

STUDIES OF ANTIBACTERIAL ACTIVITY OF ETHANOLIC EXTRACTS FROM *NERICUM INDICUM* AND *HABISCUS ROSASINENSIS*

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*SUMMARY: Crude 50% ethanolic extracts of leaves, stem and flowers of **Nericum Indicum** Linn. and **Habiscus Rosasinensis** Linn. showed antibacterial activity against ten Gram positive and Gram negative bacteria, both pathogenic and non-pathogenic strains.*

Key Words: Antibacterial activity.

INTRODUCTION

For centuries plants have been used throughout the world as drugs and remedies for various diseases. In the sub-continent administration of decoction of plants is still in practice. Ample data, pertaining to the medicinal properties of herbs of this subcontinent is available (1-6). During the last three decades few surveys have been also conducted on medicinal plants of Pakistan (7-10).

Available data includes only the plants which are commonly used in Unani and Ayurvedic systems. Studies on antibacterial activity of the plants and their prospects for use in different systems require scientific experimentation.

The presence of antibacterial substances in two different medicinal plants and their efficacy on ten different species of Gram Positive and Gram Negative bacteria has been investigated during the present studies.

Nericum Indicum Linn. commonly known as Kaner,

belongs to family Apocynaceae. All parts of the plants are poisonous and used in eastern system of medicine. It is anti-helmenthic, diaphoretic, Carminative, febrifuge, ophthalmic, powerful heart poison and repellent. Roots are used in piles, ulcers, ring worm and also to procure abortion. Oil extracted from root bark is recommended for skin diseases such as eczema, impetigo and leprosy. The bark of root is a powerful repellent applied externally. Decoction of leaves used in skin diseases, ring worm and leprosy. Paste of bark used in ring worms and itch. Leaves, flowers and roots are used against snake bite. The bark and seeds contain toxic principles, nerisdorin, nerioderin and korabin. Flowers, bark and woody parts are cardiotoxic.

Habiscus Rosasinensis Linn. commonly known as China rose belongs to family *Malvaceae*. The flowers are considered emollient and demulcent, soaked in coconut water are given to induce labor. Decoction of flower is given in bronchial catarrh. Leaves are emollient, aperient, anodyne and laxative. Roots are demulcent and used for coughs. Decoction of roots is used for venereal diseases and as antipyretic.

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MATERIALS AND METHODS

Both the plants were collected from Karachi University campus. Voucher specimen were Kept. Different parts of the plants were separated, washed and dried in shade.

Preparation of extracts

The dried material was extracted with 50% ethanol water. The extract was concentrated under reduced pressure below 40°C. The concentrated extract was dissolved in distilled water. 5 mg/ml aliquots were used to determine antibacterial activity. Seed cultures were prepared in Trypticase soy broth which was incubated at 37°C for 24 hrs. A dilution of 1:100 in saline was used in all tests.

Test organism

Standard cultures of ten different species of Gram positive and Gram negative bacteria including pathogenic and non-pathogenic strains were used (Table 1).

Antibacterial assay

The method reported by Baqir *et. al.* (1985) has been adopted. The tests were run in triplicate. Petri plates (23x23) were prepared with Trypticase soy agar and an adequate amount of inoculum was flooded onto each plate, excess inoculum was removed and the plates were dried for 30 min at 37°C. Holes (6 mm diameter) were made in the inoculated agar and filled with samples of plant extracts, plates were incubated for 24 hrs at 37°C. Inhibition zones when present were measured in millimeter (Table 1).

RESULTS AND DISCUSSION

The result of antibacterial activity of crude ethanolic extracts of leaf, stem and flower of *Nericum Indicum*

and *Habiscus Rosasinensis* have been summarized in Table 1. Out of six plant materials screened, leaf of *Nericum Indicum* indicate 70% activity, *S. Typhi*, *Sh. Byodi* and *Ps. Aerogenosa*, were not inhibited, whereas extracts of stem and flowers inhibited 99% bacteria except *Sh. Byodi*. The leaf extract of *Habiscus Rosasinensis* inhibited 80% of organisms only *S. Typhi*, *Sh. Byodi* were not inhibited Extract of stem and flower of the same plant inhibited 99% bacteria, *S. Typhi*, being resistant. Most of extracts displayed broad spectrum of activity, since Gram positive bacteria including *S. aureus*, *St. pyoones*, *S. aolacteae*, *B. subtilus* and *C. diphtheria* and Gram negative bacteria including *E. Coli*, *Ps. Aerogenosa*, *S. Typhi*, *Sh. Byodi* and *A. hydrophilia* were inhibited with all the six plant materials from both the plants used during the studies. Antibacterial activity of these plants have not been detected earlier. Present study represents preliminary identification of active principles and chemical elucidation of their structures shall be in due course.

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Table 1: Antibacterial activity of *Nericum Indicum* and *Habiscus Rosasinensis*.

S. No	NAME OF ORGANISM	NAME OF PLANT					
		Nerium indicum			Habiscus rosasinensis		
		Flower (mm)	Leaf (mm)	Stem (mm)	Flower (mm)	Leaf (mm)	Stem (mm)
GRAM POSITIVE							
1.	B Subtilus	10	8	10	12	10	8
2.	S. Aureus	12	10	8	12	10	8
3.	St. pyogenes	10	15	10	8	10	10
4.	S. Agalacteae	8	6	8	8	8	10
5.	C. Diptheriae	8	10	8	8	10	12
GRAM NEGATIVE							
1.	E. coli	8	12	10	8	8	14
2.	P. Aeruginosa	10	-	8	8	8	12
3.	S. Typhi	8	-	8	-	-	-
4.	Sh. boydi	-	-	-	12	-	12
5.	A. Hydrophilla	8	8	8	10	12	14

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