Asian Journal of Chemistry Vol. 18, No. 1 (2006), 743–744

Antimicrobial Efficacy of Methanolic Extracts of *Fagonia cretica*

L.K. THETWAR*†, ARADHANA SINGH THAKUR‡ SEEMA SHRIVASTAVA, M.R. AUGOR**, R.C. TANDON** and N.C. DESHMUKH
Chemistry Department, Government Model Science College, Bilaspur-496 001, India

The methanolic extract obtained from the flowers of *Fagonia cretica* (Family Zygophyllaceae), was tested for its antimicrobial activity against fungi: (i) *Aspergllus niger* (ii) Aspergillus funigatus for antifungal activity; and bacteria: (i) *Escherichia coli*, (ii) *Proteus vulgaris*, (iii) *Streptococcus agalacties* and (iv) *Bacillus anthracis*for antibacterial activity.

Key Words: *Fagonia cretica*, Antimicrobial and antifungal properties.

The plant *Fagonia cretica*, No. 1–3 (Zygophyllaceae) is commonly known as Damahan in Hindi. It is bitter, astringent, tonic, febrifuge and is reported to be prophylactic against small pox. Its leaves and roots are soothing agents.

The significant medicinal importance of the plant attracted us to investigate it for its antifungal and antibacterial properties.

1.6 kg of air-dried and finely powdered flowers of the plant *Fagonia cretica* were extracted with 50% methanol at 14°C for about 30 h in a round bottomed flask and filtered. The extract was concentrated under reduced pressure to remove the solvent. The methanolic extract thus obtained from the flowers of *Fagonia cretica* was tested for its antifungal and antibacterial activities against the following organisms: (1) *Aspergillus niger* (2) *Aspergillus fumigatus* (3) *Escherichia coli* (4) *Proteus vulgaris* (5) *Streptococcus agalacties* and (6) *Bacillus anthracis*.

Filter paper disc method[4] was employed for determining the antimicrobial activity.

The filter paper discs of Whatmann paper (8 mm) in diameter were soaked with the extract, dried and were placed on soft nutrient agar (2%) petri dishes, which were previously seeded with various fungal and bacterial species. Oxide nutrient broth and Saboraud's broth[5] respectively were the media used for studying antifungal and antibacterial studies. Paper discs were arranged crosswise along with the margin and one of the centres as control for comparison of inhibitory zones for the study of samples. This practice was followed for each plate cultured with various

†Retired Principal, Government College, Kota, Bilaspur, India.
‡Government Lahiri College, Chirimiri, Distt. Korea (C.G.), India.
**Government Commerce, Arts and Science College, Bilaspur-496 001, India.

fungi and bacteria. Acromycin and streptomycin in 450 ppm per positive and negative bacteria were used as control. The results were recorded by taking average of four observations using filter paper discs. After equilibration at 5°C for 2 h and incubation at 37°C for 30–70 h depending upon growth rate of different bacteria, the zones of inhibition were measured. Regarding fungi, it was done at room temperature (27°C) till complete growth.

A perusal of the observations showed that the methanolic extract of the flowers of *Fagonia cretica* has antibacterial activity against (1) *Escherichia coli* (2) *Bacillus anthracis*, (3) *Streptococcus agalactis*, and (4) *Proteus vulgaris*. The antifungal activity was shown on *Aspergillus niger* and *Aspergillus fumigatus*. The activity maxima was displayed by *Bacillus anthracis, Streptococcus agalacties* and *Aspergillus niger*. The results are tabulated below in Tables 1 and 2.

TABLE-1
ANTIFUNGAL ACTIVITY: ANTIFUNGAL ZONES OF INHIBITION (mm)

S. No.	Fungal species	Methanolic extract from flowers of *Fagonia cretica*	Control
1.	*Aspergillus niger*	26	30
2.	*Aspergillus fumigatus*	18	30

TABLE-2
ANTIBACTERIAL ACTIVITY: ANTIFUNGAL ZONES OF INHIBITION (mm)

S. No.	Bacterial species	Methanolic extract from flowers of *Fagonia cretica*	Control
1.	*Escherichia coli* (+)	14	25
2.	*Proteus vulgaris* (+)	20	17
3.	*Streptococcus agalacties* (–)	24	28
4.	*Bacillus anthracis* (–)	24	28

ACKNOWLEDGEMENTS

The authors acknowledge their sincere thanks to Mr. Chandra Prakash Mishra and Smt. Pushpa Mishra for their kind cooperation during the dreary chores of proof- reading.

REFERENCES

1. R.N. Chopra, S.L. Nayar and C.C. Chopra, Glossary of Indian Medicinal Plants, Council of Scientific and Industrial Research, New Delhi, p. 176 (1956).
2. J.C. Maruzzella and P.A. Henary, *J. Am. Pharm. Assoc.*, **47**, 471 (1958).
3. J.G. Vincent and H.W. Vincent, *Proc. Soc. Exp. Biol. Med.*, **55**, 162 (1944).
4. D. Dag and B. Beat, *Ger. Offen*, **2**, 457 (1975).
5. L.Z. Xu, S.S. Zhang, H.J. Li and K. Jiao, *Chem. Res. Chin. Univ.*, **18**, 284 (2002).

(*Received*: 17 March 2005; *Accepted*: 27 October 2005) AJC-4477