Ancient Science of life Vol. No XVI I July 1996, Page 79-81

ANTIBACTERIAL ACIVITY OF THE ESSENTIAL OIL OF LIPPIA NODIFLORA

K. BALAKRISHNA, R. HAMSAVENI GOPAL, V. RAMKUMAR, R. BHIMA RAO, SARADHA VASANTH and D.NARAYANAPPA

Captain Srinivasa Murti Drug research institute for Ayurveda, Arumbakkam, Madras – 600 106

Tamil Nadu Medicinal Plant Farms and Herbal Medicine Corporation Ltd., Madras – 600 106

Received: 27 July, 1995 Accepted: 15 December, 1996

ABSTRACT: The plant Lippia nodiflora (Family-Verbenaceae) has medicinal properties and particularly used as an antidandruff agent. The essential oil of the plant was tested for its antibacterial activity against both gram positive and Gram negative bacteria. It showed good activity and compared with standard neomycin sulphate. However, it was inactive in the case of shigella flexneri.

INTRODUCTION

The Plant Lippia nodiflora Mich (Family-Verbenaceae) is said to possess cooling, diuretic and febrifuge properties. It is used in ischuria, stoppage of bowels and pain in knee joints, it is an expectorant and is used in the treatment of asthma and bronchitis. It is widely used in the preparation of hair oils as an antidandruff agent[1-4]. Flavonoids[5-9], phenols[10], sugars[5], sterol glycosides[6] and potassium nitrate[11] have been reported from the plant. The composition of the essential oil has also been reported[12].

The alcoholic extract of the plant showed antibacterial activity against E.Coli1. The plant also showed anti-inflammatory, analgesic neuropharma-cological, hypoglycaemic and hypocho lesterolaemic activities[13]. The diuretic activity is attributed to the large amount of potassium nitrate present in tehplant[11].

MATERIALS AND METHODS

The plant material was collected in madras during Aug 1994. The wet plant (2kg) was macerated with water and subjected to hydrodistillation. The essential oil was extracted from. The distillate by ether and ether was removed by slow evaporation to get a light yellow oil with mild pungent odour (yield I.8 gm). The antibacterial activity was studied by the disc diffusion method[14], at different dilutions in DMF, disc dia 6 mm. control of microbial succeptibility was performed with biodiscs of neomycine sulphate (30µg/disc). The micro-organisms that responded to the oil were further studied for the determination of MIC by the serial dilution method[15].

RESULTS AND DISCUSSION

The results are given in table 1. The essential oil showed activity against both

gram-positive and gram –negative bacteria studied, except Sh flexri. The activity of the undiluted oil was almost comparable with that of the standard antibiotic at 30 µg/disc. It is interesting to note that P. aeruginosa which is usually resistant to commonly used antibacterial agents[16] was found to be very susceptible to the oil.

TABLE -1

ANTIBACTERIAL ACTIVITY OF THE ESSENTIAL OIL OF LIPPLA NODIFLORA

Test Organism	Diameter of Zone of inhibition in mm				MIC
	Undiluted	1:2	1:4	Neomycin sulphate (30 kg/disc)	
Staphylococcus aureus	16	10	8	22	1:125
Staphylococcus citreus	22	12	-	20	1:625
Staphylococcus faecalis	22	16	12	22	1:125
Bacillus subtilis	18	14	12	24	1:5
E.Coli	16	14	12	16	1:125
Klebsiella aerogenes	14	-	-	16	1:25
Shigella flexneri	-	-	-	18	ND
Pseudononas aeruginosa	14	10	8	8	1:125

DMF was used as the diluent and solvent control, ND = not done

ACKNOWLEDGEMENTS

The authors wish to thank the Director, central council for Research in Ayurveda and Siddha, New Delhi, India for financial assistance and Shri. B. Jayakumar for secretarial assistance.

REFERENCES

1. The Wealth of India (Raw Materials), Vol 2, publication and Information Directorate, New Delhi, India, 1962, P 142.

2. Nadkarni, A.K., Indian Mateia Medica, Vol 1, Popular prakashan, Bombay, India, 1976, P 746.

3. Chopra, R. N. Nayar, S.L and Chopra, I.C Glossary of Indian Medicinal Plants CSIR, New Delhi, India, 1956, P 155.

4. Murugesa Mudaliar, K.S., Materia Medica (Vegetable section), Tamilnadu Government Publication, 1969, P 559.

5. Joshi, B.C., and Bhakuni, D.S.J Sci Industr, Res 1959, 18B, 525.

6. Barua, A.K Chakrabarti, P. and sanyal P.K J. Indian Chem. Soc 1969, 46, 271.

7. Barua A.K Chakrabarti, P and sanyal, P.K., Trans. Bose Res Inst, Calcutta, 1970-71, 5-8, 33.

8. Ramachandran Nair., A.G Ramiah, P., Nagarajan, S. and Subramanian, S.S., Indian J hem. 1973. 11, 1316.

9. Tomas Burberan, F.A Harborne, J.B and Self R., Phytochem, 1987, 26, 2281.

10. Joshi, B.C., VignanaParishad Anushandan patrika, 1968, 11(4), 219 Chem Abstr. 1968, 73 95454e

11. Chopra, I.C Kohli, J.D and Handa, K.L J. Nat prod 1945, 48 (3), 504.

12. Elachovich, S.D and Stevens K.L J Nat Prod. 1985, 48(3), 504.

13. Ravichandran, B., Makwana, H.G., Bhaskaran Nair, R., Vijayan, N.P., Sasikala, C.K Saraswathy, V.N and sulochana, J.J Res Ayur Siddha 1989. 10, 141.

14. Cruickshank, (Ed), Medical microbiology, E& S Livingstone Ltd., London, 1965, P 893.

15. Kavanagh, F., Analytical Microbiology, Academic press, New York, 1963, P 139.

16. Iwu, M.W., Unaeze, N.C., Okunji, C.O., Corley D.G Sanson, D.R, and Tempesta, M.S., Int J Pharmacognosy, 1991, 29(2), 154.