 100 µg/well. Using a sterile borer, four wells were made and 0.1ml of the control vehicle (sterile distilled water), test drug (200 µg and 800 µg) and standard compound (100 µg) were poured aseptically into the wells. They were incubated at 37° for 24 h. The zone of inhibition was measured using a metric ruler.

III. RESULTS AND DISCUSSION

Phytochemical screening of the alcoholic extract indicated the presence of alkaloids, tannins, glycosides, steroids and flavonoids. Phytochemical screening of the aqueous extract revealed the presence of glycosides, phenolic compounds, tannins and steroids. Antimicrobial activity of two different concentrations of extracts of *Bunchosia glandulifera* has been evaluated in vitro against gram positive and negative bacteria (Table 1) that are known to cause infections in humans and plants. As presented in Table 1 the inhibitory effect of the extracts of *Bunchosia glandulifera* was increased by the concentration of extracts. Although both the extracts showed significant inhibitory effect against *Staphylococcus aureus* and *Escherichia coli* at both concentrations (200 µg/ml and 800 µg/ml).

TABLE 1: Antibacterial Activity of Leaves of *Bunchosia glandulifera*.

| Extracts | Conc. µg/ml | Diameter of the inhibitory zone (mm) | |
|----------|-------------|--------------------------------------|----------------------|
| | | <i>E. coli</i> | <i>Staph. aureus</i> |
| Aqueous | 200 | 14.6 | 13.5 |
| Aqueous | 800 | 20.3 | 17.4 |
| Alcohol | 200 | 16.4 | 11 |
| Alcohol | 800 | 21 | 20 |
| Cipro | 100 | 27 | 23.5 |

*Cipro stands for ciprofloxacin

IV. CONCLUSION

In conclusion, the aqueous and alcoholic extracts of *Bunchosia glandulifera* leaf possess significant inhibitory effect against the tested pathogens. The results obtained were comparable with those of standard drug ciprofloxacin. The results of the study support the folklore claim of this plant.

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