



## EVALUATION OF ANTIMICROBIAL EFFECT OF EXTRACT OF A MEDICINAL PLANT- *MURRAYA KOENIGII* (CURRY LEAVES) ON BACTERIAL ISOLATES

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### ABSTRACT

#### Background

Green leaf vegetables are used in India. Curry leaves are one of the plants which are used as a vegetable native to India. Curry leaves scientific name is *Murraya koenigii*. It has numerous health benefits. They are used as natural flavoring agents which give a flavor to food and have medicinal properties. They have antimicrobial, antioxidant, anti-inflammatory, anti-diabetic, hepato-protective, anti-carcinogenic properties. Methods:- The curry leaves were collected from Ghaziabad, India. The curry leaves were cleaned and shade dried at room temperature. The curry leaves powder was prepared in ethanol and chloroform extracts to test against some microorganisms with the help of the disc diffusion method. The inhibition zones around the disc were measured with the help of a scale in millimeter (mm). Result:- The curry leaves extracts showed antimicrobial activity against *E.coli* and *Bacillus Subtilis* in both ethanol and chloroform extracts.

Conclusion:- *Murraya koenigii* extracts effectively act against some microorganisms such as *E.coli* and *Bacillus Subtilis*. It may have the ability to play an important role against some microorganisms. The leaf has bioactive potential and can be used as an alternative natural therapy for tested microbes. A 10 mm zone of inhibition of chloroform extract was observed against *Bacillus* as compared to 7 mm of zone of inhibition against *E.coli*. It is a useful resource in the clinical medicine and food industry. Further study could be done, on the basis of results obtained. Thus, *Murraya koenigii* could be effective against some bacterial infections and it may be considered as an alternative to antibiotics.

**KEYWORDS:-** Antibiotics, Pathogenic, Cytotoxic activity, Phagocytic activity, Parasitic, Bronchitis.

### 1 INTRODUCTION

*Murraya koenigii* (curry leaves) family: *Rutaceae*, is a small tree, the native place is India. It is used in the preparation of pickle, curry powder, sausages, chutney and seasonings. (1) Curry leaves (*Murraya koenigii*) are leaf-spices used in all our country. Its small quantity is used to flavor a food due to its distinct aroma. Because volatile oil is present in the leaf. It improves the digestion ability. It has a bitter and acidic taste. The flavor and other quality retain even after drying. In India, it is used as traditional food. Also used in Unani and ayurvedic treatment. (2) It has antimicrobial, anti-oxidant properties. The *Murraya koenigii* contains some molecules like carbohydrates, proteins, minerals, fiber, vitamin A, vitamin C, nicotinic acid, carotene, oxalic acid, calcium, alkaloids, tetrahydrocannabinol, cyclomahanimbine, carbazole alkaloids etc. (3) The use of antibiotics is increasing in the world, which are the reason for the development of multi-drug resistance against pathogenic strains. Thus for alternative the herbal and natural medicines may be used as drug because it has fewer side-effects as compared to antibiotics. (4) Plants are used as folk medicines for some infectious diseases such as microbial disease, parasitic disease, diarrhea, urinary tract infections, bronchitis, cutaneous abscesses. (5)

*Murraya koenigii* (curry leaves) have some important health benefits and has a natural flavor agent. It has anti-inflammatory, antifungal, antimicrobial, anticarcinogenic potential. The root and stem bark of *Murraya koenigii* consist of triterpene and carbazole alkaloids. (6)

## 2 METHODOLOGY

In the present study, a plant (*Murraya koenigii*) was collected from Ghaziabad, Uttar Pradesh. the (*Murraya koenigii*) curry leaves were cleaned with the help of distilled water and shade dried at room temperature for 2 days and converted into powder with the help of an electric blender.

### ETHANOL EXTRACTION

The extraction of ethanol was made by dissolving the forty grams (40gms) of *Murraya koenigii* leaves powder to 120 ml of 100% ethanol solution (1:3) . It was covered with foil paper kept at room temperature for 24 hours, then filtered supernatant was throw off, and the solvent (liquid part ) was evaporated with the help of a water bath. to make the final volume of the curry leaf ethanol extract for the experiment.

### CHLOROFORM EXTRACTION

The chloroform extraction was made by dissolving the forty grams (40gms) of *Murraya koenigii* leaves powder to 120 ml of 100% chloroform solution (1:3) covered with foil paper kept at room temperature for 24 hours. then filtered the solution and rest supernatant was throw off, and the liquid(solvent) was evaporated with the help of a water bath,.the final volume of the curry leaf chloroform extract for the experiment.

### DISC DIFFUSION TEST

The disc diffusion method used for an antimicrobial sensitivity test, in which the ethanolic and chloroform extracts of the *Murraya koenigii* (curry leaves) samples evaluated by this method. The paper disc made up of whatman paper, was soaked in ethanolic and chloroform solution with the following concentrations: 0.05g(50mg/ml), 0.1g(100mg/ml), 0.2g(200mg/ml), 0.4g(400mg/ml), 0.6g(600mg/ml) of leaves extraction, the prepared ethanolic and chloroform discs made from filter paper incubated at 37°C for 24 hours. (7).

NAM (Nutrient agar media) was prepared. The ethanolic and chloroform disc which were been incubated for 24 hrs at room temperature, the filter paper disc were placed these cultures, and the plates incubated at 37°C for 24 hours. The zone of inhibition was measured with the help of scale in millimeter(mm).

## 3 RESULT

The antibacterial effect of *Murraya koenigii* (curry leaves) extracts tested against some microbes such as *E.coli.*, *Bacillus*. As shown in table 1.1, in which ethanolic and chloroform extracts results were shown on the basis of zone of inhibition.

Chloroform extracts concentration (50mg/ml, 100mg/ml, 200mg/ml, 400mg/ml, 600mg/ml). ethanol extract concentration (50mg/ml, 100mg/ml, 200 mg/ml, 400 mg/ml).

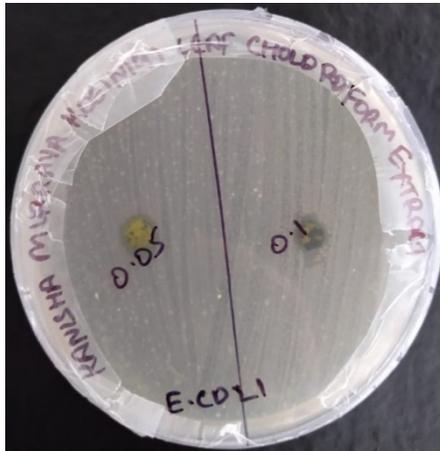
Chloroform extract was more effective with *Bacillus* in produce a maximum no. of 10 mm inhibition zone as compared to 7mm inhibition zone of *E.coli*. in higher concentration.

Table 1.1 Evaluation of antimicrobial effect of extract of curry leaves (*Murraya koenigii*). The inhibition zone measured in milimeteris given below:-

MURRAYA KOENIGII (CURRY LEAVES)					
CHLOROFORM			ETHANOL		
CONCENTRATION	<i>E.coli</i>	<i>BACILLUS</i>	CONCENTRATION	<i>E.coli</i>	<i>BACILLUS</i>
0.05	4mm	3.5mm	0.05	3mm	3mm
0.1	3mm	3.5mm	0.1	3mm	3mm
0.2	3mm	3mm	0.2	3mm	3mm
0.4	5mm	3mm	0.4	3mm	3mm
0.6	7mm	10mm	-	-	-

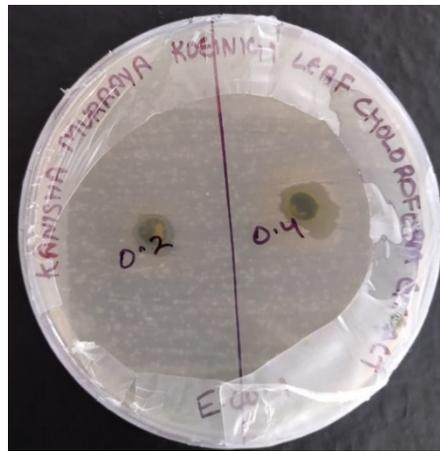
### (A) Chloroform concentration

#### I. *E.coli*.strain



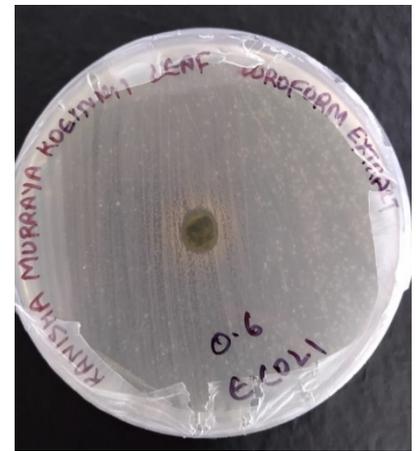
50mg/ml and 100mg/ml

(a)



200mg/ml and 400mg/ml

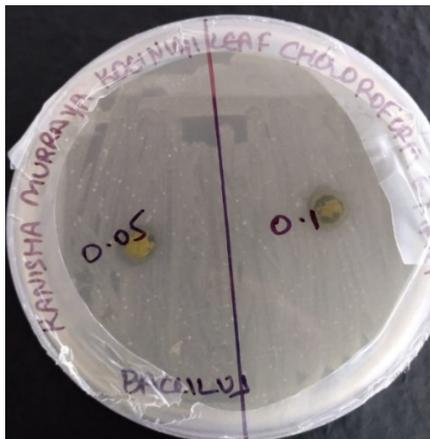
(b)



600 mg/ml

(c)

## II. Bacillus Subtilis strain



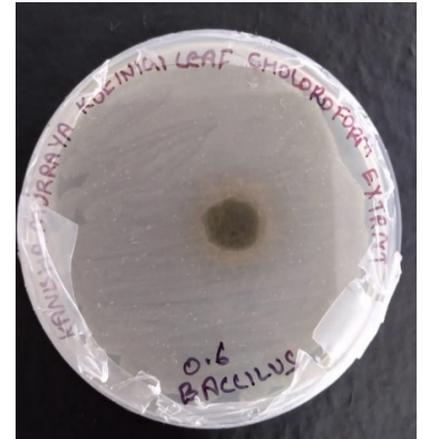
50mg/ml and 100mg/ml

(c)



200mg/ml and 400mg/ml

(d)



600 mg/ml

(e)

## (B) Ethanol concentration

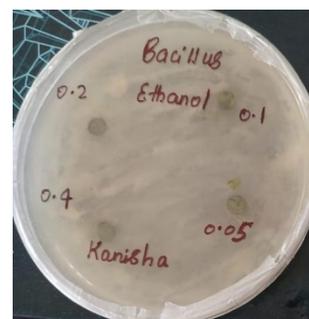
### I. E. coli



50mg/ml, 100mg/ml, 200mg/ml, 400mg/ml

(a)

### II. Bacillus



50mg/ml, 100mg/ml, 200mg/ml, 400mg/ml

(b)

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## 4 CONCLUSION

The ethanol and chloroform extracts of curry leaves are found to be effective against tested bacterial strains *E.coli* and *Bacillus*. The leaf has bioactive potential and may be used as an alternative natural therapy for tested microbes. Curry leaves show natural benefits, which we add to the everyday meal. It helps to prevent against bacteria. It is a useful resource in the clinical medicine and food industry. Further study should be carry out on the basis of results.

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## 5 DISCUSSION

*E.coli* and *bacillus* are taken for this study. chloroform extraction is more effective than ethanol extraction. In which the *Murraya koenigii* of ethanol extract and chloroform extracts showed effectiveness against e.coli and bacillus. Table- 1.1 Shows the concentration result against microorganisms. the present investigation shows that the extraction of curry leaves may be used as an antibiotic.

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