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STUDY THE EFFECT OF APAMARGA ON URINARY TRACT INFECTION THROUGH CULTURE AND SENSITIVITY TEST

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ABSTRACT

Urinary Tract Infection is the second most common type of infection in the body. It is one of the most serious health problem affecting millions of people, UTI can occur at any age in life In *Ayurvedic* literature a lots of drugs have been mentioned which are useful in Urinary Tract Infection, but their efficacy has to be proved by scientific method like urine culture and sensitivity test. *Apamarga* has been described in the *Vedas*. *Acharya Charak* has mentioned *Apamarga* is *Shirovirechana, Krumighna, Vamanopaga Gana .Acharya Charak* was so much convinced of its efficacy that in his famous work *Charak Samhita*. *Apamarga* is useful *in Mutradah* and *Mutrakrichcha* by causing *Vilayana* of *Kleda* and *Kapha* by its *Katu* and *Ushna Gunas*. The present study is being taken so as to take a step in the direction of proving the efficacy of the Ayurvedic drug scientifically to the modern days people. Hence, it is a humble attempt to check the efficacy of *Apamarga Moola* on bacteria present in Urinary Tract Infection.

Key words: U.T.I., *Apamarga moola,* Bacteria, Culture & Sensitivity test.

INTRODUCTION

Urinary trect infection is commen in women,uncommen in men.Recurrent infection cause considerable morbidity,if complicated , it can cause severe renal disease[12]One may be suffering from UTI as antibiotics may be necessary[12]. Due to development of resistance to present day antibiotics there is needed to evaluate new antibiotics which are equally effective. Although a lot of classical references of drugs on *Mutrakrichcha*[1,2] are available in *Ayurvedic* texts. It is imperative for us to prove the antimicrobial properties of the mentioned drug using scientific parameters.

Acharya Sushruta[3] and *Acharya Charak*[4], has explained *Mutrakrichacha* under *Mutravahastroto Dusthi Vikar*. Symptoms of U.T.I. like Burning Micturition, Abdominal pain, and increased Frequency are same in *Mutrakrichcha Vyadhi. AcharyaCharak*[5] has mentioned *Apamarga* is *Shirovirechana, Krimighna,Vamanopaga Gana.* According to *Acharya Sushruta*[6], *Veeratvardi Gana* is useful in *Mutrakrichcha* and *Apamarga* belong to *Veeratvardi Gana*.

Apamarga[7,8,9] (*Achyranthes aspera)* is from the family A*maranthaceae* found throughout tropical Asia,Africa, America, commonly in waste places roadside, hedges, gardens, fields or farms, forest edges and other places. Whole plant is use for therapeutic perpous. For present study *Moola* was selected to seen antimicrobial activity comparing with standard drug.

AIM & OBJECTIVE

- Study the effect of *Apamarga* on UTI through culture and Sensitivity test.
- An effort will be made to determine the culture & sensitivity of *Apamarga* on bacteria causing U.T.I.

MATERIAL & METHOD

Apamarga Moola was collected from fields and dried under sunlight, then made into coarse powderand stored in air tight container. This Powder was authentified from pune university. Aqueous Extract of *Apamarga Moola* has been prepared in National Toxicology Centre Sinhagad Road Pune 2.40 gm aqueous extract of *Apamarga moola* from 120 gm of *Apamarga Moola churan* obtained by soxhlet extraction method. In this extract we prepared two different concentration i.e. high and low concentration. High concentration of *Apamarga Moola* extract is prepared by 1.20 gm of *Apamarga Moola* Extract in 6 ml of water & low concentration of *Apamarga Moola* extract is prepared from 1.20gm of *Apamarga Moola* extract in 12 ml of water 30 ml of *Apamarga Moola Kwath* is prepared from 30 gm of *Apamarga Moola Churna* boil in240 ml of water.

Different type of media for the culture and sensitivity e.g. Nutrient agar, MacConkry's agar was used.

Methodology

Urine sample was collected from 60 patients who were suffering from U.T.I. Urine Culture was done and bacteria were isolated. Sensitivity of extract of *Apamarga Moola* in different concentrations were observed Standard drug Ofloxacin were use for compare to Sensitivity. This study has been done in Bharati Vidyapeeth Medical Foundation's Ayurved Hospital, Pune -43.

Preparation of disc- 400 circular disc of filter paper, 0.5 cm in size was prepared by using punching machine. Each disc were dipped in *Apamarga moola kwath*, and Solution of different concentration of *Apamarga moola* extract under sterile precaution. after 10 min. Disc were taken out and dried sometime and preserved in sterile air sealed glass container. The disc container were kept in refrigerator and used as when required.

Preparation of Culture:

The infected urine sample of patient was inoculated on MacConkey's. After 24 hrs the growth of E. coli was seen on MacConkey's media, colonies are pink colored due to lactose fermentation. The colonies of E.Coli were stained with gram stain & confirmed as gram-negative which are pathogenic.For anti-microbial assay again 4-5 colonies from above culture were lifted with sterilized platinum loop & diluted in 1 ml of distilled water .This solution was gently spread over the nutrient agar with sterile cotton swab.preserved disc put over this nutrient media for see sensitivity. Standard antibiotic disc were also placed on another infective nutrient media to see antibiotic Sensitivity in U.T.I. for comparing.

Evaluation of zone of inhibition[10] for this study, according to the measurements of zone sizes, three categories of drug sensitivity can be recognized as

SensitiveIf the size of zone of inhibition of the test organism is larger than that of standard drug.The size of zone of inhibition of the test organism is equal to that of standard drug.The size of zone of inhibition of the test organism is not more than 3 mm smaller than that of standard drug.

Resistance: The size of the zone of inhibition of the test organism is smaller than 3 mm

RESULTS/ OBSERVATIONS

Table no.1:Presence of organism in urinary infected patients:

Name of Organism	No	Percentage
E.coli	51	85%
Staphylococcus Aureus	03	5%
Streptococci	06	10%
Total	**60**	**100%**

According to observation, E.coli bacteria found in 51 patients. Other bacteria found Stapphylococcus Aureus and streptococci.

Table no.2:Zone of inhibition on bacteria culture in 60 samples:

Sensitivity in mm	*Kwath*	Low-conc. Extract	High-conc. Extract	Standard drug
0-3mm	60	60	27	00
3-6mm	00	00	**33**	60
6-12mm	00	00	00	00
Total	**60**	**60**	**60**	**60**

According to observations, *Kwath* & low concentration of extract of *Apamarga moola* shows no sensitivity. In high concentration of extract, 33 samples showed sensitivity with 3mm.

Tableno 3:Zone of inhibition on E.coli, Staphylococcus aureus & Streptococci bacteria.

Bacteria	*Kwath*	lowconc. Extract	highconc. Extract	Standard drug
E.coli	Resistance	Resistance	**Sensitive**	Sensitive
Streptococci	Resistance	Resistance	Resistance	Sensitive
Staphylococus Aureus	Resistance	Resistance	Resistance	Sensitive

In *Kwath* & low concentration of extract of *Apamarga moola* all bacteria shows no sensitivity. In high concentration of extract, E.coli bacteria shows sensitivity with 3mm

Table no 4:STATISTICAL ANALYSIS

	Kwath	Low-conc. Extract	High-conc. Extract	Std.drug
Resistance	60	60	27	00
Sensitivity	00	00	33	60
P value	>0.05	>0.05	<0.05	<0.05
Result	**Not Significant**	**Not Significant**	**Significant**	**Significant**

According to applied z-test, high concentration of *Apamarga* extract is sensitive to bacteria, and in low concentration of extract and *Kwath* found to be not sensitive.

DISCUSSION

In this study, maximum bacteria found in E. coli Bacteria On Mac Conkey's medium. Escherichia coli are the commonest cause of UTI. It is responsible for about 70-80% of acute infection in general population

Kwath of *Apamarga Moola* and low concentration of *Apamarga Moola* shows resistant in all 60 Samples, but in high concentration of *Apamarga Moola* extract is

found to be sensitive in this samples, means high conc. of *Apamarga mool* extract is significant in Bacteria causing UTI., Maximum Sensitivity found in E. coli bacteria. *Acharya Charak* has mentioned *Apamarga* is *Krumighna, Gana* .Result of this study, conclude that the medicinal plant *Apamarga(Achyrenyhus aspera)* mentioned in *Ayurvedic* literature is having potential for use as antimicrobial agents. this study confirm the explanation of *Ayurvedic* claim as *Krumighna.*

CONCLUSION

Apamarga Moola Kwath and low concentration of Aqueous extract of *Apamarga Moola* are found resistance to all samples .Aqueous extract of *Apamarga Moola* ,high concentration is Sensitive to bacteria means drug showed antimicrobial activity against bacteria.

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