IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

EVALUATION OF TRIKANTAKADI KWATHA IN MUTRAKRICHHRA

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ABSTRACT

Dysuria is defined as pain, burning or discomfort on urination along with increased frequency or urgency of urination. *Mutrakrichhra* is defined as discomfort during, before & after micturition that may manifest in the form of *Daha, Ruja, Peeta-Mutrata, Sarakta-Mutrata, Basti Gurutva, Shotha, Muhurmutrata*. It may occur independently or as a *Lakshana* in other disease like *Ashmari, Mutraghata, Gulma, Mutraja Vidradhi, Arsha etc.*

METHODS

Total number of 20 patients was selected from the O.P.D of *Kayachikitsa* department of Rishikul campus, Uttarakhand Ayurveda University, Haridwar on the basis of inclusion and exclusion criteria.

RESULTS

- **The percentage relief in all the subjective parameters is as follow-**
  Burning**- 93%,** Pain-**100%,** Urgency-**74.50%,** Frequency-**72.40%.**
- Statistically highly significant result was found in subjective parameters like **burning, urgency& frequency** at the level of significance p<0.001 in each.
- Statistically significant result was found in subjective parameters like pain at the level of significance p<0.05 in each.
- In objective parameters, statistically highly significant results were found in serum creatinine & leukocyte esterase(p<0.01). Statistically significant results were found in appearance, pH & bacterial presence

($p<0.05$). Statistically Non-significant results were found in SGPT, Urea, Colour, S. gravity, Protein, RBC, Pus cell, Epithelial cells & Cast.

INTRODUCTION

According to Ayurveda, *Mutra* is formed from *Kitta bhaag* of *Ahara* by the action of *Jathragni*. In Ayurveda urinary disorders comes under *Mutrvahasrotasa* and describe in the form of *Mutrakricchra* and *Mutraghata*. The symptoms of *Mutrakricchra* and *Mutraghata* appear to overlap, but *Acharya Dalhana*, *Acharya Chakrapani*, and *Acharya Vijayarakshita* have distinguished between them. This distinction is based on the intensity of *"Vibhanda"* or *"Avarodha"* (obstruction), which is more pronounced in *Mutraghata*, whereas in *Mutrakrichhra* pain manifests as burning, tingling, and stinging of the urethra during, before, and after micturition. In *Mutrakrichhra* it is consider that doshas being aggravated by their repetitive etiological factor, individually or all reaches *Basti Mutramarga* result in *Sthan Sansrya* and *Vyadhi* is produced. The features of *Mutrakrichhra* manifest in the form of Daha, Ruja, *Muhurmutrata*, *Basti gurutva* etc.).

Now the need of *Ayurvedic* medicine arises to fill this lacuna. There are number of preparations described in *Ayurvedic* text and *Trikantakadi Kwath* in one among them and it has wonderful properties that helps in curing *Mutrakrichhra.* It contains drugs having propertiese such as *Vata-Pitta Shamak*, *Mutrala, Anulomak, Mutrakrichhra-hara, Daha Shamak, Ashmari Hara, Srotoshodhak, Vranropak* propertiese. On modern parametres we can say that these drugs have anti-inflammatory, diuretic, antacid lithotriptic, anti-lithogenic, laxative actions. This is the basis for choosing these drugs for my clinical study.

MATERIAL & METHODS

AIMS & OBJECTIVES

- To study the efficacy of *Trikantakadi Kwath* in *Mutrakrichhra.*

TYPE OF STUDY

- Open Randomised Trial

  Selection of Patients- Total 20 Patients with clinical features of the *Mutrakrichhra* from the OPD of *Kaya Chikitsa, Acharya Pandit Mukundi Lal Dwivedi Ayurvedic Chikitsalaya*, Rishikul Campus, UAU Haridwar will be selected randomly for this clinical study, irrespective of sex, religion, occupation etc. A detail proforma was prepared on the basis of the *Ayurvedic* text and allied sciences. The patient who fulfilled the inclusion and exclusion criteria were registered on this proforma and scoring of the different clinical features was done on the basis of assessment criteria.

  Trial drug is *Trikantakadi Kwath* which is described in *Chakradatta Samhita* contents are

त्रिकंटकारग्वधदर्भकाशदुरालभापर्वतभेदपथ्याः।

निघ्नन्ति पीता मधुनाऽश्मरीं च सम्प्राप्तमृत्योरपि मूत्रकृच्छ्रम्ं ॥

	Drug name	Botanical name	Family	Part used	Part
1	***Gokshur***	*Tribulus terrestris*	Zygophyllaceae	*Panchanga*	1 part
2	***Araghwadha***	*Cassia fistula*	Leguminosae	*Phala majja*	1 part
3	***Darbha***	*Imperata cylindrica*	Graminae	*Panchanga*	1 part
4	***Kasa***	*Sacchrum spontaneum*	Graminae	*Panchanga*	1 part
5	***Yavasa***	*Alhagi camelorum*	Leguminosae	Panchanga	1 part
6	***Paashanbheda***	*Saxifraga ligulate*	Saxifragaceae	Root	1 part
7	***Haritaki***	*Terminalia chebula*	Combretaceae	Fruit	1 part

Description of each drug will be explained further on the basis of properties, chemical constituents, action of *Dosha*, & mechanism of action.

Drug	***Rasa***	***Guna***	***Virya***	***Vipaka***	***Dosha Karma***	***Pharmacological Action***	***Chemical constituents***
Gokshur	*Madhura*	Guru, Snigdha	Sheeta	*Madhura*	*Vata-pitta Shamak*	*Diuretic Anti-inflammatory Aphrodisiac*	Harman, Sterols. Sapogenin Diosgenin, Gitogenin
Araghvadha	*Madhura*	*Guru, Snigdha*	*Sheeta*	*Madhura*	*Tridosh-Hara*	*Laxative, Anti-inlammatory Carminative,*	Sugar, Mucilage, Pectins, Anthraquinone
Darbha	*Madhura*	*Laghu, Snigdha*	*Sheeta*	*Madhura*	*Tridosh-Hara*	*Diuretic, Astringent*	Cylindrin, Arundoin,

							Fernenon, Isoburneol Simiarenon.
Kasa	*Madhura*	*Sara*	*sheeta*	*Madhura*	*Pitta-Hara*	*Diuretic, Immunomodulator,*	Galactose, Rhamnose, Terpenes, Coumarins,
Pashanbheda	*Kashaya, Tikta*	*Laghu, Snigdha, Tikshana*	*Ushna*	*Katu*	*Tridosh-Hara*	*Diuretic, lithotriptic, Antinflammatory*	Tannic Acid, Gallic Acid
Haritaki	*Kashaya, Tikta, Lavan Madhura,*	*Laghu, Ruksha*	*Ushna*	*Madhura*	*Tridosh-Hara*	*Anti-bacterial, Antiinflammatory, Hepatoprotective*	Tannins, AnthraquinonesPolyphenols
Yavasa	*Madhura Tikta, Kashaya*	*Guru, Snigdha*	*Sheeta*	*Madhura*	*Pitta-Kapha Hara*	*Antacid, Laxative, Diuretic, Gastroprotective*	*B-Phenethylamine,Salsolidine, Betaline, Sterols, Coumarins*

INCLUSION CRITERIA

1. Age Criteria: 20yrs to 70 Yrs.
2. Classical Symptom of *Mutrakrichhra i.e. ruk-ruk kar daha ke saath mutra ki pruvratti, Daha, Ruja, Muhurmutrata, Basti Gurutva, Sarakta-Mutrata, Shotha.*
   - Burning Micturition
   - Painful Micturition
   - Frequency of Micturition
   - Urgency

EXCLUSION CRITERIA

1. Patient Suffering from Diabetes Mellitus and Diabetes Insipidus.
2. Pyelonephritis
3. Uncontrolled Hypertension
4. Tuberculosis
5. Renal Disease

6. Anatomical Abnormalities
7. Thyroid Dysfunction
8. Pelvic Neoplasm
9. Surgical History (Phimosis)
10. Any Other Major Illness.

CRITERIA FOR WITHDRAWAL

1. Personal Matter
2. Aggravation of Complaints
3. Intercurrent Illness
4. Any other difficulties
5. LAMA (Patient can leave against medical advice).

CRITERIA FOR ASSESSMENT

The assessment of the drug trial was done on the basis of the Subjective and Objective parameters.

Subjective Parameters: The assessment of drug trial was done on the basis of improvement in the symptoms mentioned in inclusion criteria.

1. Burning Micturition
2. Painful Micturition
3. Frequency of Micturition
4. Urgency

Objective Parameters:

a) Urine & Routine Microscopy:

Colour, Appearance of urine, Specific gravity, Cast, pH, Glucose, Ketones, Bile Salts, Bile Pigments, Leukocyte Esterase, Bilirubin, Proteins, WBC, RBC, Pus Cells, Crystals.

b) Blood Investigation: Blood Urea, Serum Creatinine, SGOT, SGPT.

GRADING OF SUBJECTIVE PARAMETRES

1.Burning micturition

	GRADING	BT	AT
No burning	0		
Mild burning	1		
Moderate burning	2		
Severe burning	3		

2. Painful micturition

	GRADING	BT	AT
No pain	0		
Mild pain	1		
Moderate pain	2		
Severe pain	3		

3.

Urgency

	GRADING	BT	AT
No urge	0		
Can hold for >1hr	1		
Can hold for 10-30 mins	2		
Can hold for less than 10mins	3		

4.Frequency of micturition

	GRADING	BT	AT
5-7 times	0		
8-10 times	1		
10-13 times	2		
>13 times	3		

STATISTICAL ANALYSIS

- On comparison of subjective criteria before and after treatment with in a group Wilcoxon's Signed rank test was applied.
- For objective criteria within the group comparison paired t- test was applied.
- The test was carried at the 0.05, 0.01, 0.001 level of "p".
- Obtained result was interpreted according to the "p" value as:
- **P> 0.05 not significant, P > 0.01 & < 0.05 significant, P < 0.001 highly significant.**

FINAL RESULT: The results thus obtained from individual patient was categorised according to following grades

- **No relief –** < 25% improvement,
- **Mild relief –** >25% to <50%improvement,
- **Moderate relief –** >50% to < 75% improvement,
- **Marked relief –** >75% improvement to 99% relief,
- **Complete relief –** 100% improvement (cured).

RESULTS

The percentage relief in all the subjective parameters in patient given *Trikantakadi Kwath* is as follow-

VARIABLE	Number of patients
BURNING	20
PAIN	9
URGENCY	11
FREQUENCY	14

Assessment of Result in Subjective Criterias of *Mutrakrichhra*

GROUP1	MEDIAN		MEAN		SD	SE	Wilcoxon Signed	p-value	% effect	Result
PARAMETER	BT	AT	BT	AT						
BURNING	2	0	2.20	0.10	0.88	0.198	-210	<0.001	93%	HS
PAIN	2	0	1.67	0	0.50	0.166	-45	< 0.05	100%	S

URGENCY	2	1	2.20	0.55	0.67	0.203	-66	<0.001	74.50%	HS
FREQUENCY	2	0.5	2.07	0.57	0.85	0.228	-91	<0.001	72.40%	HS

The table shows that statistically highly significant results were found in subjective parameters like burning, urgency & frequency as value of $p < 0.001$ in each. Statistically significant results were found in pain.

Assessment of Result in Objective Criteria's of *Mutrakrichhra*

Objective Parameters		**N**	**MEAN**		**D**	**% Change**	**SD**	**SE**	**"t" Paired**	**p-value**	**Result**
			BT	**AT**							
Blood	**SGOT**	20	40.78	38.07	2.7	6.61	9.90	2.21	1.22	p > 0.05	**NS**
	SGPT	20	35.16	33.20	1.97	5.59	10.82	2.42	0.81	p > 0.05	**NS**
	UREA	20	20.75	20.70	0.05	0.24	4.62	1.03	0.048	p > 0.05	**NS**
	CREATININE	20	0.82	0.73	0.09	11.11	0.09	0.02	4.587	p < 0.001	**HS**
Urine (R &M)	**COLOR**	4	0.20	0.05	0.15	75	0.50	0.25	3.00	p > 0.05	**NS**
	APPEARANCE	8	1.000	0.250	0.750	75	0.46	0.16	4.583	p < 0.05	**S**
	S. GRAVITY	20	1.018	1.016	0.002	0.17	0.01	0.001	1.54	p > 0.05	**NS**
	pH	20	6.1	6.7	-0.6	-9.45	1.05	0.23	-2.46	p < 0.05	**S**
	L.ESTERASE	2	0.10	0	0.10	100	0.00	0.00	Infinite	p < 0.001	**HS**
	PROTEIN	1	0.05	0	0.05	100	----	----	----	----	**----**
	RBC	2	0.50	0.0	0.50	100	1.67	0.37	1.34	p > 0.05	**NS**
	PUS CELLS	20	9.45	2.90	6.55	69.31	9.50	2.12	3.08	p > 0.05	**NS**
	CRYSTALS	1	0	0.05	-0.05	100	----	----	----	----	**----**
	CAST	1	0.05	0.0	0.05	100	----	----	----	----	**----**
	EPITHELIAL CELLS	20	6.25	2.35	3.90	62.40	5.87	1.31	2.97	p > 0.05	**NS**
	BACTERIA	5	0.25	0.0	0.25	100	0.44	0.10	2.52	p<0.05	**S**

In objective parameters, statistically highly significant results were found in serum creatinine & leukocyte esterase ($p<0.001$). Statistically significant results were found in appearance, pH & bacterial presence ($p<0.05$). Statistically Non-significant results were found in SGPT, Urea, Color, S. gravity, Protein, RBC, Pus cell, Epithelial cells & Cast.

DISCUSSION

- Statistically highly significant result was found in subjective parameters like **burning, urgency& frequency** at the level of significance $p<0.001$ in each.
- Statistically significant result was found in subjective parameters like pain at the level of

significance $p<0.05$ in each.

- **The percentage relief in all the subjective parameters is as follow-**
  Burning**- 93%,** Pain-**100%,** Urgency-**74.50%,** Frequency-**72.40%.**
- In objective parameters, statistically highly significant results were found in serum creatinine & leukocyte esterase($p<0.001$). Statistically significant results were found in appearance, pH & bacterial presence ($p<0.05$). Statistically Non-significant results were found in SGPT, Urea, Colour, S. gravity, Protein, RBC, Pus cell, Epithelial cells & Cast.
- **The percentage relief in all the objective parameters is as follow-**
- 100% in case of L. Esterase, RBC, Crystals, Cast & Protein & Bacteria in urine.75% in colour & appearance of urine. 69.31% in pus cells, 62.40% in epithelial cells count.11.11% in Serum Creatinine level, 6.61% in SGOT level, 5.51% in SGPT level very minor change i.e., 0.24% in Serum Urea level & 0.17% in specific gravity level.

Probable Mode of action of Drugs:

Trikantakadi Kwath possess following propertiese *Vata-Pitta Shamak, Mutrala, Anulomak, Mutrakrichhra-hara, Daha-shamak, Ashmari-hara, Srotoshodhak, Vranropak* propertiese. on the basis of description of these drugs properties stated earlier. This is to be followed by on modern parameters we can say that these drugs have anti-inflammatory, diuretic, antacid, lithotriptic, anti-lithogenic, laxative actions. First of all, *Kwath* is *Agni Siddha Kalpana* hence suitable for *Vata-Kapha Pradhana Vyadhis.* Normally the urine formed filtered through kidney excreted from body through *Mutavaha Srotasa*. This whole process is accomplished by the action of *Prakrita Vata* (*Vyana Vayu* & *Apana Vayu*). Various afflictions result due to malfunctioning of these processes.
Gokshura is *Agnideepaka*[ii], it acts on liver regularizes the *Mutrajanana karma* (enzymatic actions, ornithine cycle, proper formation of urea) and its release in blood towards kidney. Saponins of *Tribulus terrestris* can ameliorate injured liver cells which may promote metabolic actions. This can be correlated with *Agnideepana Guna* & *Yakrita* is considered to be seat of *Dhatvagni*. It has potent diuretic action by increasing blood flow to the kidneys or by increasing GFR. It causes loss of water without potential loss of electrolytes as occurs with other diuretics. It has *Krimighna*[iii] action, steroidal saponin, flavonoids, alkaloids, tannins, terpenoids are considered to be antimicrobials. Articles have shown it has inhibition zone for Bacillus cereus, Escherichia coli, & Staphylococcus aureus. It has *Shothahara*[iv] action N-trans-p-caffeoyl tyramine markedly suppressed the expression of (COX-2) & the production of prostaglandins (PGE-2) through decreasing p-JNK expressions. It has *Bastishodhaka* & *Balya* action. Alpha- amyrin was found in *Tribulus terrestris* which is a precursor of Ursolic acid. Ursolic acid[v] increased skeletal muscle as well as grip strength and exercise capacity. *Rasayana* action[vi] of *Gokshura* is due to saponins isolated from the fruits of Tribulus terrestris demonstrated increase in phagocytosis, indicating non-specific immune response. It also increases humoral antibody titre. di-p-coumaroylquinic acid derivatives possess potent

antioxidant activity so considered the major constituents contributing to the antioxidant effect of the plant. *Gokshura* contains nitrates and oils, which causes diuresis and due to its *Vata pitta shamak* action it can be used to reduce inflammation and pain in conditions where some stone produces obstruction and infections leading to colicky pain. It has maximum amount of potassium and other alkaloids due to which it acts as a loop diuretic.

Araghvadha is having *Sukha Virechaka* propertiese as mentioned in *Agrya Prakaran* of *Charak Samhita* that helps is removal of morbid *Pitta*, and *Anulomana* of *Apana Vata* which helps in *Mutranishkramana*. It is also having antibacterial and antifungal properties against some gram positive staphylococcus aureus and streptococcus pyogenes, some gram negative[vii] E.Coli, *Pseudomonas aeruginiosa*, antifungal strains *Aspergillus niger*, *Candida albicans* and results were remarkably comparable with that of ampicillin, ciprofloxacin, norfloxacin and chloramphenicol and this data is available in one of the renowned journal.

Darbha is having *Tridoshaghna gunas* according to *Acharya Bhavamishra*. In *Kaideva Nighantu* also its mentioned as *Ashmarihara* and *Basti Vikarahara* and according to *Rasa* which is *Madhura* and *Kashaya* its mainly used as an astringent. Apart from this there are some theses work available showing result of *Trinapanchmoola* drugs in chronic renal failure[viii], renal proteinuria[ix].

Haritaki due to *Kashaya Rasa* it has *Sanshaman, Kapha Soshan, Shareerasya Kledasya Upshoshana, Kapha-Rakta-Pitta Prashman Gunas,* due to *Amla Rasa* got *Vata Anulomaka* propertiese, *Katu Rasa Margaan Vivrunoti*. It also has prokinetic action antibacterial action against *Salmonella typhi*[x], *Staphylococcus epidermidis, Staphylococcus aureus*, *Bacillus subtilis* that also have been proven in another journal.

Paashanbheda has *Tridoshaghna* and *Mutravirechaniya* and *Ashmarighna* propertiese[xi] . *Duralabha* is having *Pitta* pacifying propertiese *Kapha Hara Gunas* and diuretic action.

CONCLUSION

- *Mutrakrichhra* is defined as discomfort during, before & after micturition that may manifest in the form of *Daha, Ruja, Peeta-Mutrata, Sarakta-Mutrata, Basti Gurutva, Shotha, Muhurmutrata*.
- *Trikantakadi kwath* can overall increases the health of *Basti* i.e., urinogenital system that will help in treating *Srtovaigunya* and also disease recurrence, and progression of the disease.
- *Trikantakadi Kwath* possess following propertiese *Vata-Pitta Shamak, Mutrala, Anulomak, Mutrakrichhra-hara, Daha-shamak, Ashmari-hara, Srotoshodhak, Vranropak* propertiese that has cured *Mutrakrichhra* patient.

ACKNOWLEDGEMENT

I am very thankful to my supervisor Dr. Sanjay Kumar Tripathi & my co-supervisor Dr. Shweta Gyanendra Shukla for their guidance & enthusiastic support during this work.

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