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THE EFFECT OF HARITAKI KWATH IN URINARY TRACT INFECTION BY CULTURE & SENSITIVITY

Dr. Priyanka Balasaheb Varpe*[1], Dr. Jayprakash Ashok Khairnar[2] and Dr. Ravindra Baban Aatram[3]

[1]*Assistant Prof., Department of Rognidan, Ashvin Rural Ayurved College, Manchi Hill, Sangamner, Maharashtra, India - 413714.
[2]Associate Prof., Department of Kaumarbhritya, Smbt College of Ayurved, Dhamangaon, Ghoti, Nashik, Maharashtra, India - 422403.
[3]Assistant Prof., Department of Kayachikitsa, Ashvin Rural Ayurved College, Manchi Hill, Sangamner, Maharashtra, India - 413714.

***Corresponding Author: Dr. Priyanka Balasaheb Varpe**
Assistant Prof., Department of Rognidan, Ashvin Rural Ayurved College, Manchi Hill, Sangamner, Maharashtra, India - 413714.

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ABSTRACT
Urinary tract infection (UTI) is the most common bacterial infection occurs due to the multiplication of micro-organisms in the urinary tract, when body defence mechanisms are decreased. The frequency of which is only second to upper respiratory tract infection, but the incidence and degree of morbidity and mortality is greater than those of upper respiratory tract infections. Difficulty during micturition is the chief symptom of it. According to Ayurveda, it is known as 'Mutrakricchra'. In Ashtanga Samgraha, it is included under the Mutra apravrittijanya basti-gata vikara. Various antibiotics used in modern medical science to solve this problem became unsatisfactory due to the limitations of antibiotics and resistance of micro-organisms to it. Considering this situation, it is relevant to search for an alternative management, which is both effective and economical. However, in the present study an attempt has been made to overcome this problem by using the herbal preparations Haritaki Kwath assessed by culture and sensitivity. Results of the study is found very encouraging.

KEYWORDS: Urinary tract infection, Micro-organisms, Mutrakricchra, Haritaki Kwath, culture and sensitivity.

INTRODUCTION
Urinary tract infection is a common problem now a days because of the changes in the life style of the human beings. UTIs are challenging, not only because of the large number of infections that occur each year, but also because the diagnosis of UTI is not always straightforward. Physicians must distinguish UTI from other diseases that have a similar clinical presentation, some UTIs are asymptomatic or present with atypical signs and symptoms, and the diagnosis of UTIs in neutropenic patients (who do not typically have pyuria) may require different diagnostic criteria than those used for the general patient population.[1]

A urinary tract infection is associated with multiplication of organisms in urinary tract and is defined as the presence of a high concentration in the midstream sample of urine, usually $\geq 10^5$ CFU/ml.[2] The term UTI covers a range of conditions of varying severity from simple urethritis and cystitis to acute pyelonephritis with septicemia.[3] Infections of the urethra and bladder i.e. lower urinary tract infection are often considered superficial or (mucosal) infections and upper urinary tract infection include pyelonephritis and renal suppuration signify tissue invasion. Escherichia coli has approximately 68% of frequency for causing UTI and other common bacterias are proteus, klebsiella, Enterobacter, Pseudomonas etc, although yeast, fungi and viruses may produce UTI.[4]

According to Ayurvedic point of view, urinary tract infection is nearer to the term Mutrakricchra, in which dysuria is the most common feature. Most of the classical Ayurvedic texts describe eight types of Mutrakricchra. Acharya Vagbhata has classified all the urinary disorders into Mutra apravrittijanya vyadhi and Mutra atipravrittijanya vyadhis (A.S.Ni 9).[5] Mutrakricchra comes under Mutra apravrittijanya vyadhi, in which reduced flow of urine takes place. In this disease difficulty during micturition is the main symptom.

Various antibiotics used in modern medical science to solve this problem became unsatisfactory due to the limitations of antibiotics and resistance of micro-organisms to it. The meticulous knowledge of this can be optimism by testifying effect of drug on urinary microorganism responsible for urinary tract infection. In

text, Haritaki have been described in the treatment of mutrakriccha and its krimighna properties. Taking these points into considerations and their use by various physicians, this research study has been designed to find out effect of Haritaki Kwath on bacteria which causes urinary tract infection. For finding out the efficacy of this drug, the culture and sensitivity method have been soughed.

AIMS AND OBJECTIVE

Aim: To Study the effect of Haritaki Kwath in urinary tract infection by culture and sensitivity.

Objective

1) To study detail procedure of culture & sensitivity.
2) To study detail procedure of Haritaki Kwath and preparation of anti microbial disc from Haritaki Kwath by aseptic precaution.
3) To study various bacteria which cause urinary tract infection.
4) To study urinary tract infection.
5) To study detail examination of urine by chemical, physical, microscopic method.
6) To study morphology of Gram (+) and Gram (-) organism by culture method.
7) To study sensitivity and Resistance of bacteria to Haritaki Kwath.

MATERIAL AND METHODS

Selection of patients

Patients attending the Pathology Lab and Outdoor Patients Department of Rognidan & Vikrutividnyan fulfilling the criteria for selection were incorporated into the study irrespective of caste, religion etc. A detailed history regarding family history, past illness and clinical finding pertaining to Dosha, Dushya, Agni, Srotasa etc. A special research proforma for assessment of efficacy were prepared. Total 60 patients were registered and their urine samples were evaluated by culture and sensitivity.

Inclusion criteria

1) Sex- Both sexes male and female are included.
2) Urine collection from Mutrakricchra, Mutraashmari, UTI patients.
3) Age - Both sexes between 20 yrs to 60 yrs.

Exclusion criteria

1) Patients not willing for trial
2) Patients with chronic Kidney disease.
3) Pregnant and lacting Mother.
4) Patient with Multi- organ failure.

Criteria for diagnosis: For purpose of examining patients and exclude otherdiseases.

1) Urine routine
2) CBC

Criteria for assessment of results

The main criteria for assessment of therapeutic trial were based on by seeing Zone of Inhibition in surrounding discs during culture and sensitivity test.

Materials

a) Drug: “Haritaki Kwath” for Discs preparation.
b) Stain: Gram stains
c) Agar: MacConkey Agar, Nutrient agar, Muller Hiltons Agar

METHODOLOGY

1. Haritaki kwath prepared as described by Ayurvedic texts.
2. Haritaki kwath Discs made as given in modern texts.
3. Urine samples collected from mutrakricchra, mutraashmari and UTI patients to do urine culture by using MacConkey agar.
4. Gram staining of urine sample done.
5. Cultured growth & Gram staining determines gram negative bacteria.
6. Sensitivity of gram-negative bacteria to Haritaki kwath discs analyzed by using Nutrient agar And Muller Hiltons Agar.

Preparation of Haritaki kwath disc [Figure 1]

- 50 gm Haritaki fruit bharad churna was taken and mixed with 800ml water in steel container, boiled on low and constant flame till $1/8^{th}$ remnant of mixture.
- Cut paper disc from Whatman No.2 filter paper with the help of paper punching machine (6 mm in diameter)
- Kept the paper disc in Haritaki kwath for 10 min.
- Placed the disc in petri dish by sterilized forcep and allow drying for an hour.
- then store the Haritaki disc in a refrigerator (4^0C) and used for sensitivity.

Disc diffusion method for sensitivity

- Dip the forcep in alcohol and sterilized on flame.
- Keep the sterilized Haritaki disc with the help of forcep on nutrient agar plate 4cm apart from each other. [Figure 3]
- Press the disc firmly into the agar to ensure complete contact. The discs are distributed so that they are no closer than 15mm from the edge of the Petri dish. [Figure 5]
- After preparing culture on MacConkey’s agar, pick up colony by a sterilized loop and spread on sterilized nutrient plate in the center. [Figure 2, 4]
- Place the inoculated plate with the Haritaki discs, in the incubator and incubate at 370C.
- Following incubation measure the diameter of the zone of inhibition by scale.

Table 1: Age wise distribution of 60 Patients.

Age group	No. of patient	Percentage
20-30	16	26.67
30-40	20	33.33
40-50	12	20
60-60	12	20

Table 2: Sex wise distribution of 60 Patients.

Gender	No. of patient	Percentage
Male	39	65
Female	21	35

Table 3: Isolated Organism wise distribution of 60 Patients.

Isolated organism	No. of patient	Percentage
Escherichia coli	46	77
Pseudomonas	5	8
Staphylococcus	5	8
Klebsiella	4	7

Table 4: Effect of Haritaki kwath on Isolated organism.

Isolated organism	Sensitive	Resistance	Total
Escherichia coli	37	9	46
Pseudomonas	5	0	5
Staphylococcus	0	5	5
Klebsiella	0	4	4

Table 5: Overall effect of Haritaki kwath on urine infection.

	No. of patient	Percentage
Sensitive	42	70
Resistance	18	30

Figure 1: Haritaki kwath disc.

Figure 2: MacConkey Agar.

Figure 3: Nutrient Agar.

Figure 4: Technique of culture.

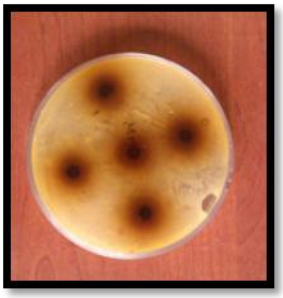

Figure 5: Technique of Sensivity.

DISCUSSION

The observations of the study are presented in Tables 1 to 3

Majority of the patients i.e. 33.33% belong to the age group of 30-40 yrs, followed by 26.67% in 20-30 yrs out of them 65% patients are female and 35% are male. [Table:1, 2] Women are especially prone to UTI. 50 to 80 % of women have at least one UTI during their life time. Prevalence in women is 3% at age 20, rising by 1% per decade thereafter. the microorganism (bacteria) isolated by urine culture method are E.coli, Pseudomonas, staphylococcus, Klebsiella among them colonies of E.coli found in maximum patient i.e. 77% [Table:3]. The majority of UTI occurs through ascending of bacteria from the urethra to the bladder continuing ascent up to the kidney via ureter is pathway for most renal parenchymal infections because, bacteria causing UTIs will colonize the colon or perianal region and periurethral region in females forming a biofilm that usually resists the body's immune response.

RESULT

E.coli is found to be sensitive to *Haritaki kwath* In Maximum number of patient (i.e. 62%) followed by Pseudomonas is found to be sensitive to *Haritaki kwath* in 8% patients. Whereas Klebsiella and Staphylococcus are found to be resistant to *Haritaki kwath* in 5 and 4 patients respectively. [Table:4] over all 70% infection found to be sensitive to *Haritaki kwath* followed by 30 % resistance. [Table:5]

CONCUSION

Female patient were more suffered from urinary tract infection compare to male patient. Escherichia-Coli, Klebsiella, Pseudomonas and Staphylococcus were observed among them E.coli were most commonly observed. *Haritaki Kwath* has shown significant antibacterial activity against urinary infection. Recommendation of Further study on effect of *Haritaki kwath* in urinary tract infection for other organisms also with same sample size.

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