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Antimicrobial activity of *Morus alba* L.

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Antibacterial activity of methanol, ethanol and water extract of the stem of *Morus alba* L. belonging to the family Moreaceae was studied. The extract was extracted by soxhlet apparatus. The effect of the extracts against 15 bacterial and one fungal strains was tested by filter paper disc diffusion technique. Out of the three extracts, the ethanol extract was found to be more effective with all the bacteria and fungi.

Key words : Antibacterial, *Morus alba,* Methanol, Ethanol, Water.

The *Morus alba* L (Family : Moreaceac) is a short-lived, fast-growing, small to medium sized tree to 10–20 m tall, native to northern China, and widely cultivated elsewhere. It is commonly called Mulberry. The plant is used to treat fever, headache, red dry and sore eyes, as well as cough. The leaves are used to promote sweating, and the branches and bark for lowering blood pressure. It is also said that Mulberry can inhibit the premature graying of hair, and when used topically can promote hair growth. Mulberry can help treat chronic diseases of the digestive tract, improve digestion, stimulate the appetite, promote gastric juice secretion and eliminate constipation. It has also been used in treating chronic gastritis and hepatitis. It is helpful in cough, dyspepsia, facial dropsy, oedema injury and Oligura. Ali and Azhar (1999) studied antimicrobial activity of some *Caesalpiniaceae* members. The antimicrobial activity of *Croton mucronifolius* and *C. triangularis* was determined by Lemos and Monte (1992). Padma Singh and Pratima Karnwal (2006) studied on antifungal activity of cassia fistula leaf extract against *Candida albicans*. Prasad *et al.* (2006) screened antibacterial activity against 59 plants (15). However, there is no report on the antimicrobial activity of *Morus alba* L. The present investigation was, therefore, undertaken to evaluate the antagonistic potential of the leaf and stem extracts of *Morus alba* L. against gram positive, gram negative bacteria and one fungus (human pathogens).

Antibiotic sensitivity test was employed to know the antimicrobial nature of the selected plants (Benson,1990). The matured plant leaf and stem were collected from the area around the Acharya Nagarjuna University campus, dried in shade and crushed in a mortar. The crushed stem was extracted with methanol, ethanol and water for 24 hours using Soxhlet apparatus. The solvent was removed by air-drying and crude extract was used. Three different dilutions (Table 1) of the extract was prepared in Dimethyl Sulphoxide (DMSO).

The antimicrobial property was determined by standard paper disc diffusion assay on Nutrient Agar media for bacteria and Sabouraund Dextrose Agar media for fungi (Bauer *et al.*, 1966). Filter paper discs of 6mm diameter were sterilized, soaked in the extracts separately and placed at equidistance on the medium. The Petridishes were incubated at 37 degrees C for 24 hr for bacteria and 48 for fungi for the development of inhibitory zones. The activity was measured in terms of diameter of inhibition zone appearing around the filter paper discs saturated with stem extracts.

The extracts prepared in all three solvents showed activity against the 15 bacterial and 1 fungal species. Comparatively, in all the three dilutions (Table 1) of extract, ethanol was found to possess more antibacterial and antifungal activity than that of methanol and water.

Table 1 : Inhibition zones of the plant extracts of *Morus alba* L against bacteria and fungus

Bacteria/fungus	Extract concentration(ppm)			Zone of Inhibition (mm) against bacterial strains and fungi		
	Methanol	Ethanol	Water	Methanol	Ethanol	Water
Xanthamonas	100	100	100	10	10	8
campestris	200	200	200	12	13	9
	300	300	300	13	16	10
Bacillus cereus	100	100	100	7	11	7
	200	200	200	9	13	8
	300	300	300	11	16	10
Enterobacter aerogens	100	100	100	10	11	8
	200	200	200	11	13	8
	300	300	300	13	15	9
Klebsella pneumonia	100	100	100	9	-	-
	200	200	200	10	-	-
	300	300	300	10	-	-
Escherichia coli	100	100	100	10	10	7
	200	200	200	12	13	8
	300	300	300	12	16	9
Proteus vulgaris	100	100	100	8	12	9
	200	200	200	9	14	10
	300	300	300	11	17	11
Bacillus subtilis	100	100	100	7	10	8
	200	200	200	10	12	9
	300	300	300	11	15	10
Pseudomoas	100	100	100	9	-	-
flourescence	200	200	200	10	-	-
	300	300	300	10	-	-
Micrococcus luteus	100	100	100	7	12	9
	200	200	200	9	15	10
	300	300	300	9	17	11
Pseudomonas	100	100	100	10	10	8
aureginosa	200	200	200	12	12	9
	300	300	300	14	14	10
Staphalococcus	100	100	100	-	-	-
aureaus	200	200	200	-	-	-
	300	300	300	-	-	-
Clostridium sporogens	100	100	100	7	10	9
	200	200	200	8	12	10
	300	300	300	9	14	12
Salmonella typhi	100	100	100	10	10	8.
	200	200	200	12	13	9
	300	300	300	14	16	10
Bacillus megateterium	100	100	100	-	13	9
	200	200	200	-	16	10
	300	300	300	-	19	12
Serratia marcesens	100	100	100	10	10	8
	200	200	200	12	13	9
	300	300	300	14	16	10
Fungus				Methanol	Ethanol	Water
Candida albicans	100	100	100	11	10	9
	200	200	200	13	13	13
	300	300	300	16	17	15

REFERENCES

Ali, M. S and Azhar, I. (1999). Antimicrobial screening of some Caesalpinaceae plants, *Fitoterapia*, **70** : 229-304.

Bauer, R.W., Kirby, M.D.K., J.C., Sherris and Truck, M. (1966). Antibiotic susceptibility testing by standard single disc diffusion method. *Am J. Clin. Pathol.*, **45**: 493-496.

Benson, H.J. (1990). *Microbiological applications*, 5th ed. USA, WMC publications.

Lemos, T.L.G. and Monte, F.J.Q. (1992). Chemical composition and antimicrobial activity of essential oils from Brazilian plants. *Fitoterapia*, **63**: 266-268.

Padma Singh and Pratima Karnwal (2006). Antifungal activity of Cassia fistula leaf extract against Candida albicans. *Indian J. Microbiol.*, **46** (2) : 169-170.

Prasad, S.H.K.R., Rajasekhar, D., Vijayamma, J. and Vijayalakshmi, M. (2006). Antibacterial spectrum of Botanicals. *Recent trends in plant sciences*, pp 144-148.