

STUDY OF INHIBITORY EFFECT OF *EUCALYPTUS* FRUIT EXTRACT AGAINST DIFFERENT BACTERIA

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ABSTRACT

The present paper describes the *in vitro* antibacterial activity of *Eucalyptus* fruit on the basis of inhibition zone. The aqueous, methanol and ether extract of fruit was used to test its antibacterial activity by disk diffusion method against *E.Coli*, *S. Typhi* and *L. acidophilus*. Result obtained showed positive antibacterial activity of Aqueous and Ether extract against *E.Coli*, *S. Typhi* and *L. acidophilus*. While, Methanol extract showed the positive activities against only *E. coli*.

Keyword:- *E.Coli*, *S. Typhi*, *L. acidophilus*, *Eucalyptus* fruit and antibacterial activity

INTRODUCTION

Human has for centuries used many species to treat several diseases.² According to Farombi³ medicinal plants have continuously to play a dominant role in the maintenance of human health since ancient time. The present study was undertaken to study the effect of fruit extract of *Eucalyptus* on the micro organisms like *E.Coli*, *S. Typhi* and *L. acidophilus*.

MATERIAL AND METHODS

Material collection

The *Eucalyptus* fruit was collected from the campus of Govt. Holkar Science College, Indore in between the months of January to March, 2009. The fruit was washed with distilled water, than dried under the incubator at 37°C temperature for 2-3 days until it becomes totally dried.

Extract preparation

The extracts were prepared in three solvent i.e. Aqueous, Methanol and Ether. The 10 gram powder of fruit was dissolved in 100 ml of different solvent and heated until it becomes nearly half i.e. approximately 50%. It was then filtered in a test tube with the help of Wateman Filter paper No. 1. Filtered solution was centrifuged at 2000

rpm for two minutes. The supernatant which contain clear fresh extract of fruit of *Eucalyptus* was used for experimental work.

Media preparation

The Mueller Hinton media was used to test Micro organism susceptibility.

Media Composition - (Typical, g/l)

- Meat infusion – 2.0
- Casein Hydrolysate – 17.5
- Starch – 1.5
- Agar – agar 17.0

Media Preparation Method

38gm of Mueller Hinton dehydrated media was prepared in 1000 ml of purified flittered distilled water. It was then heated with frequent agitation and boil for one minute and sterilize at 121°C (15 lbs of pressure) for 15 minute. After that it was cool to 45° to 50°C, mixed gently and finally poured into previously sterile petriplates.

Disk Preparation

E-270 (diameter 12.5) paper was cut into a shape of disk, and then sterilized into incubator for over night. These disk were placed into

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prepared extract of experimental fruit for 20 minutes, then removed with the help of a sterile forcep and placed into a separate sterile petriplates, allow drying in the laminar air flow.

Inoculums Preparation

From a stocked pure bacterial sample, 4 to 5 colonies were transfer with a wire loop to 10ml of distilled water in test tube.

Inoculation procedure

Disk diffusion method was used to test the antibacterial activity of *Eucalyptus* fruit extract against the experimental bacteria.

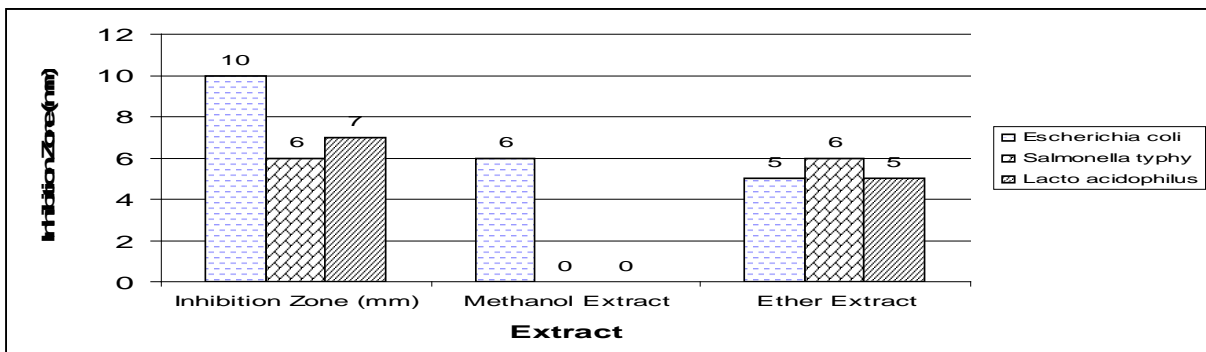
RESULT AND OBSERVATION

Antibacterial activity of *Eucalyptus* fruit extract on different bacteria was given in table 1 and presented with fig.1.

Table-1 Antibacterial activity of *Eucalyptus* fruit extract on different bacteria

S.No.	Organism	Inhibition Zone (Radius)		
		Aqueous Extract (10%) (10gm/100ml)	Methanol Extract (10%) (10gm/100ml)	Ether Extract (10%) (10gm/100ml)
1	<i>Escherichia coli</i>	10 mm	6 mm	5 mm
2	<i>Salmonella typhy</i>	6 mm	No Result	6 mm
3	<i>Lacto acidophilus</i>	7 mm	No Result	5 mm

Fig.-1 antibacterial activity of *Eucalyptus* fruit extract on different bacteria



The aqueous extract of fruit was effective against all the 3 bacteria. It was most effective in treatment of *E. coli* followed by *Lacto acidophilus* than *Slamonella typhy*. The sized based decreasing order of inhibition zone was observed as-

E. coli* > *Lacto acidophilus* > *Salmonella typhy

The methanol extract gave zone of inhibition only with *E. coli*. However, there was no zone of inhibition with *Salmonella typhy* and *Lacto acidophilus*.

The ether extract gave best result with *Salmonella typhy* then both *E. coli* and *Lacto acidophilus*. The diameter of zone of inhibition was similar in *E. coli* and *Lacto acidophilus*. The sized based decreasing order of inhibition zone was observed as-

Salmonella typhy* > *E. coli* = *Lacto acidophilus

On comparison of different extract, the *E. coli* gave maximum inhibition zone in aqueous extract followed by methanol extract than ether extract. The sized based decreasing order of zone of inhibition was observed as-

Aqueous* > *Methanol* > *Ether

The *Salmonella typhy* was found to exhibit equal inhibition zone to aqueous and ether extract. The methanol extract was ineffective against the *Salmonella typhy*.

The *Lacto acidophilus* gave best result in aqueous extract followed by ether extract. However, there was no inhibition zone in

methanol extract. The sized based decreasing order of inhibition zone was observed as-

Aqueous > Ether

Overall result for fruit extract showed that for *E. coli*, aqueous extract was most effective. For *Salmonella typhi*, both the aqueous and ether extract gave same result. However, for *Lacto acidophilus*, aqueous extract was most effective.

DISCUSSION

Kumar *et al.*,⁴ studied antibacterial activity of *Abutilon indicum* and described maximum activity with ethanolic extract followed by petroleum ether and aqueous. Ahmad and Ahmad¹ studied antibacterial activity of ethanolic extract to 22 traditionally used Indian medicinal plants against 7 bacteria including *S. typhi* and *E. Coli* and found 10 plants with antibacterial activity. Naqvi *et al.*,⁵ found aqueous extract of plant as antibacterial including *E. Coli* and *S. typhi*. In the present investigation too aqueous extract of fruit of *Eucalyptus* was found most effective against *E. Coli* and *L. acidophilus*, while against *S. typhi* ether extract of fruit of same plant was most effective. Interesting finding in the present study was that methanol extract of fruit of studied plant showed no response against *S. typhi* and *L. acidophilus*.

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