

## ANTIMICROBIAL ACTIVITY OF *CORCHORUS OLITORIUS. L*

D.Ramadevi\* and S.Ganapaty

Department of Pharmacognosy, College of Pharmaceutical Sciences,  
Andhra University, Visakhapatnam, A.P.

### Summary

The study was premediated to evaluate a rare specie of *Corchorus olitorius* for their antibacterial and antifungal activity.

The root and capsule extracts of *Corchorus* species were tested for antibacterial and antifungal activity, the results revealed that root and capsule extracts of *Corchorus olitorius* highest antibacterial activity.

**Key Words:** Antimicrobial, *Corchorus olitorius*.

[Email. ramapathi.addepalli@gmail.com](mailto:ramapathi.addepalli@gmail.com)

### Introduction

*Corchorus* (Family: *Tiliaceae*) is a genus of annual herbs. Nearly 40 species are known to occur in nature and distributed in tropics of both the hemisphere<sup>1</sup>

The roots and capsules of *Corchorus olitorius* are antibacterial, demulcent, bitter tonic, laxative, carminative, refrigerant, febrifuge, diuretic, useful in chronic cystitis, gonorrhoea and cardiogenic<sup>2-6</sup>. All most all plants in the genus possess interesting biological properties.

### Materials and Methods

#### Collection and Preparation of Plants

The roots and capsules of *Corchorus olitorius* were collected from Warangal, Andhra Pradesh, India. They were identified by Prof. M. Venkaiah, Taxonomist, Andhra University, Visakhapatnam, Andhra Pradesh, India.

#### Extraction and Isolation

The (roots(1kg)capsules(1kg)) were air dried, coarsely powdered and extracted with petroleum ether, chloroform and methanol and concentrated under vacuum to a small residue (root extract-9g,capsule extract-10g)

**Antimicrobial activity**

The root and capsule extracts of *Corchorus olitorius* were used for antimicrobial activity. For testing 6 Gram(+)bacteria *Bacillus subtilis*, *Streptococcus mutans*, *Micrococcus lutues*, *Lactobacillus acidophilus*, *Staphylococcus aureus*, *Streptococcus anginosus* and 6 Gram(-) bacteria, *Erwinia*, *Enterobacter aerogens*, *Proteus vulgaris*, *Klebsiella pneumoniae*, *Pseudomonas aeroginosa*, *Escherichia coli* were used. The fungi employed in the antifungal activity were *Rhizoctonia solanic*, *Mucor* and *Candida albicans* using Agar diffusion method. Chloramphenicol (1mg/ml) and fluconazole (10mg/ml)as standards.

**Results and discussion**

The results revealed that the Capasule and root extracts of *Corchorus olitorius* had the highest antibacterial activity. The growth of *Bacillus subtilis*, *Pseudomonas aerogenosa*, *Streptococcus mutans* were inhibited by the all tested extracts. *Streptococcus aeroginosa*, *E.coli*, *Lactobacillus acidophillus*, *Micrococcus luteus*, *Streptococcus anginosus*, *Staphylococcus aureus*, *Klebsiella pneumonia* are resistant to the Capsule and root extracts of *Corchorus olitorius*. *Erwinia*, *Enterobacter aerogens* and *proteus vulgaris* are moderate resistant bacteria.

Antifungal activity results demonstrated that all the extracts showed positive results. *Candida albicans* has strong activity against *Mucor* and *Rhizoctonia solanic*.

**Antibacterial activity of *Corchorus olitorius* capsules against (Gram +ve)**

Organisms	Corchorus olitorius capsules petroleum ether extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concetrations
<i>Bacillus Subtilis</i>	10	13	13	50	8
<i>Streptococcus mutans</i>	10	12	13	35	8
<i>Micrococcus lutues</i>	11	12	12	30	8
<i>Lactobacillus acidophilus</i>	10	12	12	30	8
<i>Staphylococcus aureus</i>	10	11	11	27	8
<i>Streptococcus anginosus</i>	10	11	12	34	8

**Antibacterial activity of *Corchorus olitorius* capsules against (Gram -ve)**

Organisms	Corchorus olitorius capsules petroleum ether extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Erwinia</i>	12	13	-	15	8
<i>Enterobacter aerogens</i>	12	13	-	25	8
<i>Proteus vulgaris</i>	12	15	-	29	8
<i>Klebsiella pneumoniae</i>	-	-	10	30	8
<i>Pseudomonas aeroginosa</i>	10	12	15	45	8
<i>Escherichia coli</i>	12	14	15	20	8

**Antifungal activity of *Corchorus olitorius* capsules**

Organisma	<i>Corchorus olitorius</i> capsules petroleum ether extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Rhizoctonia solanic</i>	11	12	13	17	8
<i>Candida albicans</i>	11	11	12	18	8
<i>Mucor</i>	10	10	11	14	8

**Antibacterial activity of *Corchorus olitorius* capsules against (Gram + ve)**

Organisms	<i>Corchorus olitorius</i> capsules chloroform extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Bacillus Subtilis</i>	14	16	18	50	9
<i>Streptococcus mutans</i>	12	13	14	35	10
<i>Micrococcus lutues</i>	10	12	13	30	10
<i>Lactobacillus acidophilus</i>	10	11	11	30	12
<i>Staphylococcus aureus</i>	10	10	11	27	9
<i>Streptococcus anginosus</i>	10	10	11	34	9

**Antibacterial activity of *Corchorus olitorius* capsules against (Gram - ve)**

Organisms	<i>Corchorus olitorius</i> capsules chloroform extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Erwinia</i>	11	13	-	15	8
<i>Enterobacter aerogens</i>	12	13	-	25	10
<i>Proteus vulgaris</i>	11	12	-	29	10
<i>Klebsiella pneumoniae</i>	8	8	10	30	12
<i>Pseudomonas aeroginosa</i>	13	17	19	45	14
<i>Escherichia coli</i>	-	-	-	20	10

**Antifungal activity of *Corchorus olitorius* capsules**

Organisms	<i>Corchorus olitorius</i> capsules chloroform extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Rhizoctonia solanic</i>	12	13	13	17	8
<i>Candida albicans</i>	12	11	13	15	8
<i>Mucor</i>	10	11	10	14	9

**Antibacterial activity of *Corchorus olitorius* capsules against (Gram + ve)**

Organisms	<i>Corchorus olitorius</i> capsules methanolic extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Bacillus Subtilis</i>	12	15	15	50	10
<i>Streptococcus mutans</i>	10	11	11	35	11
<i>Micrococcus lutues</i>	10	-	-	30	12
<i>Lactobacillus acidophilus</i>	-	-	-	30	12
<i>Staphylococcus aureus</i>	8	9	9	27	11
<i>Streptococcus anginosus</i>	10	11	11	34	10

**Antibacterial activity of *Corchorus olitorius* capsules against (Gram - ve)**

Organisms	<i>Corchorus olitorius</i> capsules methanolic extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Erwinia</i>	10	12	-	15	9
<i>Enterobacter aerogens</i>	12	13	-	25	8
<i>Proteus vulgaris</i>	12	13	-	29	8
<i>Klebsiella pneumoniae</i>	8	10	10	30	10
<i>Escherichia coli</i>	-	-	-	20	10

**Antifungal activity of *Corchorus olitorius* capsules**

Organisms	<i>Corchorus olitorius</i> capsules methanolic ether extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Rhizoctonia solanic</i>	11	11	11	14	10
<i>Candida albicans</i>	11	12	13	18	12
<i>Mucor</i>	11	10	12	17	12

**Antibacterial activity of *Corchorus olitorius* roots against (Gram +ve)**

Organisms	<i>Corchorus olitorius</i> roots chloroform extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Bacillus Subtilis</i>	13	16	16	50	9
<i>Streptococcus mutans</i>	12	13	13	35	10
<i>Micrococcus lutues</i>	10	11	12	30	10
<i>Lactobacillus acidophilus</i>	8	9	10	30	10
<i>Staphylococcus aureus</i>	12	14	14	27	9
<i>Streptococcus anginosus</i>	11	12	14	34	9

**Antibacterial activity of *Corchorus olitorius* roots against (Gram -ve)**

Organisms	<i>Corchorus olitorius</i> roots chloroform extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Erwinia</i>	12	12	15	15	8
<i>Enterobacter aerogens</i>	10	11	-	25	10
<i>Proteus vulgaris</i>	12	13	-	29	10
<i>Klebsiella pneumoniae</i>	9	11	11	30	12
<i>Pseudomonas aeroginosa</i>	13	15	16	45	14
<i>Escherichia coli</i>	11	13	17	20	10

**Antifungal activity of *Corchorus olitorius* roots**

Organisms	<i>Corchorus olitorius</i> roots Chloroform extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Rhizoctonia solanic</i>	10	9	10	11	10
<i>Candida albicans</i>	10	11	12	18	8
<i>Mucor</i>	9	10	12	14	9

**Antibacterial activity of *Corchorus olitorius* roots against (Gram +ve)**

Organisms	<i>Corchorus olitorius</i> roots methanolic extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Bacillus Subtilis</i>	16	19	19	50	10
<i>Streptococcus mutans</i>	13	14	16	35	11
<i>Micrococcus lutues</i>	10	12	12	30	12
<i>Lactobacillus acidophilus</i>	8	10	10	30	12
<i>Staphylococcus aureus</i>	11	13	14	27	11
<i>Streptococcus anginosus</i>	10	12	12	34	10

**Antibacterial activity of *Corchorus olitorius* roots against (Gram -ve)**

Organisms	<i>Corchorus olitorius</i> roots methanolic extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Erwinia</i>	13	14	-	15	8
<i>Enterobacter aerogens</i>	11	11	-	25	11
<i>Proteus vulgaris</i>	10	13	-	29	10
<i>Klebsiella pneumoniae</i>	-	-	-	30	10
<i>Pseudomonas aeroginosa</i>	12	15	17	45	10
<i>Escherichia coli</i>	12	14	15	20	11

**Antifungal activity of *Corchorus olitorius* roots Methanolic extract**

Oranisms	<i>Corchorus olitorius</i> roots methanolic extract				
	100 mg/ml	300 mg/ml	500 mg/ml	Standards	Concentrations
<i>Rhizoctonia solanic</i>	12	13	14	17	12
<i>Candida albicans</i>	11	12	13	18	12
<i>Mucor</i>	12	13	15	12	11

**Acknowledgement**

One of the authors(D. Ramadevi) in grateful to UGC, New Delhi for the awarding of JRF(NO.U2/RGNF/(SC/ST)2008-2009.

**References**

- 1.The Wealth of India, Raw Materials, vol 2(National Institute of Science Communication and information Resources, CSIR, New Delhi) 1950:326-346.
- 2.Chopra R N. Chopra I C,Handa K L& Kapoor C D, Indigenous drugs of India (UN Dhar & Sons, Kolkatta)1958: 501-502.
3. Satyavati GV,Raina M K & Sharma M, Medicinal Plants of India, Vol I (ICMR, New Delhi) 1976:278-281.
- 4.Cowan MM, plants products as Antimicrobial agents. Clinical Microbiology Reviews. 1999:12:564-582.
5. Guvan K, Yucel E, Centintas F.Antimicrobial activities of Fruits of Craptaegus and pyrus species. Pharmaceutical biology. 2006 : 44 (2) : 79-83.
- 6.Burt S. essential oils : their antibacterial properties and potential applications in foods a review. International journal of food microbiology. 2004:94:223-253.

Dt:14-9-2011