



Studies on Phytochemical Screening and Antimicrobial Potentials of Leaf of Plant *Acalypha Wilkensiana* from Chandrapur Forest

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Abstract:

Medicinal Plant *Acalypha wilkensiana* from Chandrapur district forest (MS) India was collected. Shade dried Plant leaves powdered were extracted with different solvents such as Methanol, Ethyl acetate, Chloroform, Hexane and Aqueous. Phytochemical screening of this plants was performed for Alkaloid, Terpenoid, Tannin, Phenolic compound, Carbohydrates, Saponin, Anthraquinone, Glycoside and Flavonoids. The phytochemical screening and antimicrobial potentiality of *Acalypha wilkensiana* against multidrug resistant pathogens were investigated using standard microbiological techniques. The extracts were tested by agar well diffusion method for activity against *Staphylococcus aureus* and *Escherichia coli* isolated from clinical samples. The susceptibility patterns of the test isolates against the crude extract was determined at extract concentrations of 10 mg/ml. However, the isolates were subjected to antibiotics susceptibility testing and found to be resistant to Gram negative and Gram positive antibiotics with little variations in sensitivity pattern. The observed antibacterial effects were believed to be due to the presence of alkaloids, tannins, and flavonoids identified in the extracts. The results apparently justified their use in the treatment of infections.

Keywords: *Acalypha wilkesiana*, Antibacterial, Phytochemical, Susceptibility

Introduction:

Plants have been a source of medicine in the past centuries and today scientists and the general public recognize their value as a source of new or complimentary medicinal products [1]. This plant-based, traditional medicine system continues to play an essential role in health care, with about 80% of the world's inhabitants relying mainly on traditional medicines for their primary health care [2]. *Acalypha wilkesiana* belongs to the Euphorbiaceae Family comprises about 570 species. *A. wilkesiana* has been known to be used in most part of Nigeria to treat antifungal and antibacterial ailment especially in the western part of Nigeria. The vast use of *A. wilkesiana* in the treatment of various bacteria ailment in western Nigeria gives a great course for study. Also, there is a need to identify novel substances that are active towards microorganisms of concern. The aim of this study is to carry out phytochemical and antibacterial activity of leaf extract of *A. wilkesiana* with various solvents.

Material and Methods:

The present work was carried out at Department of chemistry, J.M.V. Chandrapur. Gondwana University. The plant named *Acalypha wilkensiana* was collected from Chandrapur forest region. Their botanical identity of plant was determined and authenticated from literature available in Department of Botany,





J.M.V. Chandrapur. The leaves of *Acalypha wilkensiana* was thoroughly washed with water and dried under shade for about ten days. The dried plant sample was ground well into a fine powder in a mixture grinder. The powder was stored in a air sealed polyethylene bag at room temperature before extraction. Phytochemical analysis and antibacterial activity were determined by standard test and procedure given in literatures[3].

Results

Phytochemical screening of hexane, chloroform, ethyl acetate, methanol and water extracts of *Acalypha wilkensiana* is shown in table 1. The susceptibility of test microorganism to the crude extracts of *Acalypha wilkensiana* is shown in table 2.

Discussion

The results of this study support the antibacterial and activities of *A. wilkesiana* as a broad spectrum antibacterial agent since it inhibited the growth of Gram-positive and gram negative bacteria. Results of the phytochemical screening show the presence of some bioactive components. Some of them include tannins and glycosides. Some of these components however, were present in minute quantities; saponins alkaloids, phlobatins and cardiac glycolysis. This present study also revealed that the ethyl acetate fraction of the extract was the most potent of all the fractions used.

Table. 1- Phytochemical tests of various extracts of plant *Acalypha wilkensiana*.

Contituents	Observation/Results
Alkaloid	Present
Tannine	Present
Anthraquinones	Absent
Glycoside	Present
Reducing Sugars	Absent
Saponin	Present
Flavonoids	Present
Phlobatannins	Absent

Table. 2- Antimicrobial activity of various extracts of plant *Acalypha wilkensiana*.

Extracts	Microorganism	
	Gram + (<i>S aureus</i>)	Gram -(<i>E coli</i>)
Water extract	+++	+++
Chloroform extract	-	-
Ethyl acetate extract	+++	+++
Methanol extract	+++	++
Hexane extract	++	-
Streptomycin	+++	+++
Chloramphenico	++	++

Key to symbols: - = Inactive (inhibition zone <5 mm); + = slightly active (inhibition zone 5-10 mm); ++ = moderately active (inhibition zone 10-15 mm); +++ = highly active (inhibition zone >15 mm)





Conclusion:

The demonstration of activity against both gram-negative and gram-positive bacteria is an indication that the plant can be a source of bioactive substances that could be of broad spectrum of activity. The fact that the plant was active against both clinical and laboratory isolates is also an indication that it can be a source of very potent antibiotic substances that can be used against drug resistant microorganisms. The search for new drugs to counter the challenges posed by resistant strains of bacteria and some fungi might have started yielding results as the investigation of this plant has demonstrated enormous therapeutic potential. It can serve the desired purpose with lesser side effects that are often associated with synthetic antimicrobial agents.

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