ANTI-BACTERIAL ACTIVITY OF ETHANOLIC EXTRACT OF *INDONEESIELLA ECHIOIDES* (L) NEES. EVALUATED BY THE FILTER PAPER DISC METHOD

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ABSTRACT

The study was carried out to investigate the antibacterial activity of the ethanolic extracts of *Indoneesiella echioides* (L) Nees. was evaluated by the filter paper disc method. This method is based on the diffusion of an antibiotic from a filter paper disc through the solidified culture media of a Petri dish used for study. The growth of inoculated is inhibited entirely in a circular area "Zone around the filter paper disc containing a solution of antibiotic and the plant extract. The microorganisms used were:

1. Staphylococcus aureus (Gram positive
2. Escherichia coli (Gram negative)

The organisms were maintained on nutrient agar slants. These were tested using nutrient broth. One loop ful of the respective cultures was taken in slants which were maintained below 40°C were taken and inoculated in the broth and incubated at 37°C for 24hrs and were observed for the growth of the organism with naked eye for their turbid nature. It was compared with that of sterile broth. The presence of turbidity indicated growth and suitability of the culture for further work.

Keywords: *Staphylococcus aureus, Escherichia coli*, antibacterial activity.

INTRODUCTION

Herbal medicine represents one of the most important fields of traditional medicine all over the world. To promote the proper use of herbal medicine and to determine their potential as sources for new drugs, it is essential to study medicinal plants, which have folklore reputation in a more intensified way (MAPY, 1996). Over the past 20 years, there has been an increased interest in the investigation of natural materials as sources of new antibacterial agents. Different extracts from traditional medicinal plants have been tested to identify the source of the therapeutic effects (Awadh *et al*., 2001, El-Faky, 1995). As a result some natural products have been approved as new antibacterial drugs, but there is still an urgent need to identify novel substances that are active towards pathogens with high resistance (Barbour, 2004, Recio, 1989, Cragg *et al*., 1997)

Recently, multiple drug resistance has developed due to indiscriminate use of commercial antimicrobial drugs commonly used in the treatment of infectious diseases (Service, 1995) making it a global growing-problem.

MATERIAL AND METHODS

Collection and authentication of plant material

The plants *Indoneesiella echioides* (L) Nees. were collected in the month of January 2006 from Mr. Kumareshan M.Sc., M.Phil. Botanist, Salem. Dr. Marimuthu authentified the plant and the specimen of *Indoneesiella echioides* were kept in the museum of Vinayaka Mission's college of Pharmacy, Salem under reference number 006/col./219

Preparation of stock culture (Ashok Rathan, 2000)

From the cultures, which were maintained on nutrient agar slants, one loopful of the respective organisms were taken and aseptically transferred to 100ml of sterile nutrient broth in a flask, which was shaken thoroughly and incubated at 37°C for 24hrs

Standardization of stock culture

1ml of this seeded broth was then diluted with 9ml of sterile water in a culture tube. This was shaken thoroughly and about 1ml of this suspension was transferred to a second culture tube, which in addition contains 9ml of sterile water. This was shaken thoroughly and thus was further diluted 10 times with sterile water till 10^{10} dilution was obtained (up to 10 culture tubes)

Standardization of the seeded broth was done by inoculating 0.2ml of each dilution on solidified nutrient agar medium by spread plate method. After incubation at 37°C for 48 hours, the number of well-formed colonies on the plates was counted. The seeded broth was then suitably diluted to contain between 10^7–10^8 micro organism c.f.u./ml (colony forming unit per ml). This was designated as the working stock that was used for antibacterial studies

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Procedure (Ashok Rathan, 2000)
Antibacterial activity of alcoholic extract was screened by filter paper disc method.

A previously liquefied medium, appropriate for the test is inoculated with the requisite quantity of the suspension of the microorganism, the suspension was added to the medium at a temperature between 40–50^{o}C and the inoculated medium was poured immediately into dried Petri dishes to occupy a depth of 3 to 4 mm.

The paper disc (No.2Whatmann) was cut downed into small disc (6mm diameter) and sterilized at 180^{o}C/30' m in hot air oven impregnated with the test solution and the standard solution. The dried discs were placed on the surface of the medium.

The dishes were left standing for 1-4 hrs, at room temperature as a period of pre- incubation diffusion to minimize the effects of variation in time between the applications of different solutions. Subsequently incubated for about 18 hrs at about 37^{o}C and the diameter of the circular inhibition zones were measured

RESULTS AND DISCUSSION

The antibacterial activity of the ethanolic extract of whole plant of *Indoneesiella echioides* (L) Nees. was studied against both gram positive (staphylococcus) and Gram negative (*Escherichia coli*) organism at 100mg concentration and the antibacterial activity was compared with that of the standard drug Cefuroxime at 50micro gram concentration.

The results show that the ethanolic extract of whole plant of *Indoneesiella echioides* at 100mg concentrations exhibited a significant antibacterial activity against both Gram positive and negative organisms. It has exhibited a

Table 1: Antibacterial activity of the ethanolic extract of whole plant of *Indoneesiella echioides* (L) Nees

S. No.	Name of the Organism	Diameter of Zone of Inhibition in mm produced by		
		*E.E.I.E.L [1]	Alcohol Control [2]	Cefuroxime (Std) [3]
1.	*Staphylococcus aureus*	12	4	16
2.	*Escherichia coli*	10	2	14

*Ethanolic Extract of Whole Plant of *Indoneesiella echioides* (L) Nees.

Fig. The figure show that the ethanolic extract of *Indoneesiella echioides* at 100mg concentrations exhibited a significant antibacterial activity against both Gram positive and negative organisms. It has exhibited a significant antimicrobial activity comparing than that of standard Cefuroxime.

more significant antimicrobial activity than that of standard Cefuroxime.

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