

ANTIMICROBIAL ACTIVITY OF *IPOMEA CARNEA* LEAVES

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(Received 22 August, 2023; Accepted 6 October, 2023)

Key words: *Bioprospecting, Ipomoea carnea, Therapeutic compounds, Antimicrobial activity*

Abstract– Bioprospecting is a systematic and organized search for useful natural products derived from bioresources including plants, animals and microorganisms. These are potential sources of novel chemical and biological products for medicine, agriculture, and other industries. The aim of this work was to check bioprospecting of *Ipomoea carnea* Jacq plant. Extract of *Ipomoea carnea* Jacq plant was searched for novel therapeutic compounds. Its extract was used to kill the pest, weeds and unwanted plants. It also preserves soil fertility and helps in bio composting and anti-microbial agent. *Ipomoea carnea* plant has positive and negative effects on antimicrobial properties, crude ethanol extract elucidate prominent antimicrobial activity against *Pseudomonas auroginosa* and *Bacillus subtilis*

INTRODUCTION

Bioprospecting is a systematic and organized search from natural sources including plants, microorganisms, animals, etc for small molecules, macromolecules, biochemical and genetic information for useful products that could be developed into commercially valuable products for the agricultural, aquaculture, bioremediation, cosmetics, pharmaceutical industries and overall benefits of the society (Bhalerao and Teli, 2016).

The current era and science is looking for the development of traditional medicine, especially phytomedicine, parallel to modern medicine with its safety and potency. Due to this approach bioprospecting of natural sources is necessary. *Ipomoea carnea* is one of the promising medicinal plants due to its biological importance. *Ipomoea carnea* is locally available non-economical weed plants commonly found in waste lands. *Ipomoea carnea*, widely distributed all over the world known as 'Bush Morning Glory' belonging to family Convolvulaceae. It is an herb or shrub with milky sap. Worldwide, there are about 85 genera and 2,800 species in genus *Ipomoea*, Convolvulaceae family (Bhalerao and Teli, 2016) (Kunal *et al.*, 2021).

Ipomoea carnea is used for its medicinal and ornamental properties. The latex of this plant shows

anti-inflammatory effects, therefore, used as an antiseptic for treating lesions in traditional medicines. Hot water extract of this plant shows anti-rheumatic property, and it also reduces teratogenic effect of cyclophosphamide. Various studies shows that this plant also exhibit antimicrobial and antifungal activities (Adsul *et al.*, 2012). It has been reported that leaves of *I. carnea* can also be used in the treatment of piles and rheumatic pain. It also exhibit sedative and anticonvulsant property. Aqueous extract of *I. carnea* leaves exhibit harmful effects on embryo of rats which results in large amount of abnormalities and malformations. (Kunal *et al.*, 2021)

Ipomoea carnea plant was native to India that has spread in many countries on earth, this plant adapt in any habitat. In Egypt, firstly it was cultivated as an ornamental plant, however it is found everywhere nowadays on road side, canal bank, cultivated land, waste land etc. In India also it is commonly found plant in waste land, Madhya Pradesh and Chhattisgarh are the major states. *Ipomoea carnea* is commonly called as Besharam/ behaya plant in marathi (Maharashtra) meaning shameless, refers to its rampant spreading, due to its medicinal, agricultural and ornamental properties we focused to study on this plant to solve some medicinal and agricultural issues. Present work aim is

bioprospecting of *Ipomea carnea* for antimicrobial and antifungal activities respectively. (Sharma and Bachheti, 2013) (Fatima *et al.*, 2014).

MATERIALS AND METHODS

Collection of Sample

Ipomoea Carnea leaves sample were collected from the nearby areas of Nanded region. Collected leaves were washed to clear dust and kept for drying.

Extraction of leaves

Air shade dried, leaves powder of *I. carnea* (200 g) was extracted using soxhlet extractor. The continuous soxhlet extraction was carried out using solvent acetone and ethanol. Each solvent was recovered; the acetone (8.2%) and ethanol (8.5%) extracts were obtained. Both acetone and ethanol extracts were tested for their antimicrobial activity against reported strains. Among both extracts acetone extract was found to be more active hence used for further antimicrobial studies.

Disc/ Gel Diffusion Method

Antimicrobial studies were carried using bacterial and fungal strains as reported in present work. The paper disc / gel diffusion method was used. Test samples of acetone extracts (200 mg) were dissolved in 1 ml acetone solvent and used for disc diffusion method. 5 mm diameter filter paper discs were prepared, sterile and impregnated with these solvent extract. The bacterial and fungal strains were inoculated on nutrient agar and potato dextrose agar respectively and incubated for 24 hours at 37 ± 0.1 °C and antimicrobial activity were observed (Chowdhury *et al.*, 1997).

RESULTS AND DISCUSSION

This plant was screened by various investigators, but the literature survey reveals that in few reports the investigation of antimicrobial activity of the *Ipomoea carnea* was showed. The antibacterial activity of crude extracts prepared from leaves of *I. carnea* such as acetone (1) and ethanol (2) have been reported (Table 1).

The crude acetone extract exhibits activity against *Escherichia coli*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, *Saccharomyces cerevisiae* and *Aspergillus niger* while the crude ethanol extract elucidates prominent antimicrobial activity against *Pseudomonas auroginosa* and *Bacillus subtilis*.

Table 1. Antimicrobial activity of extracts

Microorganisms	Diameter of zone of inhibition (mm)*	
	Extract 1	Extract 2
<i>Escherichia coli</i>	5 mm	NA
<i>Pseudomonas aeruginosa</i>	12 mm	11 mm
<i>Bacillus subtilis</i>	5 mm	4 mm
<i>Staphylococcus aureus</i>	NA	NA
<i>Saccharomyces cerevisiae</i>	3 mm	3 mm
<i>Aspergillus niger</i>	4 mm	NA

*Zone of inhibition including the diameter of filter paper disc (5 mm); NA= No activity

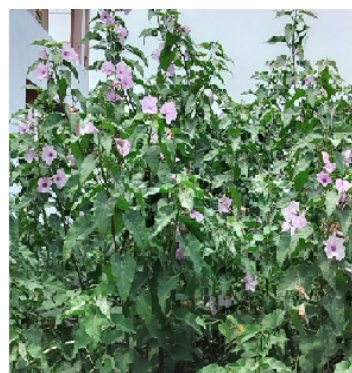


Fig. 1. *Ipomoea carnea* plant.



Fig. 2. *Ipomoea carnea* leaves



Fig. 3. *Ipomoea carnea* leaves sample powder

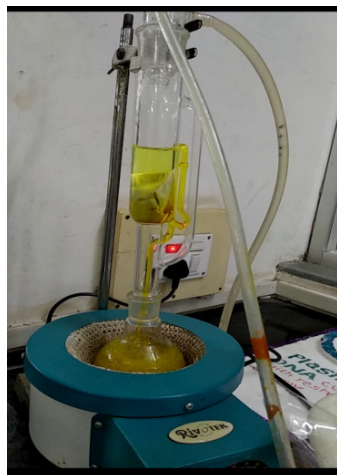
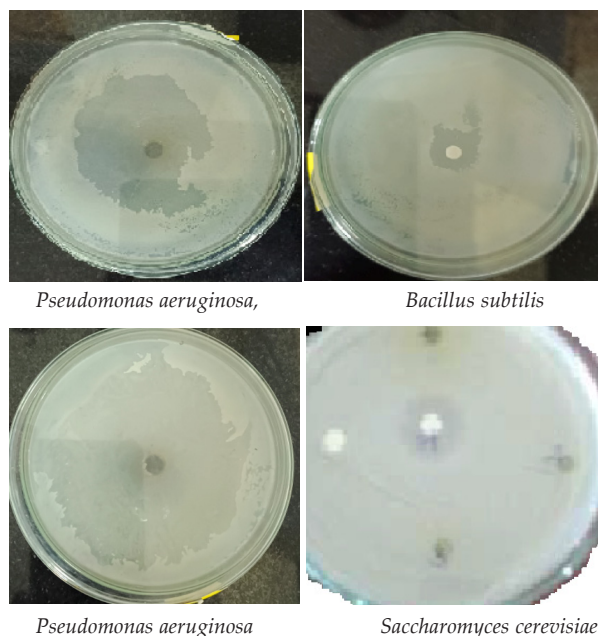


Fig. 4. Soxhlet extractor



Pseudomonas aeruginosa,

Bacillus subtilis

Pseudomonas aeruginosa

Saccharomyces cerevisiae

Fig. 5. Antimicrobial activity

Significance of the study

Ipomoea carnea is one of the promising medicinal plants due to its biological importance. *Ipomoea carnea* is locally available non-economical weed plants commonly found in waste lands. This plant shows the presence of many active chemical constituents which are responsible for various pharmacological medicinal uses. This plant exhibit antimicrobial and antifungal activity, hence *Ipomoea*

carnea has a leading role for the development of novel effective drugs, hence *Ipomoea carnea* is significantly can be used an ethnic valuable plant in number of activities.

ACKNOWLEDGEMENT

We are thankful to the Aavishkar Research committee, Honorable Vice-Chancellor, Swami Ramanand Teerth Marathwada University, Nanded for avail Aavishkar Research student fellowship and Honorable Chairman and Principal of Mahatma Gandhi Mission's College of Computer Science and IT, Nanded for providing infrastructure and necessary facilities.

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