

Studies of Antibacterial Activities of Leaf Extract of Selected Ethno –Medicinal Plants

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Abstract: The potential of higher plants may give a new source of antimicrobial agents with novel mechanism of action (Narayan V, J shukla) the drugs from higher plants and their effects continue to occupy and important niche in modern medicine (B Mahes and V Satish) plants are rich in secondary metabolites which have been found to have antimicrobial properties . In general bacteria have the genetic ability to transmit and acquire resistance to synthetic drugs which are used for therapy. To study the spectrum of antibacterial agents from natural sources few plants were selected from the college campus. The plants used in the experiment are osmum sanctum, azadirectha indica , psidium gujava and aegle marmilos. The test organism selected is e coli. The result obtained in present study reveal that plant extract possess potential medicinal activity against tested bacteria.

I. Introduction

From the ancient days plant parts and there extracts are used for therapeutic purpose to cure several diseases caused by microorganisms. The plant and their products play significant role in preventing the human diseases (Ramaswamy et al) . Even though man has the knowledge of herbal medicine from many decades natural products from plants may provide a new possible mechanism of action against micro organisms (Runyioro et al , Shahidi et al).

The emergence of new infectious disease there reoccurrence earlier seemed to be controlled and the enhancement in the bacterial resistance to bacterial resistance have created the necessity to create towards the development of new antimicrobials. The antibacterial agent is that which kill or inhibit the growth of bacteria. Many researchers from different parts of the world studied the effect of plant extracts on bacteria(Reddy P S et al) . Much work has been done on ethno medicinal plants in India (Maheshwari j k et al)

The plant extracts or its active constituents are used as folk medicine in traditional therapies of 80 % of world population (Shaik et al) . In general the bacteria are clever enough to transfer and acquire resistance used in therapy (towers g h et al) . Plants have varieties of secondary metabolites and can be a soure of new drugs which are still yet unexplored. The medicinal plants represent a rich antibacterial activity (Mahesh b and Satish s)

II. Material and methods:

The plant extract are also used worldwide for synthesizing various medicines to study the spectrum of antibacterial agents from natural sources, few plants were selected . The fresh and healthy leaves and plants

Tulsi : ocimum sanctum, bel : aegle marmilos, guava: psidium gujava, neem : azadirecta indica were collected in the months of February and march from the college campus.

The plant material especially leaves were well washed repeatedly double distil water and then the leaf extracts were obtained by grinding them . the extracts were filtered using whatman filter paper .

The test organism i.e. E. coli is seeded into NAM (nutrient agar medium) with spread plate method 10^6 cells /ml with the 24 hours cultured bacteria in nutrient broth . After solidification the filter paper disks 5mm in diameter impregnated with different Concentrations of 3 plant extracts were placed on test organism . in the second method 50 μ l of natural 4 plant extracts were added to each of the 4 well (7mm) dia holes in the agar gel 20mm apart from . these were incubated at $36\pm1^\circ\text{C}$. these were compared with the antibiotic sensitivity test performed by the agar diffusion method which is designed to determine the smallest amount of antibiotic to inhibit the growth of a micro organism .this is done by measuring the diameter of growth inhibition clear zone surrounding the antibiotic disc. The antibiotic discs used were cloremphenicol and tetracycline against test organism e coli.

III. Results & Discussion

In the well method present study revealed that the tested four medicinal plant extracts possess potential of antimicrobial activity as *aegle marmilos* > *ocimum sanctum* > *psidium gujava* > *azadirachta indica*. The antibacterial activity of 3 plant extracts against *E coli* were assessed in terms of zone of inhibition of bacterial growth. The antibacterial activities is presented in following table:

Plant extract	Zone of inhibition in cm , Concentration in $\mu\text{g}/\text{mm}$			
	25	50	100	150
Azadirachta	0.6	0.8	0.9	1
ocimum	0.9	1	1	1.1
aegle	1	1	1.2	1.6

The zones of growth inhibition were measured after 18 to 24 hours of incubation at $36^\circ\text{C} \pm 1^\circ\text{C}$ the antibacterial activity of the extracts increased linearly with the increase of concentration compared with standard drugs this study shows the presence of different phyto chemicals in these plant extracts which have valuable extracts for therapeutic extracts . However further studies are needed to better evaluate the potential effectiveness of the crude extracts as the antibacterial agents.

References

- [1]. Alam MM, Siddiqui MB, Hussain W. Treatment of diabetes through herbal drugs in rural India. *Fitoterapia*. 1990;61:240–2.
- [2]. Bauer AW, Kirby WMM, Sherris JC, Turck M. Antibiotic susceptibility testing by standardized single disc method. *Am J Clin Pathol*. 1966;36:493–6.
- [3]. Cowan MM. Plant products as anti-microbial agents. *Clin Microbiol Rev*. 1999;12:564–82.
- [4]. Dahanukar SA, Kulkarni RA, Rege NN. Pharmacology of medicinal plants and natural products. *Indian J Pharmacol*. 2000;32:S81–118.
- [5]. Maheshwari JK, Singh KK, Saha S. Economic Botany Information Service, NBRI. Lucknow: 1986. Ethno botany of tribals of Mirzapur District, Uttar Pradesh.
- [6]. Prashanth KV, Chauhan NS, Padh H, Rajani M. Search for antibacterial antifungal agents from selected Indian medicinal plants. *J Ethnopharmacol*. 2006;107:182–8.
- [7]. Reddy PS, Jamil K, Madhusudhan P. Antibacterial activity of isolates from *Piper longum* and *Taxus baccata*. *Pharmaceutical Biol*. 2001;39:236–8.
- [8]. Runyoro D, Matee M, Olipa N, Joseph C, Mbawando H. Screening of Tanzanian medicinal plants for anti-Candida activity. *BMC Complement Altern Med*. 2006;6:11.
- [9]. Shahidi BH. Evaluation of antimicrobial properties of Iranian medicinal plants against *Micrococcus luteus*, *Serratia marcescens*, *Klebsiella pneumonia* and *Bordetella bronchiseptica*. *Asian J Plant Sci*. 2004;3:82–6.
- [10]. Shaik D, Malika FA, Rafi SM, Naqui B. Studies of antibacterial activity of ethanolic extract from *Nericum indicum* and *Hibiscus rosasinensis*. *J Islamic Acad Sci*. 1994;7:167–8.
- [11]. Towers GH, Lopez A, Hudson JB. Antiviral and antimicrobial activities of medicinal plants. *J Ethnopharmacol*. 2001;77:189–96.