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ETHANOBOTANICAL CHARACTERIZATION OF *COCCINIA INDICA* AGAINST URINARY TRACT INFECTION

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ABSTRACT

Medicinal plants are the backbone of traditional medicine in the last few decades. Several screening studies have been carried out in different parts of the world. This has been brought about by the acknowledgement of the value of medicinal plant as potential source of new compounds of therapeutic value and as a source of new compounds in drug. Most of the several traditional medicines in existence are derived from several medicinal plants which prevent detrimental effects to a human being. *Coccinia indica* has been widely utilised as a home remedy for several ailments. The leaf of *coccinia indi*ca has various pharmacological activities such as antibiotics, antidiabetics, anticancer, antimalarial. Coccinia indica serves to be a dynamic medicine in the treatment of urinary tract infection. Most common bacteria that infects urinary tract are E. coli, Klebsiella pneumonia, Pseudomonas, Proteus Vulgaris. Antibiotic drugs have a greater capacity to destroy bacteria or suppress their growth. MIC was performed to determine the concentration of the extract that is lethal to the target bacteria by broth dilution method Phytochemicals are secondary metabolites that extensively used in therapeutic purpose. Phytochemical such as tannin, saponin, protein, alkaloids, flavonoids and etc are extracted, screened & identified in the plant using three different solvents like DMSO, Ethanol, and Propanol. Among the three solvents, the ethanol extract has a greater activity in the estimation of medicinal compounds which tends to prepare the desired medicine.

KEYWORDS: Phytochemical screening, *coccinia indica*, urinary tract infection, MIC, secondary metabolites, Antimicrobial activity.

1. INTRODUCTION

Coccinia indica plant it belongs to the family of Cucurbitaceae. It's also known as 'kundru' in India.[1-2] The beneficial medicinal effects of plant materials typically result from the combination of secondary products present in the plant. The whole plant is traditionally used for the various medicinal purpose. This plant is growing throughout the world and it is easily available. This plant is widely used in traditional medicine like Unani, Ayurveda, and Siddha. In this modern medicine natural drugs has played a vital role in therapeutic purpose in various medicine for treatment to a number of ailments such as diseases including biliary disease, skin disease, urinary tract infection, respiratory infection, diabetes, wounds, inflammation, fever, asthma and cough.[3-4] The whole plant of *Coccinia indica* having pharmacological activities like analgesic, antipyretic, anti-inflammatory, antimicrobial, antiulcer, antidiabetic and so many activities.[5]

The newer work on medicinal plants is mostly the rediscovery of traditional effects at cellular and molecular levels. And 3.4 billion People in the developing world depend on plant-based traditional medicine. This represents about 88% of the world's inhabitants, who rely mainly on traditional medicine for their primary healthcare. According to World Health Organization, a medicinal plant is any plant is used for therapeutic purpose. An increasing interest in herbal remedies has been observed in several parts of the world and many of the herbal remedies have been incorporated into orthodox medicinal plant practice. Some of them are also used for the prophylactic purpose.[6] Ethnobotany is recognised as an effective way to discover further medicines, the plant has the ability produced chemical that protect itself but recent research demonstrates that many phytochemicals studies against human disease.[7-8] Fabricant DS and Farnsworth NR has been reported that 122 compounds used in modern medicine which is driven from an ethnomedical plant source.[9] The parts of the *Coccinia indica* plant have the biological activity such as antidiabetic, antifungal and antibacterial.[10]

This medicinal herb has so many numbers of secondary metabolites like alkaloids, glycosides, saponin, resins, lactones and oils.[11] This process we have identified tannin, saponin, protein, alkaloids, flavonoids, aminoacids and etc compound present in the plant.

Flavonoids, tannins they are phenolic compounds, which are responsible for the free radical scavenging effect observed or it acts as a primary oxidant.[12] Urinary tract infection is a bacterial infection caused by most of all bacteria. It is one of the most common bacterial diseases that affects mostly in human. It affects the bladder, cystitis, and etc. Mostly this

infection affects the new born baby and women. It can spread to the kidney and also it will cause kidney failure and renal failure. The common bacteria that causes infection are E.coli, klebsiella pneumonia, pseudomonas, proteus vulgaris and enterobacteria. This infection can be identified by physical examination like odour, colour, turbidity, density, Glucose, ketone. The bacteria that causes infection in urine is called bacteriuria. In this study, the antimicrobial activity was tested using 12 solvents of *Coccinia indica* and phytochemical screening methods and also the MIC was carried out.

2. MATERIALS AND METHODS

2.1. Chosen plant and extract preparation

The fresh leafs of coccinia indica plant sample was collected in the month of December (2016) from at Manappathur, Ariyalur (Dt), Tamilnadu, India. The plant was authenticated in St. Joseph College, Department of botany, and Tiruchirappalli. About 10 g of powdered leaves of (*Coccinia indica*) was weighed and extracted with different solvents chloroform, ethanol, ethyl acetate, butanol, DMSO, propanol, benzene, dichloromethane, hexane, cyclohexane, pyridine and acetone based on polarity and solubility using shaker method filtered& stored at 4˚C.

2.2. Antimicrobial activity testing -Disc diffusion assay (1966)

The different bacterial strain was tested against the plant extract for determining the antimicrobial activity using disc diffusion method. The diameter of the zone was calculated and interpreted.

2.3. Determination of Minimal Inhibitory Concentration (MIC)

The potential dosage of Ethanol, DMSO, and Propanol controlling the bacterial isolates was determining by MIC. The lethal dosage for the chosen solvents were screened against UTI isolates by broth dilution method.

2.4. Phytochemical screening

Phyto-components was screened for, results revealed the presence of compounds steroids, saponin, leucoanthocyanin, tannin, xanthoproteins, phytosterols, emodins, amino acids, etc. by positive reaction with test reagents. Different qualitative chemical tests can be performed for establishing profile of methanol and aqueous extract for its chemical composition. The following tests were performed on *coccinia indica ethanol* extracts to detect various phytoconstituents present in them.

3. RESULTS AND DISCUSSION

Invitro antibacterial assay was performed to access the efficiency of *Coccinia indica* against the growth of urinary tract pathogens. As a result the maximum zone of inhibition was found in Ethanol extract of the leaf against *E.coli, Klebsiella pneumonia* Ethanol-13m, 19mm in *Coccinia indica*. The activity was calculated by measuring the lethal dosage for the ethanolic extract of value observed was 3-50µg/ml of ethanol extract of *Coccinia indica* is found to be effective in inhibiting the growth of all the test pathogens. As a result of the present work clearly, indicates the ethanol extract of *Coccinia indica* effectively controls the growth of bacteria and could possibly act as a bacteriocidal agent**.** Among the three solvent phytochemical analysis ethanol extract have contained high phytochemical compound compare with other 2 solvent extraction (DMSO, phenol). The ethanol extract was more effective against the urinary tract infection. And most important component present in extract like steroids, saponin, leucoanthocyanin, tannin, oils resins, phytosterols, emodins, amino acids, etc. The ethanol showed predominant inhibition against the *e.coli, klebseilla pneumonia* organisms.

Table 1: Preliminary work in *coccinia indica* plant leaf against Urinary Tract Infection.

Antibacterial Activity				
S. no.	**Solvents**	**ZOI (mm)**		
		E.coli		***Klebsiella pneumonia***
1	Propanol	13		10
2	Benzene	9		-
3	Ethanol	15		12
4	DCM	8		-
5	DMSO	11		9
6	Cyclohexane	9		-
7	Pyridine	-		10
8	Butanol	-		-
9	Acetone	-		-
10	Chloroform	7		-
11	Hexane	-		-
12	Ethyl acetate	8		-
Standard antibiotics				
1	Penicillin	12		9
2	Gentamycin	15		13
Phytochemical screening				
S. No.	**Phytocompounds**	**Dmso**	**Ethanol**	**Phenol**
1	Steroids	+++	+++	+++
2	Saponin	+	-	-
3	Coumarins	+	++	+
4	Amino acids	-	+	-

5	Phytosterols	++	+	+
6	Tannin	-	+	-
7	Cardial glycosides	+	+	++
8	Phlobatannin	++	+	+
9	Leucoanthocyanin	-	-	-
10	Flavonoids	+	++	++
11	Phenols	++	-	-
12	Emodins	-	-	-
13	Proteins	-	-	-
14	Alkaloids	-	+	-
15	oils	+	+	+
16	Resins	+	+	+

Minimal inhibitory concentration

S. No.	Organisms	MIC Dosage (mg/ml)		
		Ethanol	**DMSO**	**Propanol**
1	*E.coli*	3mg/ml	150mg/ml	200mg/ml
2	*Klebsiella pneumonia*	50mg/ml	200mg/ml	200 mg/ml

4. DISCUSSION

The ethanol, phenol, chloroform extract was more effective against the urinary tract infection. And these extract was analysed for phytochemical screening analysis. And most important component present in extract like steroids, saponin, leucoanthocyanin, tannin, xanthoproteins, phytosterols, emodins, amino acids, etc. The whole plant of Coccinia indica having pharmacological activities like analgesic, antipyretic, anti-inflammatory, antimicrobial, antiulcer, antidiabetic and so many activities.[13] Coccinia indica plant is used in the traditionally medicinal plant. It was used to cure many diseases like a cough, cold, diabetics, fever and respiratory infection.[14] Most of all parts of the plant like stem, bark, leaves, and fruit were used to cure so many diseases And this phytochemical method the leaf part of the coccinia indica plant sample was taken and proceed the phytochemical qualitative quantitative analysis. And what are all the secondary metabolic compound present in the sample it was analysed. This plant has anti-diabetic properties. Finally concluded among this solvent the ethanolic extract was very high effective and it has contained so many phytochemical compounds.

5. CONCLUSION

The present study was reviewed that ethanol extract in *coccinia indica* shown an effective activities against the *e.coli, klebseilla pneumonia* and the lethal dosage was determinate as 3-50mg/ml is the effective against UTI isolate the screening result also review the ethanol extract contain important phytocompound such as tannin, steroids, alkaloids, oils, resins,

amino acids, flavonoids, Coumarins and Cardial glycosides etc. The study concludes that ethanol extract in *coccinia indica* may be formulated as a drug to treat the UTI. And this present study I suggested the coccinia indica plant it has so many anti-inflammatory actions, anti-diabetic effect and many more biological activities. And also it has therapeutic potential activity. The leaf part of this plant has much more medicinal value. So we have to use this Plant for preparing herbal medicine and to treat the many diseases and infection.

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