



## EVALUATION OF THE ANTIBACTERIAL ACTIVITY OF METHANOLIC EXTRACT FROM *CORALLOCORPUS EPIGAEUS* TUBER

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### ABSTRACT

Tuber powder of the *Corellocarpus epigaeus* was investigated for antibacterial activity against the gram positive and gram negative microorganisms. Methanolic extract of the tuber was evaluated against five common isolates which includes *E.Coli*, *Proteus vulgaris*, *Serratia*, *Pseudomonas* and *Micrococcus*. Qualitative analysis of the metholic extract revealed the presence of the flavonoids, alkaloids, phenolic compounds, tannins, proteins, aminoacids, fats and carbohydrates. Methanolic extract of *Corallocaarpus epigaeus* tuber showed better antimicrobial activity on gram negative microorganisms than gram positive organisms. This property was also identified in growth curve studies. Both the studies carried out proved the antibacterial activity of *Corallocaarpus epigaeus*

**KEY WORDS:** *tuber: antibacterial activity: growth curve: flavonoids: alkaloids: methanolic extract.*



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## INTRODUCTION

Plants are the valuable source of natural medicines to sustain human health, especially in the past decade. The use of plant based bioactive compounds for therapeutic purposes has tremendously increased in India. According to WHO, plants are the best source to get a variety of medicines. 80% of Individuals from developed countries use natural medicine from medicinal plants. Therefore, there is a demand for the investigation and identification of the nature, safety and efficiency of natural drugs<sup>1</sup>. The antimicrobial activity of bioactive compounds from medicinal plants will be of great important in therapeutic treatments. There are various studies on these properties to prove the efficacy of the medicinal plants in Worldwide<sup>2,3</sup>. The present study is an attempt to identify the bioactive compounds and analyze its antimicrobial activity of methanolic extract of tuber of *Coralloporus epigaeus*. There are studies which indicates the pharmacological activities of *Coralloporus epigaeus* usually to treat rheumatism, asthma, snake bite, dysentery and syphilis bacterial infections. So, the current study is carried out to prove the antibacterial activity of *Coralloporus epigaeus*.

## MATERIALS AND METHODS

Fresh tuber was collected from the V.Chelladurai from Thirunalveli district. Skin was removed from collected tuber and made into pieces and shade dried. The dried tuber was powdered and soaked in methanol for five days. Then filtered and subjected to soxhlet apparatus for further extraction which results in crude methanolic extract and stored for further use. Qualitative analysis of bioactive compounds: methanolic extract was analysed for the various phytochemical compounds like

flavonoids, alkaloids, phenolic compounds, tannins, proteins, aminoacids, fats and carbohydrates.

### **Antibacterial activity**

Assay of zone of inhibition in various concentrations of methanolic extract of *coralloporus epigaeus* 24hrs fresh broth culture of *E.Coli*, *Proteus vulgaris*, *Serratia*, *Pseudomonas* and *Micrococcus* used to perform an antibacterial activity of methanolic extracts of *Coralloporus epigaeus* tuber by well diffusion method. Muller hinton agar used for antibacterial activity and Crude methanolic extract obtained was made into dry powder, weighed and used. Three different concentrations, 0.5mg/ml, 1mg/ml and 1.5mg/ml dissolved in DMSO and used for antibacterial activity.

### **Determination of growth curve of microorganisms exposed to different concentration of methanolic extract of Coralloporus epigaeus**

To determine the growth curve of various bacterial cells exposed to different concentrations of (0.5, 1mg, 1.5 mg/ml) methanolic extract from *Coralloporus epigaeus* in muller-Hinton broth. Bacterial cell concentration was taken as  $10^5$  CFU/ml. All the broth cultures were incubated in a shaker incubator at 37° C for 24hrs. Growth curve of bacterial cultures were examined in 1 hr interval for 8hrs at 600nm optical density.

## RESULTS

In the current study the phytochemical analysis of methanolic extract revealed the presence of the secondary metabolites like flavonoids, alkaloids, phenolic compounds, tannins, proteins, aminoacids, fats and carbohydrates (table 1).

**Table 1**  
**Qualitative phytochemical analysis of methanolic extract of *Corallocarpus epigaeus***

Phytochemical	Results observed
Alkaloids	+++
Flavonoids	+++
Phenols	+++
Glycosides	+++
fats	+++
Proteins	+++
Carbohydrates	+++
Tannins	-

Antibacterial activity of methanolic extract was showed in the table 2 and graphs 1 shows study on the growth curves of all the bacteria tested for antibacterial activity. The current study on a methanolic extract of *Corallocarpus*

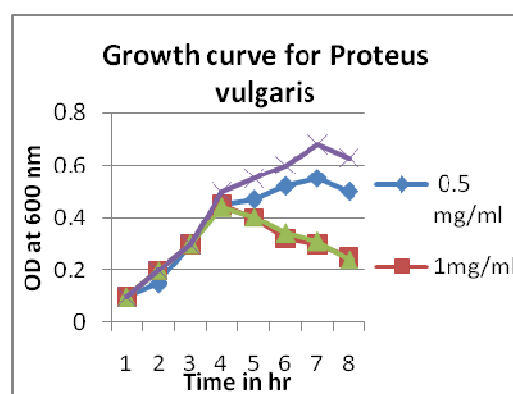
*epigaeus* showed a better inhibition on the gram negative organisms than gram positive organisms. There was a better difference in the growth curve also when compared with the gram negative and positive organisms (Fig.1).

**Table2**  
**Showing the effect of zone of inhibition for methanolic extract**

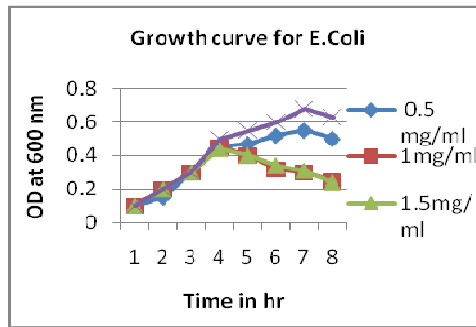
Organism	Zone of inhibition in mm		
	0.5mg/ml	1mg/ml	1.5mg/ml
Proteus vulgaris	13.3	14	14
E.Coli	11	11.3	12.3
Serratia	7	7.2	9
Micrococcus	6	7.3	9.1
Pseudomonas	6.2	7	7.6

**Figure1**  
**Growth curves of A) *Proteus vulgaris*, B) *E. Coli*, C) *Serratia*, D) *Micrococcus* and E) *pseudomonas***

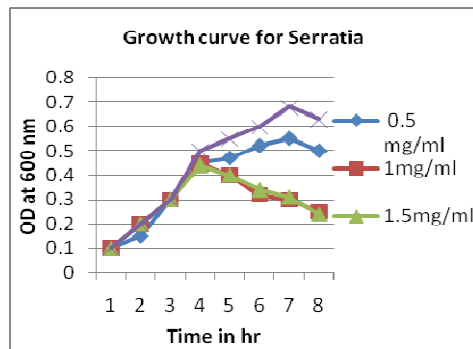
**A**



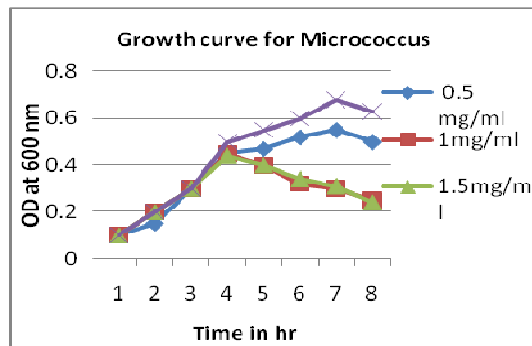
**B**



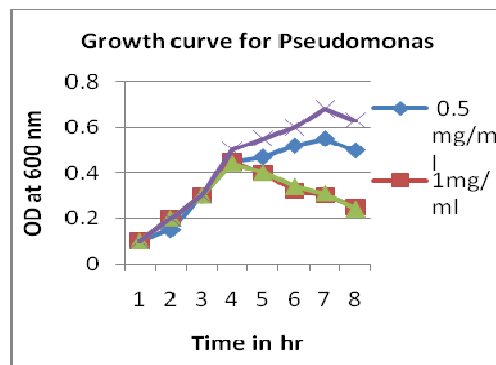
**C**



**D**



**E**



## DISCUSSION

The antimicrobial activity of methanolic extract of *C.epigaeus* tuber extracts tested against gram positive and gram negative microorganism. In this study the methanolic extract of tuber showed a higher inhibitory effect on gram negative organisms than gram positive. This antimicrobial activity is due to the presence of the various phytochemicals which are depicted in the table. 1. Methanol has a stronger extraction capability this could be the reason for the various types of bioactive compounds extraction<sup>4</sup>. There are studies saying that gram negative bacteria are resistant than gram positive bacteria<sup>5</sup>. In General, gram negative bacteria are more sensitive than gram

positive bacteria<sup>4</sup>. Methanolic extract of *C.epigaeus* reveals the antibacterial property and indicates that the phytochemicals like flavonoids, phenolics, alkaloid substances may be responsible for this antimicrobial activity. Thus current evaluation of antimicrobial activity ascertains the value of the natural plants as antimicrobial compound development. This may also help to isolate new antibiotic substances that control the infections from microorganisms.

## CONCLUSION

The current study concludes that *corellocorpus epigaeus* possess good antimicrobial activity, hence can be used as an antimicrobial agent.

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