Short Communication

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Partial Purification and Antibacterial Studies of Extracts from *Eugenia jambolana* Linn and *Vinca rosea* Linn

M. Rafi Shaikh, Maleka, F.A. Baqir, S. Naqvi*, Dilnawaz Shaikh*

Department of Microbiology, University of Karachi Karachi-75270, Pakistan

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During the last few years it has repeatedly been reported by many investigators that some plant juices and extracts show antibacterial activity. [1-23].

Present communication deals with the antibacterial activity of ethanolic extracts and partially purified alkaloidal and non-alkaloidal fractions of *Eugenia jambolana* and *Vinca rosea* which are commonly used in medicines.

The extraction of *E. jambolana* and *V. rosea*, air dried flowers, leaves, fruits, stem, roots and seeds were performed by maceration in EtOH for two weeks, after crushing by an Ultraturax apparatus. The crushed material was extracted with EtOH five times, such that the last extract obtained, was almost colourless. All EtOH extracts were concentrated under reduced pressure to a brownish gummy mass. This gummy extract was acidified with 10% HCl (Merck) and extracted with $CHCl_3$ (Merck) to remove non-alkaloidal compounds. The acidic aqueous fraction was then basified with NH_3 and extracted thoroughly with $CHCl_3$.

Antibacterial assay. The crude extract as well as the partially purified fractions were used to determine the antibacterial activity. 5 mg/ml aliquots, dissolved in distilled water, were used in the test. Antibacterial activity was tested against ten different Gram positive and Gram negative bacteria. Freeze dried cultures were procured from ATCC and were maintained on Difco Nutrient agar, stored at 4° and subcultures were made after 4-week intervals.

The tests were run in triplicate. Petri plates (10 cm diam.) were prepared with trypticase soya agar Bhakuni [4], 0.1 ml of the diluted overnight culture was poured and spread on each plate and the plates were stored for 30 min. at 37°. Wells of 6mm diam, were cut with a sterile cork borer in the inoculated agar. The wells were filled with the plant extract. 50% Ethanol

Table 1. Antibacterial Activity of Crude Ethanolic Extracts.

S. No.	Name of plant: Botanical name	Vernacular name	Part of the plant used	Name of microorganism: *Bacillus subtilus*	*Staphylococcus aureus*	*Streptococcus pyogenes*	*Streptococcus agalacteae*	*Corynebacterium diptheriae*	Control
Gram Positive Microorganisms									
1.	*Eugenia jambolana* L.	Jaman	Leaf	12mm	–	8mm	2mm	8mm	–
			Stem	8mm	–	8mm	2mm	4mm	–
			Root	8mm	6mm	8mm	4mm	6mm	–
			Seed	12mm	10mm	10mm	10mm	8mm	–
2.	*Vinca rosea* L.	Sadabhar	Leaf	8mm	–	10mm	10mm	–	–
			Stem	–	–	8mm	8mm	8mm	–
			Flower	8mm		12mm	14mm	16mm	–
			Root	8mm		10mm	14mm	8mm	–
Gram Negative Microorganisms				*Escherichia coli*	*Pseudomonas aerogenosa*	*Salmonella paratyphi*	*Shigella boydi*	*Aerobacter hydrophilia*	Control
1.	*Eugenia jambolana* L.	Jaman	Leaf	10mm	4mm	–	–	4mm	–
			Stem	8mm	2mm	–	4mm	–	–
			Root	10mm	8mm	–	6mm	10mm	–
			Seed	4mm	12mm	8mm	8mm	12mm	–
2.	*Vinca rosea* L.	Sadabhar	Leaf	10mm	–	8mm	16mm	10mm	–
			Stem	6mm	–	10mm	–	10mm	–
			Flower	8mm	–	8mm	12mm	10mm	–
			Root	10mm	6mm	24mm	22mm	8mm	–

*Department of Pharmaceutics, University of Karachi-75270, Pakistan.

TABLE 2. ANTIBACTERIAL ACTIVITY OF THE ALKALOIDAL AND NON-ALKALOIDAL FRACTIONS OF LEAF, STEM, ROOT, FRUIT AND FLOWER OF *VINCA ROSEA* AND *EUGENIA JAMBOLANA*

S. No.	Name of microorganism	Alkaloidal								Non-alkaloidal							
		Vinca rosea				*Eugenia jambolana*				*Vinca rosea*				*Eugenia jambolana*			
		Leaf	Stem	Flower	Root	Leaf	Stem	Fruit	Seed	Leaf	Stem	Flower	Root	Leaf	Stem	Fruit	Root
	GRAM POSITIVE																
1.	*Bacillus subtilus*	–	2mm	–	6mm	15mm	10mm	15mm	15mm	4mm	–	–	–	–	–	–	–
2.	*Staphylococcus aureus*	–	–	10mm	14mm	10mm	8mm	15mm	10mm	–	–	–	–	–	–	–	–
3.	*Streptococcus pyogenes*	–	–	–	10mm	8mm	8mm	10mm	8mm	2mm	–	–	–	–	–	–	–
4.	*Streptococcus agalacteae*	–	10mm	12mm	6mm	10mm	8mm	12mm	8mm	8mm	–	–	–	–	–	–	–
5.	*Corynebacterium diptheriae*	–	–	8mm	18mm	10mm	10mm	12mm	8mm	2mm	–	–	–	–	–	–	–
	GRAM NEGATIVE																
1.	*Escherechia coli 97*	–	6mm	–	8mm	10mm	10mm	15mm	10mm	6mm	–	–	–	–	–	–	–
2.	*Pseudomonas aerogenosa*	4mm	8mm	6mm	16mm	8mm	8mm	8mm	10mm	–	–	–	–	–	–	–	–
3.	*Salmonella paratyphi*	–	8mm	6mm	12mm	15mm	12mm	15mm	15mm	4mm	–	–	–	–	–	–	–
4.	*Shigella boydi*	–	6mm	18mm	10mm	10mm	10mm	14mm	12mm	2mm	–	–	–	–	–	–	–
5.	*Aerobacter hydrophilia*	–	12mm	–	10mm	10mm	10mm	12mm	10mm	6mm	–	–	–	–	–	–	–

–ve = No zone of inhibition; Control = 50% Ethanol water.

in water v/v was used as control.

The plates were incubated for 24 hrs. at 37°. At the end or the incubation period, the inhibition zones were measured to the nearest mm. ((Tables 1 - 2).

The data obtained for the antibacterial activity of the crude ethanolic extracts of different parts of *E.jambolana* and *V. rosea* are summarized in Table 1. The results show that all eight plant materials tested exhibited antibacterial activity against most of the Gram Positive and Gram Negative bacteria used in the study. The results are in conformity with the results obtained by Dhar *et al.* [8] and Baqir *et al.* [13]. The most significant activity, with a maximum zone of inhibition of about 24 mm, was observed for the root of *V. rosea* against *Salmonella typhi.*

The crude extract of both plants were fractionated into partially purified alkaloidal and non-alkaloidal fractions by chemical methods. The results are summarized in Table 2.

The different parts of *V. rosea* also showed remarkable antibacterial activity. The present study confirms the results of Farnsworth [3].

The present preliminary study in *E. jambolana* and *V. rosea* establishes the occurrence of antibacterial components. Structure elucidation of the active compounds and further work will be reported in due course.

Key words: *Eugenia jambolana, Vinca rosea,* Antibacterial activity.

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