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Antimicrobial Activity of Ethanolic Leaf Extract of *Intigofera aspalathoides* and *Plectranthus caninus* Against Some Human Pathogenic Microorganisms

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Antimicrobial Activity of Ethanolic leaf extract of *Intigofera aspalathoides* and *Plectranthus caninus* against some human pathogenic bacteria and fungi were evaluated. The extracts of these plants were evaluated for antimicrobial activity against human pathogenic bacteria such as *Escherichia coli, Staphylococcus aureus* and *Salmonella typhii* and pathogenic fungi such as *Aspergillus flavus* and *Aspergillus ochraceous.* Ethanolic leaf extracts were prepared and based on the susceptibility of the test organisms were determined. It was found that ethanolic extracts showed high inhibition zone than control experiments.

Key words: Antimicrobial activity, ethanol extract, human pathogen, ZOI.

In India, medicinal plants from the back bone of several indigenous traditional systems of medicine. Pharmacological studies have acknowledged the value of medicinal plants as potential source of bioactive medicines, (Prusti *et al*., 2008). Medicinal plants are rich source of novel drugs that forms of medicines, modern and lead compound in synthetic drugs (Ncube *et al*., 2008). The World Health Organization (WHO) estimated that 80% of the population of developing countries relies on traditional medicines, mostly plant drugs, for their primay health care needs. Also, modern pharmacopoeia still contains at least 25% drugs derived from plants and many other which are synthetic analogues built on prototype compounds isolated from plants. Further more, about 42% 25 top selling drugs marketed world wide ae eitehr directly obtained from natural sources of entities derived from plant products (Ramya *et al*., 2008). Alcoholic extract of *Intigofera aspalathoides* was tested for antimicrobial activity against HEL cell culture, He La cell culture and cytotoxicity against human epithelial larynx cancer cell (HEP_2), human breast cancer (HBL-100) and cervical carcinoma cells (HELA) cell lines. The extract produced 48% inhibition for antimycobacterial and more than 80 micro gl/ml of minimum

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inhibitory concentration against HEL and HeLa cell cultures (Rajkapoor *et al*., 2007). The chemical constituents of the essential oil from *Plectranthus japonica* have been identified by using GC, GC-MS and spectral analysis, and screened for antifungal activity against *A. niger, Penicillium citricum, Rhizopus nigrican* and *Trichodermis viride* (Mathpal *et al*., 2002). No reports antimicrobial activity of ethanolic leaf extracts in leaves of *I. aspalathoides* and *P. caninus* can be found. So in the present study at attempt has been made to investigate invitro antimicrobial activity of two medicinal plants viz, *Intigofera aspalathoides* and *Plectranthus caninus* against human pathogenic microbes.

MATERIAL AND METHODS

Collection and identification of plants

I. aspalathoides (fabaceae) and *P. caninus* (Lamiaceae) leaves were collected from the garden of the Sengamala Thayaar Educational Trust Women's College, Mannargudi, Tamil Nadu, India. A voucher specimen was deposited in the Herbarium of the STET women's College Department of Biotechnology, Mannargudi, Tamil Nadu.

Preparation of plant extract

5gms of fresh and healthy leaves of each plant species were washed with tap water (2-3 times) and surface sterilized by soaked in 0.1% mercuric chloride solution for few seconds and washed with distilled water. Subsequently, plant materials were grounded in 50ml of ethanol. The ethanolic macerates were kept for 24 hrs at room temperature. Macerates were squeezed through double-layered muslim cloth and filtered through filtered paper. After filtration, aliquot was centrifuged at 10,000 rpm for 20 min. The supernatant were filtered through whatmann No. 1 filter paper and then sterilized by passing through 0.2 micron disposable filters. The extract (50%) thus obtained were sued for the *in vitro* studies (Parihar and Bohra, 2002).

Antibacterial and Antifungal activity of plant extract

The bacterial and fungal cultures were obtained from the Institute of Microbial Technology (IMTECH), Chandigarh, India and maintain on a nutrient agar. A disc diffusion method was used for testing antimicrobial activity (Bauer *et al*., 1966). The bacterial and fungal cultures were diluted with sterile water and mixed thoroughly to get a clear homogenous suspension and this suspension uniformly spread on solidified agar (Nutrient agar and Potato dextrose agar) medium. A sterile filter paper No. 1 disc were soaked in different plant (50%) extracts by inserting the filter paper in to the extract and shacking by holding it with forecps. The filter paper disc were allowed to dry and immersed again in the different plant (50%) extract. The filter paper discs were placed carefully over the spread cultures in incubated at 37°C for 24hrs for bacteria and 28-30° for 48hrs for fungi. Paper discs treated with distilled water alone served as control.

RESULTS AND DISCUSSION

It was found that ethanolic extract of leaves of *I. aspalathoides* and *P. caninus* have

Table 1. Antimicrobial activity of 50% ethanolic leaf extracts of *Intigofera aspalathoides* and *Plectranthus caninus* against some human pathogenic microorganism

S. No	Microorganism	Zone of inhibition (in mm)	
		I. aspalathoides	*P. caninus*
1.	*Escherichia coli*	10	8
2.	*Staplylococus aureus*	12.5	7
3.	*Salmonella typhii*	11	7
4.	*Aspergillus niger*	12	8
5.	*Aspergillus flavus*	14	6.5
6.	*Aspergillus ochraceus*	7.5	5

shown inhibition against the bacterial strains of *Escherichia coli, Staphylococcus aureus, Salmonella typhii* and fungal strains of *Aspergillus niger, Aspergillus flavus* and *Aspergillus ochraceus*. Based on these comparisons the susceptibility of the test organisms against ethanolic plant extracts were determined. The result obtained in the present study revealed that the ethanolic extracts of *I. aspalathoides* and *Placetranthus caninus* were showed high ihibitory activity against the growth of three bacterial and fungal species than control (Table 1). Similar results were obtained by Deepa *et al*., (2008) in *Coleus* and *Coleus zeylanicus* showed broad spectrum activity against bacteria and fungi such antimicrobial activity of ethanolic extract of nine medicinal plants has been reported by Perumal *et al*., (2004).

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REFERENCES

1. Prusti, A., Mishra, S.R., Sahoos and Mishra, S.K. Antibacterial activity of some Indian Medicinal Plants. *Ethnobotanical Leaflets.* 2008; **12**: 227-230.
2. Ncube, N.S., Afolayan, A.J. and Okoh, A., Assessment techniques of antimicrobial properties of natural compounds of plant origin. *African Journal of Biotechnology.* 2002; **7**: 1979-1806.
3. Ramya, S., Govindaraj, V. Kannan, N.K. and Jayakumaraj, R., *In vitro* evaluation of antibacterial activity using crude extracts of *Catharanthus roseu*. L. (G) Don. *Ethnobotanical Leaflets*, 2008; **12**: 1013-1018.
4. Rajkapoor, B., Murugesh, N., Kavimani, S., Krishna, D.R., Ravichandran, V., Gobinath, M., Harikrishnan, N., Vidyasagar, J. Clereq, E. and Franzblau, S.G., Antimycobacterial, antiviral and cytotoxic studies of *Indigoferao aspalathoides vahl. Pharmacognosy magazine.* 2007; **3**(11): 163-166.
5. Mathpal, D., Mathpal, R., Shah, G.C. and Gupta, R.C., Essential oil from *Plectranthus japonicas. Ethnobotanical leaflets.* 2002; 14: 96-98.
6. Parihar, P. and Bhora, A. Screening of some terms for their antimicrobial activity against *Salmonella typhi. Ad. Plant Sci.,* 2002; **15**(2): 365-367.
7. Bauer, A.W., Kirby, M.D.K., Sherris, J.C and Trick, M. Antibiotic susceptibility testing by standard single disc diffusion method. *America Journal of Clinical Pathology*, 1966; **45**: 493-496.
8. Deepa, M.J., Sree Ranjini, K. and Thoppi, J.E., Antimicrobial screening of essential oils of *Coleus aromatics* and *Coleus zeylaniceus. International Journal of Aromatherapy.* 2002: **12**: 150-107.
9. Perumal, G., Subramanyam, C., Natarajan, D., Srinivasan, K., Mohana Sundari, C. and Prabakar, K., Antifungal activities of traditional medicinal plant extract - A preliminary survey. *Journal of Physiological Research.,* 2004; **17**(1): 81-83.