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Studies on the Antibacterial activity of Tagetes *erecta* Linn Leaves.

Sandipan Chatterjee[1a*], Syed Ansar ali [1b]

[1a] Department of Pharmacology, Karnataka college of Pharmacy, Bangalore-560064

The antibacterial activity of the alcoholic extract of *Tagetes erecta* was tested by disc diffusion method. Zones of Inhibition produced by alcoholic extract in a dose of 50, 100, 200, 400 and 600 mg/ml against selected strains was measured and compared with Streptomycin sulphate IP. 0. 05% w/v and Procaine penicillin IP 0.05% w/v. The results of the study showed the justification of the use of the plant in the treatment of infection diseases, and the active chemical constituents when isolated will be added to the present anti-bacterial agents.

Key words: *Tagetes erecta,* Anti-Bacterial activity, Disc diffusion.

INTRODUCTION

In the last three decades, Pharmaceutical industries have produced a number of new antibiotics; resistance to these drugs by microorganisms has increased. In general, bacteria have the genetic ability to transmit and acquire resistance to drugs, which are utilized as therapeutic agents,[1] Such a reality is cause for alarm, because of the number of patients in hospitals who have suppressed immunity, and due to new bacterial strains, which are multi-resistant produced new infection which going to be more fatal. The problem of microbial resistance is growing and the outlook for the use of antimicrobial drugs in the future is still uncertain. Therefore, require solved this problem. For a long period of time, plants have been a valuable source of natural products for maintaining human health, especially in the last decade, with more intensive studies for natural therapies. In developing countries and low income people such as farmers, people of small isolate villages and native communities use folk medicine for the treatment of common infections. According to World Health Organization [2] medicinal plants would be the best source to obtain a variety of drugs. About 80% of individuals from developed countries use traditional medicine, which has compounds derived from medicinal plants. Therefore, such plants should be investigated to better understand their properties, safety and efficiency [3]. One way to prevent antibiotic resistance of pathogenic species is by using new compounds that are not based on Existing synthetic antimicrobial agents [4]. Traditional healers claim that some medicinal plants such as *Tagetes erecta*. Are more efficient to treat infectious diseases than synthetic antibiotics. It is necessary to evaluate, in a scientific base, the potential use of folk medicine for the treatment of infectious diseases produced by common Pathogens. Medicinal plants might represent an alternative treatment in non-severe cases of infectious diseases. They can also be a possible source for new potent antibiotics to which pathogen strains are not resistant. [5].

MATERIALS AND METHODS

Leaves of *Tagetes erecta* Linn were collected during the month of November from the local area of Burdwan District, West Bengal, India. The plants were dried in shade around 10 days and the crude drug were subjected to pulverizations and passed through sieve no.40. The powder (75g) was packed into a Soxhlet apparatus for extraction by alcoholic solvent (500ml alcohol (95%) at 60° C to 70° C for 24 hour. The extract was dried at 75°C in water bath for hours when a solid mass was obtained. After concentrated preparation, the dried powders extract was stored at 4^{o} C. The yields of the alcoholic extract were found to be 9.5%, was tested for the anti-bacterial activity against various bacterial strains. These bacterial strains were obtained from microbiology Department, ABMRCP, Bangalore, India. Sterile nutrient agar plates were prepared and incubated at 37^{o}Cfor 24h to check for any contamination. Sterile filter paper discs (Whatman No.1) of 6 mm diameter were soaked in alcoholic extract of

different dilution was placed in appropriate position on the surface of the plate with quadrants marked at the back of the petri dishes. Test solutions alcoholic extract prepared using Dimetheyl formomide (DMF) to get the 50, 100, 200, 400 and 600 mg/ml concentration. Standard drug solutions prepared in distilled water Streptomycin sulphate IP. 0. 05% w/v and Procaine penicillin IP.0.05% w/v. (5µg/ml). The *in vitro* antibacterial activity of alcoholic extract of *T.erecta at* 50, 100, 200, 400 and 600 mg/ml. was studied by disc diffusion method [6] against *Escherichia coli, Pseudomonas aeruginosa. Staphylococcus aureus,* and *Staphylococcus albus*. The Petri dishes were incubated at 37^{o}C for 18 h and the diameter of the zone of inhibition measured in mm. The activity of the different extracts was compared with Streptomycin sulphate IP. 0. 05% w/v and Procaine penicillin IP 0.05% w/v.[7] The zone of inhibition was calculated by measuring the minimum dimensions of the zone of no microbial growth around the disc and minimum inhibitory concentrations were determined. (Table 1)

Table 1. Antibacterial activity of alcoholic extract of *T.erecta*

Bacteria	Zone of inhibition (mg/ml)					MIC (mg/ml)	Streptomycin sulphate (5µg/ml)	Procaine Penicillin (5µg/ml)
	50	100	200	400	600			
E.coli	0	10	14	17	26	100	30	10
p. aeruginosa	0	0	0	9	12	400	25	05
Staphylococcus albus	0	0	14	18	22	200	20	35
staphylococcus aureus	0	0	12	17	20	200	20	25

Zone of inhibition (mm) are average of triplicate experiments. Disc diameter = 6 mm

RESULTS AND DISCUSSION

The alcoholic extract of the *T. erecta* plant exhibited moderate to significant antibacterial activity tested on bacterial organisms as compared to the standard Streptomycin sulphate IP. 0. 05% w/v and Procaine penicillin IP 0.05% w/v. The study revealed that alcoholic extract of the crude drug was very much effective against *E.coli* (Gram Negative) and *S. aureus, S.albus* (Gram positive bacteria) and moderately effective against *pseudomonas aeruginosa.* Thus on the basis of the results it is inferred that the alcoholic extract of *T. erecta* plant had *in-vitro* antibacterial. Further Phytochemical studies are needed to identify active constituents responsible for the observed activity.

CONCLUSION

The above findings justify the alcoholic extract of *Tagetes erecta* contain bioactive constituents with anti-bacterial activities, and further support the etanomedical claim of the use of the plant in the management of infection diseases.

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