An Elsevier Indexed Journal ISSN-2230-7346

Journal of Global Trends in Pharmaceutical Sciences

ANTIBACTERIAL ACTIVITY OF METHANOLIC EXTRACTS OF FLOWERS OF *PLUMERIA ACUMINATA*

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ARTICLE INFO

Key Words

Plumeria acuminata, Antibacterial activity, Bacterial strains, Agar well diffusion method

ABSTRACT

The present study evaluated antibacterial activity of the flowers of *Plumeria acuminata* Ait. The methanolic extracts of the flowers were tested against *Staphylococcus aureus, Escherichia coli, Bacillus subtilis, Klebsiella pneumonia* bacterial strains to determine the antibacterial activity by agar well diffusion method. The methanolic extracts of the flowers of *Plumeria acuminata* Ait. showed significant antibacterial activity against the bacteria tested.

INTRODUCTION:

Medicinal plants are considered as rich resources of ingredients which can be used in drug development either pharmacopoeial, non-pharmacopoeial or synthetic drugs. Based on this fact, the present study was aimed at the evaluation of antibacterial properties of the methanolic extracts flowers of *Plumeria acuminata* Ait. *Plumeria acuminata* Ait. is a large magnificent tree with a wide spreading crown, belonging to the family Apocynaceae. Bark dull-greyish[1]. Its crooked trunk bears fleshy, thick branches and contains a sticky, milky sap. The bark is smooth and papery, while the wood is yellowish-white and soft[2]. The material may be taken as cooling tea for prevention for heart stroke[3]. Iridoids are present in the leaf, stem, flower and root. Fulvoplumierin inhibits the growth of various strains of Mycobacterium tuberculosis[4]. Bark possesses tonic properties[5]. Methanolic extracts of leaves inhibited the growth of microbes[6]. Methanolic extracts of leaves of *Plumeria acuminata* Ait. possesses potent antioxidant and free radical scavenging properties[7]. Ethanolic extract of the green leaves showed antimutagenic activity[8]. Leaves possess anti inflammatory activity[9]. Chronic toxicity studies of *Plumeria acuminata* Ait. were performed in experimental animals[10]. The present work was carried out to evaluate the anti-bacterial activity of flowers of *Plumeria acuminata*.

MATERIALS AND METHODS

Collection of plants: The plant was collected from the surroundings of Karimnagar in Telangana. It was authenticated by Dr. Narsimha Murthy Elagonda, Department of Botany, Satavahana University from Karimnagar, Telangana, India

Table.1 - Zone of inhibition of methanolic extract of flowers of *Plumeria acuminata* on different species

Concentration of extracts (mg/ml)	Zones of inhibition (mm)			
	Bacillus subtilis	*Escherichia coli*	*Klebsiella pneumonia*	*Staphylococcus aureus*
20	0.54	0.4	0.42	0.66
40	0.82	0.54	0.66	0.8
80	1.56	0.88	0.9	1.5
100	2.8	1.65	1.89	3.6

Preparation of extract

Extract was prepared from 80 %(v/v) methanol of dried flowers of *Plumeria acuminata* Ait. by cold maceration for seven days. On the seventh day the macerated solvent was filtered and obtained filtrate was evaporated to dryness. This extract was used for screening of antibacterial activity

Microorganisms used: *Staphylococcus aureus, Escherichia coli, Bacillus subtilis, Klebsiella pneumonia*

METHOD

Agar well diffusion method:

The antimicrobial activity of the extracts was carried out by Agar well diffusion method[11].The inoculums were prepared by inoculating the each organism in 10 ml of nutrient broth and incubated at 37ºC for 18 hrs. Nutrient agar medium was prepared, sterilized in an autoclave at 121ºC for 15min at 15lb pressure. Then the media was poured on to each sterilized petridish and organism was inoculated. A well were made in to the medium by using sterile stainless steel borer and was filled with each sample of the extracts (100µl) directly by using a micropipette. Then the plates were incubated at 37ºC for 24 hrs. After incubation, the zone of inhibition was observed and measured in mm[12].

RESULTS AND DISCUSSION:

The methanolic extracts of flowers of *Plumeria acuminata* Ait. was evaluated for antibacterial activity against bacterial strains of *Bacillus subtilis, Escherichia coli, Klebsiella pneumonia* and *Staphylococcus aureus*. The results showed the antibacterial activity, with increase in concentration of the extracts increased the zones of growth inhibition of the bacteria. The results were tabulated in Table 1. The lowest sample taken was 20mg/ml and highest sample was 100mg/ml. As the concentration increased, the zone of growth inhibition was increased for all the bacterial strains tested.

CONCLUSION

Medicinal plants are considered as rich resources of ingredients which can be used in drug development either pharmacopoeial, non-pharmacopoeial or synthetic drugs. The plant part used showed significant antibacterial activity, so it is concluded the part can be used for the infections said to be caused by the tested organisms. As it is in raw form, I suggest further investigations i.e., clinical trials to be performed and formulate the plant part used.

ACKNOWLEDGEMENTS

I am very much thankful to my husband Mr. L. Srinivas, for his inspirational and moral support.

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