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To Evaluate the effect of *Ashwatha* on *Mutrakrichhra* w.s.r. to *E.coli*

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ABSTRACT

In Ayurvedic classics *E.Coli* infection is not mentioned, but *Krimis* and *Mutrakrichhra* are mentioned. Most of the symptoms of *Mutrakrichhra* are similar with *Escherichia coli* infection. *Escherichia coli* is the major cause of urinary tract infections. The disease *Mutrakrichhra* has been described by almost all *Acharyas*. UTI is a major problem in society which causes *Mutravaha Srotas Vikriti*. Modern medical science physicians are facing problem in the treatment of *E.coli*. Infection, due to its relapse and synthetic antibiotic hazards. Due to this reason present study was planned to evaluate the efficacy of *Ashawath* which have been used by ancient *Acharyas* in *Mutravaha Srotas Vikriti*. In view of above fact the present trial has been undertaken to understand the effect of *Ashawatha* having antibacterial and diuretic properties. The present research work has been carried out with a view to provide a scientific basis for the claims made in various Ayurvedic texts regarding the effect of *Shigru Ashwatha Ghana* on *Mutrakrichhra* (UTI).

Key words: *Ashwath*, *UTI*, *E.Coli*, *Diuretics*, *Mutrakrichhra*, *Peepal*.

INTRODUCTION

The Ayurveda is the only medical science that is highly systemic, scientific and time tested and recognizes their interaction in the healing of the whole person. Ayurveda is effective not only in common elements but also in many incurable, chronic and degenerative disease. The knowledge about medicinal plants in the early age was documented systematically and organized scientifically in Ayurvedic *Samhitas*, *Nighantus* and other texts. In which we can get so many references of medicinal plants. Among all this

Charaka Samhita is a vast treasure of knowledge regarding medicinal plants. Charaka is the first person who could classify the existing plants, into pharmacological categories and given 50 classes which are known as *Dashemani*.^[1]

In the past two decades there is world wide revival of herbal drugs for the health care not only in developing but also in developed countries too. More than 80% population in the world still depends on the use of herbal drugs as they are easily available and have no side effects. Particularly in our country where modern drugs are out of reach of common people, the medication through herbal drugs play an important role for providing primary health care to the mass population. In modern review the aetiological factors of Lower UTI^[2] are explained on the basis of general and host defence factors. Hormones and epithelial cell receptivity are also important factors in females. UTI occur due to colonization of micro-organisms in the urinary tract. *Though Krimi* are not mentioned as a *Nidana* of *Mutrakrichhra*,^[3] Ayurveda gives importance to *Vyadhikshamatva*,^[4] which is lowered in female. The

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patients with positive urine culture were included in the study so detailed description of urine from Ayurvedic and Modern aspect is given. Various complications, mode of treatment and prognosis are explained. Clinical trial of drugs or a therapy have very much important part in the work specially in clinical subject. So trial of single drug was planned here in this study. UTI caused by E.Coli affect female more than male and so to find a path for the treatment of this disease an essential attempt has been done. *Acharya Charaka* has kept *Ashwatha* in *Mutrasangrahaniya Dravya*.^[5] *Shusruta* has included it in *Nyagrodhadi Gana*.^[6] According to *Acharya Charaka*, *Ashwatha*^[7] is mentioned in various formulations to cure *Mutrakrichhra* or urinary disorder. *Ashwatha* is considered as *Mutrala* (diuretic) by all the *Acharyas*.

OBJECTIVES

To evaluate the action of *Ashwatha* on E.Coli and to study the complication if any occurs during the course of treatment.

MATERIALS AND METHODS

Criteria for selection of patients

Inclusion Criteria

The patients attending the O.P.D. and I.P.D. of Kayachikitsa and Research Unit of Govt. Ayurvedic Hospital, Patna, having classical symptomatology of *Mutrakrichhra*. Careful elucidation and evaluation of medical history of patients and detailed physical and clinical examination on the basis of proforma specially prepared for this purpose was done. The patient under 70 years irrespective of caste, religion, sex, habits, Socio-economic status and those who fulfill the diagnosis were selected for the study.

Exclusion Criteria

Patients of diabetes, hypertension, thyroid dysfunction, carcinoma, sexually transmitted diseases, pregnant women and other severe diseases laid down as per rules are excluded.

Laboratory Investigation

The following laboratory investigation were under taken in each case just before beginning of drug trial and after completion of the study.

Haematological Investigations

The following laboratory investigation were under taken in each case just before beginning of drug trial and after completion of the study. Blood - Hb%, TLC, DLC, ESR & PCV. Above mentioned all pathological investigation were done in hospital attached laboratory.

Urine routine and culture

Urine analysis for its colour, appearance, specific gravity, reaction etc. and urine culture is done to rule out microorganism.

Radiological Investigations

If required USG of urinary system (KUB) was done to rule out any pathological obstruction in urinary tract.

Study design : Single arm clinical study

- Drug - *Ashwatha Ghana*
- Dose - 500 mg Bd
- Route of administration - oral
- Duration of therapy - 90 days

Diet advised

They were advised to follow the dietary restrictions like;

1. High intake of water
2. Intake of plenty of fluid in the form of soups, coconut water, juices and glucose water.
3. Maintenance of perineal hygiene.
4. Not to suppress the urge of micturation.
5. Complete and frequent emptying of the bladder at short intervals.

Method of Study

1. Selection of the patient on the basis of signs and symptoms.
2. Routine laboratory investigation and sign and symptoms scoring have been carried out before and after treatment.
3. Proper administration of the drug was done during clinical trial.
4. Trial drugs were assessed on the basis of clinical observation in course of the treatment, especially the sign and symptoms beside the laboratory investigation before and after the course of treatment.
5. The result was assessed and comparison of both drugs were done.

Criteria for assessment

1. **Cured** : This was decided on the basis of following two points. Complete relief in the initial chief complaints of the patient along with the positive improvement (100% relief in signs and symptoms). Complete no growth of organism in urine culture examination.
2. **Moderately improvement** : 30-59% relief in sign and symptoms.
3. **Mild improvement** : below - 30% relief in sign and symptoms
4. **Unchanged - No relief** : This was the group of patients in our series which did not report either symptomatic relief in their basic complain and not have negative urine examination report after treatment.

STATISTICAL ANALYSIS

Insignificant	p>0.05
Improvement	P<0.05
Significant	P<0.01
Highly Significant	P<0.001

OBSERVATIONS AND RESULTS**Table 1: Effect of Ashwatha Ghana on haematological values in patients of Mutrakrichhra.**

Haematological Value .	Mean score		D	%Change	S. D	S. E	t	P
	BT	AT						
Hb%	11.16	11.01	0.15	1.32	0.34	0.08	1.97	>0.05
TLC	10050	8566.67	1483.33	14.75	1764	720	2.059	<0.05
Neutrophils	62.15	59.7	2.45	3.94	5.05	1.13	2.16	<0.05
Lymphocytes	33.65	32	1.65	4.90	4.02	0.09	1.84	>0.05
ESR	36.3	28.65	7.65	21.07	8.84	1.98	3.87	<0.01
S.creatinine	1.01	0.94	0.07	6.93	0.12	0.03	2.57	>0.05
n=20								

The mean haemoglobin percentage decrease from 11.16 gm% to 11.01 gm% which was statistically insignificant (P>0.05). Initial score in the total leukocyte count was 10050 which was decreased to 8566.67 which was significant (P<0.05). There was an decreased observed in the mean neutrophil form 62.15 to 59.47 which was significant (P<0.05). The initial mean score of lymphocytes was 33.65 which was decreased to 32 which was statistically significant (P>0.05).

The ESR decreased from mean score of 36.3 to 28.65 which was statistically significant (P<0.01). The mean score of S.creatinine was 1.01 which was decreased to 0.94 after treatment which was insignificant.

Table 2: Effect of Ashwatha Ghana on clinical symptoms in patients of Mutrakrichhra.

Clinical Symptoms	Mean Score		D	% Relief	S.D ±	S.E ±	T	P
	BT	AT						
Burning Micturition	2.6	1	1.6	65.53	0.89	0.4	4	<0.05
Frequent Micturition	1.6	1.25	0.35	41.87	0.49	0.11	3.2	<0.001
Loin Pain	0.5	0.2	0.3	63.64	0.67	0.15	2.33	>0.05
Bodyache	0.9	0.5	0.35	38.8	0.67	0.15	2.33	>0.05
n=20								

For the burning micturition there was 65.53% relief with $p < 0.05$ that was showing improvement. In the frequent micturition there was 41.87% relief with $p < 0.001$ that was highly significant. For loin pain there is 63.64% relief with $p > 0.05$ that was insignificant. For the bodyache there was 38.8% relief with $p > 0.05$ that was insignificant.

Table 3: Sensitivity of Ashwatha Ghana.

Range of Sensitivity	No of Samples	Total	%
+++	02	02	10
++	12	12	60
+	06	06	30

The sensitivity showed that 10% patients are high sensitive for Ashwatha Ghana while 60% were moderate sensitive and 6% are low sensitive for Ashwatha Ghana.

Table 4: Effect of Ashwatha Ghana on Urine Culture and Sensitivity.

Urine Examination	Mean Score		D	% Relief	S.D ±	S.E ±	t	P
Culture & Sensitivity	1.4	0.75	0.7	48.87	0.75	0.17	3.98	<0.001

Urine Culture and Sensitivity - The observed change was 48.87 % with $p < 0.001$ which is statistically highly significant.

DISCUSSION

According to ancient research methodology before establishing any theory, *Upanayana* (discussion) is the step prior to *Nigamana* (conclusion). Discussion is a process of re-examining ones views and forms a base for the conclusion. In spite of detailed classical study and experimentation by various methods, theory is accepted only after the proper reasoning of observations. Hence, discussion is a very much crucial part of any scientific research. The present research work has been carried out with a view to provide a scientific basis for the claims made in various Ayurvedic texts regarding the effect of *Ashwatha Ghana* on *Mutrakrichhra* (UTI).

Ashwatha is commonly known as *Peepal*. *Ficus religiosa* (*Peepal*) is a Holy and Religious tree. It is a tree of life. The stem bark of *Peepal* is an important ingredient in many chemicals. In *Charak Samhita* it is mentioned in *Mutrasangrahaniya Gana*. It is described in many important formulations for the treatment of *Mutrakrichhra*.

Acharya Susruta has mentioned it in *Nyagrodhadi Gana*. In *Sharangdhar Samhita* it is mentioned in different formulations. The Synonyms of *Peepal* is given in almost all *Nighantus*. Few are listed here *Ashwatha*, *Bodhidru*, *Chaityavriksha*, *Gajabakshaka*, *Gajapatra*, *Gajashana*, *Guhyapushpa*, *Kapitana*, *Kesavalaya*, *Krishnavas*, *Mangalaya*, *Pavitraka*, *Mahadruma*, *Nagabandhu*, *Yajnika*, *Vishala*, *Vriksharja* and many more.^[8] All these synonyms

promotes the concept of its bactericidal action or effect.

Ashwatha is a good Rejuvenator agent. It is also used in diabetes which supports the fact that it may be used for urinary system too. The stem bark is used as astringent and antibacterial. The stem bark used in the anomalies of urine disorder.

Mutrakrichhra has been included under *Mutradosha* by *Acharya Charaka*. According to *Charaka Mutranigrahan* (suppression of urge of micturation) causes *Mutravaha Sroto Dushti*. This *Mutranigrahan* causes *Pratiloma Gati* of *Apana Vayu* and causes *Oja Kshaya*. All these factors lead to development of *Mutrakrichhra*.

Acharya Sushruta has mentioned the symptoms of suppression of *Mutravega* as suppression of urge of micturation leads to passage of urine with difficulty and in small quantity.

In the present study, eradication of the *Mutrakrichhra* is main aim, So a single drug was selected for this study, *Ashwath Ghana*. Most of Ayurvedic drug with the help of their properties effect on *Agni* and then correct the imbalance of *Dosha*, *Dhatu*, and *Mala* and clear *Srotodusti* and ultimately does *Sampraptivighatan* and *Samprapti Vighatan* is a synonym of *Chikitsa*. The *Kashaya Rasa* of *Ashwatha* helps to destroy the bacteria as *Kashaya Rasa* is mentioned as *Krimighna* (antimicrobial) in different texts. *Ashwatha* has also a *Shothahara* property that's why it reduces *Shotha* (inflammation). *Ashwatha* is also mentioned as *Yonivisodhana*. *Ashwatha* by its *Guna*, *Kapha-Pitta Shamaka* decreases the *Pitta* property of *Mutrakrichhra*. Sensitivity of *Ashwatha* shows that it has antibacterial activity.^[9]

CONCLUSION

Having analysed the result on statistical parameters, we can conclude that *Ashwatha* is highly effective for the treatment of *Mutrakrichhra* (E.coli). The drug is easily available, so helpful in the treatment of

Mutrakrichhra. *Ashwatha* positively worked on *Mutrakrichhra*. There was no side effect observed in patients registered and so it is free from various drug hazards.

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