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Antibacterial activity of *Saraca asoca* Bark

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Bark extracts of *Saraca asoca* (Roxb.) de Willde were investigated for *in vitro* antibacterial activity against *Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Proteus vulgaris, Bacillus aureus* and *Klebsiella pneumoniae* at 4 mg/ml using agar well diffusion method. The ethanol and distilled water extracts showed significant broad spectrum antibacterial activity.

Saraca asoca (Roxb.) de Willde is a medium sized endangered evergreen tree (distributed throughout India), mostly cultivated in gardens[1]. The bark of this plant is used as astringent to the bowels, anthelminitic, for curing diseases of the blood, in fever, dyspepsia, dysentery, burning sensation and leucorrhoea[2]. Flavonoids and sterols have been isolated from this plant[3,4]. In the light of above information the present investigation was undertaken which deals with the antibacterial activity of petroleum ether, butanol, ethanol and distilled water extracts of bark of *Saraca asoca* (Roxb.) de Willde against various Gram positive and Gram negative bacteria. The results of which are being reported in the present communication.

The bark of *Saraca asoca* (Roxb.) de Willde was collected from Lal Bagh, Bangalore, Karnataka in December 1999. The identity of the bark has been confirmed using all official monographic specifications[5]. The shade dried bark was pulverized by a mechanical grinder and passed through a 40 mesh sieve. The powdered bark (500 g) was extracted with petroleum ether (PE, 40-60°), successively butanol (BT), ethanol (EE), and distilled water (DW) using Soxhlet extractor method. The extracts were then distilled separately and condensed to yield solid mass completely free from solvents. (PE-3.22%, BT-8.67%, EE-12.43% and DW-27.43%). The solid mass were redissolved in dimethylformamide (DMF) to evaluate antibacterial efficiency.

Bacterial cultures used for testing included *Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Proteus vulgaris, Bacillus aureus* and *Klebsiella pneumoniae*. These bacterial cultures were obtained from Department of Microbiology, Gulbarga University, Gulbarga, India. The stock cultures were maintained on nutrient agar medium at 37°.

Antibacterial activity of the above mentioned extracts tested separately using agar well diffusion method[6]. Four

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TABLE 1: ANTIBACTERIAL ACTIVITY OF DIFFERENT EXTRACTS OF *SARACA ASOCA* (ROXB.) DE WILLDE BARK.

Organisms	Diameter of the inhibition zone (mm)				
	1	2	3	4	Strept.
S. aureus	-	10±1.06	12±0.72	13±0.55	15±0.02
E. coli	-	16±0.87	17±0.82	18±0.29	19±0.03
P. aeruginosa	-	06±0.38	08±0.04	09±0.03	10±0.25
P. vulgaris	-	08±0.12	09±1.20	11±.0.97	12±0.50
B. aureus	-	11±0.30	11±1.17	12±0.63	12±0.31
K. pneumoniae	-	09±0.26	12±0.64	14±0.21	16±0.05

*All the values are mean±standard deviation of 3 determinations. 1. Petroleum ether extract; 2. Butanol extract; 3. Ethanol extract; 4. Distilled water extract (4 mg/ml of dimethylformamide); Strept.-streptomycin sulphate (1 mg/ml of distilled water); '-' represents that there is no inhibition.

milligrams of each extract was dissolved in 1ml of distilled DMF. DMF and water alone serve as negative controls. Standard streptomycin sulphate (4 mg/ml) was used as a positive control. The plates were incubated at 37° for 24 h. The assessment of antibacterial activity was based on the measurement of diameter of zone of inhibition (mm) formed around the well.

Table 1 enumerates the effect of different extracts of bark of *Saraca asoca* (Roxb.) de Willde. The ethanol and distilled water extracts were tested at 4 mg/ml showed significant activity against all the bacteria, when compared with streptomycin sulphate (1 mg/ml). The distilled water extract was found to be more effective than others. PE extract did not show any activity. The present result support the previous work[7], which reveals that methanol and water extracts of *Saraca asoca* leaves showed antibacterial activity against *B. subtilis, P. aeruginosa* and *S. typhimurium.*

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