



Research Article

A PHARMACO-THERAPEUTIC STUDY OF GOKSHUR IN MUTRAKRICCHA VYADHI W.S.R. TO U.T.I.

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ABSTRACT

Mutrakriccha is a big health concern these days as a result of infection, an irregular lifestyle, and poor eating habits. *Mutra marga gat Strotas* defined Ayurveda as being related to urinary tract infections. *Mutrakriccha* is a sickness documented in nearly all Ayurvedic classics in which a patient has severe and uncomfortable burning micturition. *Mutrakriccha* is classified into eight types, each with its own set of signs and symptoms, and may be linked to dysuria. Antibiotics are now widely used to treat the condition. However, many side effects and antibiotic resistance developed. As a result, treating the condition becomes more complicated. In *Mutrakriccha Vyadhi*, *Gokshur* is a more effective medicine. The medications used in the treatment of *Mutrakriccha* have been documented in numerous Ayurvedic texts. I conducted a 90-day *Mutrakriccha* clinical study on 20 participants. The outcomes are as follows: For B.D., these 20 patients were treated with *Gokshur Mool Churna*. One patient dropped out of the experiment. Out of the 19 patients who completed treatment, 12 (63.16%) were cured, 5 (26.32%) were moderately improved, and 2 (10.53%) were mildly improved.

INTRODUCTION

Ayurveda, the science of life, is a one-of-a-kind gift from Lord Brahma to humanity. It is thought that Ayurveda is the oldest restorative source of medical science and that it is the root of all medical disciplines. The goal of Ayurveda is to sustain humanity's bodily, mental, social, and spiritual well-being. Ayurveda provides comprehensive restorative resources. *Mutrakriccha* is a big health concern these days as a result of infection, an irregular lifestyle, and poor eating habits. This is the most prevalent infectious illness seen in general practice, accounting for 1-3% of all consultations. *Mutrakriccha* is more common in women. Hence the present clinical study on *Mutrakriccha Vyadhi* has been chosen. *Gokshur* is a plant that has the ability to heal *Mutrakriccha Vyadhi*, as mentioned below.

Gokshur ^[1,2]

Botanical name: *Tribulus terrestris* linn.

Family: *Zygophyllaceae*

Properties

Guna - Guru

Rasa - Madhura

Virya - Sheet

Vipaka - Madhura

Pharmacognostical and Phytochemical Study of Drug Process

Gokshur were obtained from the PG Dept. of the Govt. Ayurvedic College in Patna. The extraneous ingredients were removed, the medications were washed and dried in the sun, and then they were ground to form *Churna*. *Churna* was then sent to CCRAS, Ministry of AYUSH, Government of India, Kolkata, for pharmacognostic and analytical testing. The following are the results of the Department of Pharmacognosy's standardization of *Churna* report: Powder microscopy reveals the presence of profuse lignified polygonal to hexagonal cork cells with light white content, aseptate fibers, reticulate xylem vessels, compactly arranged pitted xylem parenchyma, oval parenchymatous cells with prisms of calcium oxalate, abundant simple oval or rounded starch grains, and lignified rectangular cells with bright orange-yellow cell content.

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Fig. No. 1



Fig. No.2



Fig. No.3



Fig. No.4



Fig. No.5



Fig. No.6



Fig. No.7



Fig. No.8



Fig. No.9

Standardization of *Gokshur (Tribulus terrestris Linn.)* Root

Table 1: Physiochemical analysis of *Gokshur*

S.No.	Foreign Matter	Result (%w/w)
1	pH value (10% Solution)	4.58
2	Loss on drying	6.63
3	Water-soluble extractive	13.51
4	Alcohol-soluble extractive	13.38
5	Total ash	12.56
6	Acid-insoluble ash	2.68

Table 2: Qualitative Phytochemical tests of *Gokshur*

S.No.	Phytochemical Compounds	Result
1	Carbohydrate	-v
2	Tannin	-v
3	Alkaloid	-v

4	Starch	-v
5	Flavonoid	-v
6	Steroids	-v
7	Saponins	-v
8	Fixed Oil	-v

Microbiological Analysis

Total Bacterial Count- 250cfu/g

Total Fungal Count - 100cfu/g

Diseases Review^[3,4]

Mutrakrccha

Mutrakrccha was given by various *Acharyas* is as under: *Mutra* is voided with much discomfort is called *Mutrakrccha*.

मूत्रकृच्छ्रं दुःखेन मूत्रप्रवृत्तिः। (सु.उ.59/2)

The act of urination with *Dukha* (discomfort) is called *Mutrakrccha*.

यन्मूत्रकृच्छ्रे मूत्रं कृच्छ्रेण वहति। (च.चि.26/44)

The disease in which urine is passed with difficulty is called *Mutrakrccha*. All the above *Niruktis* indicate the meaning of *Mutrakrccha* as passing urine with difficulty. *Mutra* enters *Basti*, and the vitiated *Dosa* also gets its way and produces its various disorders. Further, he stated that *Samyak Vata* is the factor responsible for the proper formation and excretion of urine.

Table 3: Classifications of *Mutrakrccha* in *Brihatrayi* as well as in *Laghutrayi*^[5,6,7]

Type of <i>Mutrakrccha</i>	C.S.	S.S	K.S.	Vagbhatta	M.N.,B.P.	Sh.S
<i>Vataja</i>	+	+	+	+	+	+
<i>Pittaja</i>	+	+	+	+	+	+
<i>Kaphaja</i>	+	+	+	+	+	+
<i>Sannipataja</i>	+	+	+	+	+	+
<i>Dwandaja</i> (3 types)	-	-	+	-	-	-
<i>Ashmarjanya</i>	+	+	-	-	+	+
<i>Shakarjanya</i>	+	+	-	-	+	+
<i>Purishaja</i>	-	+	-	-	+	+
<i>Shukraja</i>	-	-	-	-	+	+
<i>Raktaja</i>	+	+	+	+	+	+
<i>Abhigataja</i> (<i>Shalayaja</i>)	-	+	-	-	+	+

Samprapti ghataka^[8]

Dosa: *Tridosa* with Dominant *Vata*, *Pitta*

Dusya: *Mutra*, *Jala*,

Udbhava Sthana: *Pakwasaya*

Adhithana: *Mutrasaya*

Srotasa: *Mutrabaha srotas*,

Srotodusti Prakara: *Sanga*, *Vimarga gamana*

Rogamarga: *Madhyama*

Agni: *Agnimandya*

Vyadhi Prakara: *Nija*, *Agantuja*

Pratyatma Lakshyana: *Kricchrata* in *Mutrapravritti*

Pathya-Apathya^[8,9,10]

Pathya- *Purana shali*, *Jangal mansa rasa*, *Mudaga*, *Mishri*, *Godugdha*, *Patola*, *Khajura*, *Nariyal*, *Amla*, *Punarnava* etc.

Apathya- *Ushna*, *Tikshna*, *Vidahi*, *Visham Bhojan*, *Tila*, *Guda*, *Urada*, *Khatai* etc.

Main Symptoms which is taken for study in the clinical trial

Rukvankshnam, *Sarujam Sadaham*, *Krichchham mutrayatih*, fever, frequent micturation, burning sensation during micturation, loin pain, body ache.

MATERIALS AND METHODS

Diagnostic Methods - Based on Ayurvedic classics, a specific performa was created that included all indications and symptoms. It also offers information about the *Dosha*, *Dusya*, and *Srotas Pariksha* states. Each patient had a thorough clinical history obtained. To rule out other conditions, urine R/M, urine C/S,

CBC, RBS, TLC, DLC, Hb%, ESR RFT (B. Urea), and S. Creatinine were calculated using Performa.

Inclusion Criteria

1. Subjects willing to participate in this trial
2. Patients having symptoms of *Mutrakriccha Vyadhi* as per Ayurvedic classics and U.T.I. according to modern views have been included in the study.
3. The patients having ages between 20 and 60 who can present their signs and symptoms of *Mutrakriccha* irrespective of sex, community, or locality have been included in the study.

Exclusion Criteria

1. Patients who have positive for HIV, HCV, CKD, etc.
2. Patients suffering from serious systemic disorders like diabetes, renal stricture, renal calculi, and hepatic disorders are excluded.
3. CLD, CRF, cardiac patients, cancer, chemotherapy, and dialysis patients are excluded.
4. Patients suffering from congestive heart failure.
5. Patients suffering from bronchogenic carcinoma or other forms of malignancies.
6. Status asthmaticus.
7. Pregnant and lactating women

Criteria for Assessment

Subjective Parameter

- A thorough description of each patient's history, general physical examination, and systemic examination.

- Patients are chosen based on the typical symptoms of *Mutrakriccha Vyadhi* as described in classical and contemporary views, such as dysuria a burning sensation experienced during urination, and increased frequency of urination.
- Fever, suprapubic discomfort, urgency, hesitation, hematuria, and other severe symptoms may occur.

Objective Parameter

- Every gram stain technique is used to identify gram-positive and gram-negative organisms.
- Investigations in the Laboratory: All of the patients that were chosen underwent urine R/M testing. Urine C/S, USG Abdomen, CBC, and RBS
- Additional Investigations: The following tests will be done on all patients before and after the trial: Haematological tests (CBC and ESR).
- Biochemical Examination Blood sugar- F Liver function test: S. Bilirubin, SGOT, SGPT RFT- B. Urea, S. Creatinine

Routine Examination and Assessment

The case record form will contain information on the patient's history and physical examination. A clinical evaluation will be performed on days 0, 15, 30, 45, and 60.

Posology

Gokshur Mool Churna: 6gm /day

Route of administration: Oral

Time of administration: Before a meal.

Anupana: Lukewarm water

Duration: 90 days

Table 4: Gradation Score

None	0
Mild	1
Moderate	2
Sever	3

Table 5: Grading of Patients Having Chief Complaints of *Mutrakriccha*

Symptoms	Before Treatment	After Treatment
<i>Rukvankshnam</i>	1	1
<i>Sarujam Sadaham</i>	2	0
<i>Krichchham mutrayatih</i>	3	0

Table 6: Grading of Patients Having Chief Complaints of *Mutrakriccha* in the Modern View

symptoms	Before treatment	After treatment
Fever	1	0
Frequent micturition	3	0
Burning sensation during micturition	3	0
Loin pain	1	0
Body ache	2	1

Assessment of the Total Effect of Therapy

The following criteria were adopted to assess the total effect of therapy on the registered patients.

Complete improvement: 100% relief in signs and symptoms of *Mutrakriccha*.

Moderately improvement: >50% and <100% relief in signs and symptoms of *Mutrakriccha*.

Mild improvement: >25% and <50% relief in signs and symptoms of *Mutrakriccha*.

No improvement: Below 25% relief in signs and symptoms of *Mutrakriccha*. Further, the effect of the treatment of signs and symptoms was analyzed statistically by Mean, SD, SE, 'paired t test'.

RESULTS AND DISCUSSION**Table 7: Distribution of Patients Having Chief Complaints of *Mutrakriccha***

Symptoms	No. of Patients
<i>Rukvankshnam</i>	16
<i>Sarujam Sadaham</i>	14
<i>Krichchham mutrayatih</i>	15

Table 8: Distribution of Patients Having chief Complaints of *Mutrakriccha* in the Modern View

Symptoms	No. of Patients
Fever	08
Frequent micturition	08
Burning sensation during micturition	11
Loin pain	13
Body ache	09

Effect of Gokshur**Table 9: Effect of *Gokshur mool Churna* in signs and symptoms of *Mutrakriccha Vyadhi***

Signs/Symptoms	Mean		Diff.	% relief	SD	SE	't' Value	'p' Value	S
	BT	AT							
<i>Rukvankshnam</i>	1.37	0.26	1.11	81.02	0.66	0.15	7.32	<0.001	HS
<i>Sarujam Sadaham</i>	1.47	0.31	1.16	78.91	0.83	0.19	6.05	<0.001	HS
<i>Krichchham mutrayatih</i>	1.37	0.32	1.05	76.64	0.71	0.16	6.50	<0.001	HS

Rukvankshnam's original mean score was 1.37; following therapy, the score was lowered to 0.26, with a relief of 81.02%. This impact was statistically significant ($p < 0.001$). *Sarujam Sadaham*'s baseline mean score was 1.47, and it was decreased to 0.31 following therapy, representing a 78.91% improvement that was statistically significant ($p < 0.001$). *Krichchham Mutrayatih*'s original mean score was 1.37, which was decreased to 0.32 with 76.64% alleviation and was statistically highly significant ($p < 0.001$).

Table 10: Effect of *Gokshur mool Churna* in signs and symptoms of *Mutrakriccha Vyadhi*

Signs/Symptoms	Mean		Diff.	% relief	SD	SE	't' Value	'p' Value	S
	BT	AT							
Fever	1.0	0.31	0.69	69.00	0.88	0.20	3.36	<0.05	S
Frequent micturition	0.58	0.16	0.42	72.41	0.51	0.12	3.62	<0.05	S
Burning sensation during micturition	1.11	0.32	0.79	71.17	0.79	0.18	4.37	<0.01	HS
Loin pain	1.21	0.32	0.89	73.55	1.10	0.25	3.54	<0.05	S
Body ache	1.05	0.32	0.73	69.52	0.56	0.13	5.72	<0.001	HS

The baseline means fever score in this group was 1.00; following treatment, the score dropped to 0.31, with a relief rate of 69.00%. This impact was statistically significant ($p < 0.05$). The initial mean score for frequent micturition was 0.58, which was decreased to 0.16 following therapy, representing a 72.41% reduction that was statistically significant ($p < 0.05$). The initial mean score of burning sensation during micturition was 1.11, which

was statistically significant ($p < 0.001$) and lowered to 0.32 with 71.17% alleviation. The initial mean score of loin discomfort was 1.21, which was statistically significant ($p < 0.05$) and dropped to 0.32 with 73.55% alleviation. The initial mean body discomfort score was 1.05, which decreased to 0.32 with 69.52% alleviation and was statistically significant ($p < 0.001$).

Table 11: Effect of Gokshur Mool Churna on hematological parameter

Lab. Finding	Mean		Diff.	% Relief	SD	SE	'T' Value	'P' Value	S
	BT	AT							
Hb%	14.11	13.91	0.2	1.41	0.404	0.092	2.157	<0.001	S
TLC	8576.3	7894.26	682.04	7.95	350.3	80.38	8.486	<0.001	HS
Neutrophil	65.89	63.16	2.73	4.14	4.84	1.11	2.46	<0.05	S
Eosinophil	3.58	2.16	1.42	39.66	0.77	0.18	8.06	<0.001	S
Monocyte	2.47	2.41	0.06	2.43	0.24	0.06	1.00	>0.05	IS
Lymphocyte	27.42	31.63	4.21	15.35	4.67	1.07	3.93	<0.05	S
ESR	31.315	20.157	11.158	35.63	1.607	0.368	30.251	<0.001	S

Effect of Gokshur Mool Churna on Hematological Parameter

The baseline means Hb% score was 14.11; following therapy, the score was lowered to 13.91, with a reduction of 1.41%; statistically, this result was extremely significant ($p < 0.05$). The baseline mean TLC score was 8576.3; following treatment, the score was lowered to 7894.26, with a relief of 7.95%. From a statistical standpoint, this impact was extremely significant ($p < 0.001$). The original mean Neutrophil score was 65.89; following treatment, the score was lowered to 63.16, with a relief of 4.14%. This result was statistically significant ($p < 0.05$). The original mean Eosinophil score was 3.58, and it was lowered to 2.16 following therapy, representing a 39.66% reduction that was statistically significant ($p < 0.001$). The baseline mean Lymphocyte score was 27.42; following therapy, the score climbed to 31.63, with a statistically significant alleviation of -15.35% ($p < 0.05$). Monocyte's initial mean score was 2.47, which decreased to 2.41 with 2.43% alleviation and was statistically insignificant ($p > 0.05$). The baseline mean ESR score was 31.315, which decreased to 20.157 with 35.63% alleviation and was statistically significant ($p < 0.001$). *Gokshur* has a sweet flavor, a sweet post-digestive impact (*Vipaka*), and a cold potency (*Virya*) due to the presence of *Guru* and *Snigdha Guna*. It is also effective in *Mutrakriccha Vyadhi* due to its *Mutravirechaka* feature. It contains potassium and a good amount of nitrates, which play a key role in the function of the renal system during diuresis. 12 patients are treated in 15 to 30 days. In 45 days, 5 patients are cured. 2 patients have been taking medication for 90 days.

Table 12: Total Effect of Treatment

Improvement	<i>Gokshur mool Churna</i>	
	No. of Patients	%
Complete improvement	12	63.16
Moderately improvement	05	26.32
Mild improvement	02	10.53
No improvement	00	00

CONCLUSION

Gokshur (Tribulus terrestris linn) has a sweet flavor, a sweet aftertaste (*Vipaka*), and a cold potency (*Virya*) with *Vatapittashamak* properties. *Guru* and *Snigdha Guna* are present. It also possesses *Mutravirechaka* qualities. It contains potassium and a healthy level of nitrates, both of which are crucial for the diuresis process. A review of the illness includes both modern and Ayurvedic descriptions of *Mutrakriccha Vyadhi*. It has a dominant *Vata* and *Pitta dusti janya roga tridosha*. *mutrabaha Srotas*, *Dusya*, *Mutra*, and *Jala* are all involved.

Gokshur mool Churna was used to treat the patients. A total of 20 participants are enrolled in the clinical trial, with one patient failing to finish the trial. After treatment, 12 patients, or 63.16%, were cured, 5 patients, or 26.32%, were moderately improved, and 2 patients, or 10.53%, showed minor improvement.

Because it has *Mutravirechaka* properties, *Gokshur* is very useful in *Mutrakriccha Vyadhi*. It contains potassium and a good amount of nitrates, which play an important role in the function of the renal system during diuresis. *Gokshur mool Churna* has a total effect of 65.15%.

During the treatment and follow-up period, no adverse effects were observed.

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