Antibacterial study of rhizomatous grass

K Sudheer Kumar *
Department of pharmacognosy, Associate Professor, MAK College of Pharmacy,Hyderabad, TS,India

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Corresponding author address

K Sudheer Kumar *
Department of pharmacognosy,
Associate Professor,
MAK College of Pharmacy,
Hyderabad, TS,India

ABSTRACT

Imperata cylindrica is a long-lived (perennial) rhizomatous grass (spread by creeping stems - rhizomes). In this current study the leaves of *Imperata Cylindrica* were analysed for the active constituents .It is The flowers and the roots are antibacterial, diuretic, febrifuge, sialagogue, styptic and tonic. The phytochemical analysis showed the presence of flavonoids, tannins, alkaloids, and other components. Antibacterial study was performed by taking methanolic as well chloroform extract .It showed considerable level of antimicrobial activity against the E. coli and streptoccus species. The Rf values of 0.593 and 0.511 respectively was found.

Keywords: **Methanolic extract,Antibaterial activity, *Imperata Cylindrica***

Introduction

Plants have remained a significant source of medicinal medicine. Plants synthesise many chemical compounds for functions as well as defence against insects, fungi, diseases, and herbivorous mammals. varied phytochemicals with potential or established biological activity are identified. However, since one plant contains wide various phytochemicals, the consequences of employing a whole plant as medication are unsure. Further, the phytochemical content and pharmacological actions, if any, of the many plants having medicinal potential stay unassessed by rigorous research project to outline efficacy and safety. *Imperata Cylindrica* may be a long-lasting (perennial) stalk grass (spread by creep stems - rhizomes). Its erect habit, flossy white inflorescence and in depth stalk system makes *Imperata cylindrica* grass distinct from most alternative weeds. It grows from 0.6-3 m tall. The leaves area unit concerning a pair of cm wide close to the bottom of the plant and slim to a sharp point at the top; the margins are finely toothed and are embedded with sharp oxide crystals. the most vein may be a lighter color than the remainder of the leaf and tends to be nearer to at least one aspect of the leaf. The side is hairy close to the bottom of the plant whereas the bottom is typically nonhair. Roots are up to one.2 m deep, but 0.4 m is typical in sandy soil.

Fig 1.A typical *Imperata cylindrica*

Scientific classification	
Kingdom:	Plantae
Clade:	Angiosperms
Clade:	Monocots
Clade:	Commelinids
Order:	Poales
Family:	Poaceae
Subfamily:	Panicoideae
Supertribe:	Andropogonodae
Tribe:	Andropogoneae
Genus:	***Imperata*** Cirillo

The leaves are medicine, diuretic, and medicine . it's used as an ingredient within the skin care brands for ultra Facial Cream for its high concentrations of potassium that provides a hydrating effect The leaves and flowers are utilized in the treatment of haemorrhages and wounds .They are decocted and accustomed treat fevers, thirst etc

Material and Methods

Phytochemical Screening The plant crude extracts were screened using standard strategies to spot plant metabolites.

Collection of plant samples

The plant materials are brought from native markets or collected from native area. The plants are processed and analyzed.

Processing of plant samples

The leaves of the plants are properly washed in tap water then rinsed in distilled water. The rinsed leaves are dried in an oven at a temperature of 35-40°C for 3 days. The dried leaves of every plant are powdered, employing a sterile electrical blender, to get a powered form. The powdery kind of these plants is stored in airtight glass

Analysis of the Chloroform and Chloroform – methyl alcohol Extracts

The antimicrobial activities were determined using the agar diffusion methodology. The minimum restrictive concentration of the extract against the microorganisms was carried out using glucose indicator broth. Punched agar diffusion methodology was used to verify the minimum inhibition concentration and minimum agent concentrations of the extracts. containers, shielded from daylight till needed for analysis. Preparation of binary compound extract of plant samples. The aqueous extract of every plant sample is prepared by soaking 10 g of pulverised samples in 200 ml of water for 12 h. The extracts are then filtered using filter paper or Whatman paper.

Phytochemical analysis

Chemical tests are conducted on the aqueous extract of every plant sample and also of the powdery kind of the plant samples using standard strategies.

Qualitative analysis on phytochemical constituents

Test for tannins

0.5 g of pulverised sample of every plant is boiled in 20 ml of water in a very test tube then filtered. The filtration methodology used here is that the traditional methodology, which incorporates a conical flask and filter paper. 0.1% FeCl3 is added to the filtered samples and observed for brownish green or a blue black colouration, that shows the presence of tannins..

Test for phlobatannins

10 ml of aqueous extract of every plant sample is boiled with I Chronicles HCl acid in a very test tube or conical flask. If the sample of plant carries phlobatannins, a deposition of a red precipitate can occur and indicates the presence of phlobatannins.

Test for saponins

2 g of pulverised samples of every plant is boiled along with 20 ml of water in a very water tub and filtered.10 ml of the filtered sample is mixed with five ml of water in a very test tube and agitated vigorously to get a stable persistent froth. The frothing is then mixed with 3 drops of oil and discovered for the formation of emulsion, that indicates the presence of saponins.

Test for flavonoids

A few drops of I Chronicles NH3 solution is added to the aqueous extract of every plant sample in a very test tube. A yellow coloration is discovered if flavonoid compounds are present

Results and Discussion

The results of the phytochemical analysis showed the presence of major phytocompounds like flavonoids, tannins, alkaloids, acidic compounds, Reducing sugar, and proteins. The presence of flavonoids is also to blame for the diuretics and antibacterial properties (Table 1).

Phytoconstituents	Presence /Absence
Tannins	+
Phlobatannins	+
Saponins	+
Flavonoids	+
Terpenoids	+
Cardiac glycosides	-
Alkaloids	+

Presence +

Absence -

Table 1 Phytoconstituents

The chromatographical analysis for chloroform leaves extract and chloroform – methyl alcohol leaves extract gave Rf values of 0.593 and 0.511 respectively **(Table 2).**

Extract	Rf Value
Chloroform leaves extract	0.593
Chloroform – methanol leaves extract	0.511

Table 2.Rf value

Antibacterial activity of refined extracts showed activity against staphylococcus aureus, Eschericha coli, (Table 3).

Extract	Bacterial Zone	
	E coli	Streptococcus
Chloroform –methanol	11 cm3	12
Chloroform leaves extract	10	10

Table 3 Antibacterial inhibition zone

Conclusions

The plant screened for phytochemical constituents appeared to have the potential to act as a supply of useful medicine as a results of the presence of various compounds that are important for good health. aldehydic compounds are identified to possess anti – bacterial activity and would so be effective within the management of bacterial infection.Further work is required for studying antifungal activity

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