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 tract infection is common in women, uncommon in men. Recurrent infection cause considerable morbidity, if complicated, it can cause severe renal disease. One may be suffering from UTI as antibiotics may be necessary 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 are available in Ayurvedic texts. It is imperative for us to prove the antimicrobial properties of the mentioned drug using scientific parameters.

Acharya Sushruta³ and Acharya Charak⁴, has explained Mutrakrichcha under Mutravahastroto Dusthi Vikar. Symptoms of U.T.I. like Burning Micturition, Abdominal pain, and increased Frequency are same in Mutrakrichcha Vyadhi. Acharya Charak⁵ has mentioned Apamarga is Shirovirechana, Krimighna, Vamanopaga Gana. According to Acharya Sushruta⁶, Veeratvardi Gana is useful in Mutrakrichcha and Apamarga belong to Veeratvardi Gana. Apamarga⁷,⁸,⁹ (Achyranthes aspera) is from the family Amaranthaceae 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 therapeautic 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 powder and stored in an airtight container. This Powder was authenticated 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 churna obtained by soxhlet extraction method. In this extract we prepared two different concentrations 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 1.20 gm of Apamarga Moola extract in 12 ml of water. 30 ml of Apamarga Moola Kwath is prepared from 30 gm of Apamarga Moola Churna boiled in 240 ml of water.

Different type of media for the culture and sensitivity e.g. Nutrient agar, MacConkey’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 used for comparison 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 for this study, according to the measurements of zone sizes, three categories of drug sensitivity can be recognized as

Sensitive: if 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 not more 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 Staphylococcus Aureus and streptococci.

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

<table>
<thead>
<tr>
<th>Sensitivity in mm</th>
<th>Kwath</th>
<th>Low-conc. Extract</th>
<th>High-conc. Extract</th>
<th>Standard drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3mm</td>
<td>60</td>
<td>60</td>
<td>27</td>
<td>00</td>
</tr>
<tr>
<td>3-6mm</td>
<td>00</td>
<td>00</td>
<td>33</td>
<td>60</td>
</tr>
<tr>
<td>6-12mm</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

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.

Table no.3: Zone of inhibition on E.coli, Staphylococcus aureus & Streptococci bacteria.

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Kwath</th>
<th>lowconc. Extract</th>
<th>highconc. Extract</th>
<th>Standard drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.coli</td>
<td>Resistance</td>
<td>Resistance</td>
<td>Sensitive</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Streptococci</td>
<td>Resistance</td>
<td>Resistance</td>
<td>Resistance</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Staphylococcus Aureus</td>
<td>Resistance</td>
<td>Resistance</td>
<td>Resistance</td>
<td>Sensitive</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Kwath</th>
<th>Low-conc. Extract</th>
<th>High-conc. Extract</th>
<th>Std.drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance</td>
<td>60</td>
<td>60</td>
<td>27</td>
<td>00</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>00</td>
<td>00</td>
<td>33</td>
<td>60</td>
</tr>
<tr>
<td>P value</td>
<td>&gt;0.05</td>
<td>&gt;0.05</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Result</td>
<td>Not Significant</td>
<td>Not Significant</td>
<td>Significant</td>
<td>Significant</td>
</tr>
</tbody>
</table>

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.

**REFEERENCE**

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