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Review Article

AYURVEDIC PHARMACOLOGY FOR *MUTRAKRICHRA*

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ABSTRACT

Mutrakrichra roga (urinary disorders), is a prevalent ailment described in Ayurveda with diverse aetiologies and manifestations. Managing *Mutrakrichra* (urinary disorders) involves using various herbal drugs with diuretic, lithotriptic, and soothing properties. This study aims to compile and compare the drugs used in treating *Mutrakrichra roga* (urinary disorders) from different classical Ayurvedic texts or *Samhitas*, including *Charaka Samhita*, *Sushruta Samhita, Ashtanga Hridaya*, and other manuscripts. A systematic review of these texts was conducted to identify the drugs recommended for managing *Mutrakrichra roga* (urinary disorders). The findings revealed a rich repository of medicinal plants and formulations used for their therapeutic effects on urinary disorders, including *Gokshura (Tribulus terrestris), Punarnava (Boerrhavia diffusa),* and many others. This compilation of drugs from different *Samhitas* provides valuable insights into the traditional knowledge and practices of Ayurveda in managing *Mutrakrichra roga*. It underscores the need for further research and clinical studies to validate the efficacy and safety of these herbal remedies in contemporary healthcare practices.

INTRODUCTION

Mutrakrichra roga (urinary disorders) is a significant health concern in Ayurveda, characterized by various symptoms related to the urinary system. It encompasses a wide range of conditions, including difficulty in urination, frequent urination, painful urination, and urinary tract infections, among others. Ayurvedic texts such as *Samhitas*, offer a rich repository of knowledge on the management of *Mutrakrichra roga* (urinary disorders), detailing the use of herbal drugs and formulations. These texts emphasize the importance of a holistic approach to healthcare, focusing on the balance of *Doshas* (biological energies), *Dhatus* (tissues), and *Malas* (waste products) in the body. One of the key aspects of Ayurvedic treatment for *Mutrakrichra roga* (urinary disorders) is the use of herbal drugs with diuretic, lithotriptic, and anti-inflammatory properties. These herbs are known to improve kidney function, reduce inflammation in the urinary tract, and promote the elimination of toxins from the body. Urinary tract infections (UTIs) are common among both females and males, but due to physiological differences, the incidence is significantly higher in women. The occurrence of UTIs is eight times more frequent in females compared to males.[1] This study aims to compile and analyse the drugs used in the treatment of *Mutrakrichra roga* (urinary disorders) from different *Samhitas*. By comparing the recommendations from various texts, identification of commonalities and differences in the herbal remedies prescribed for this condition is enlisted. This compilation not only provides valuable insights into the traditional Ayurvedic management of urine disorders but also lays the foundation for further research and clinical studies to validate the efficacy and safety of these herbal remedies.

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MATERIAL AND METHOD

Nidana (Etiology)

The *Nidan* (etiological factors) of *Mutrakrichra* (Urinary disorders) as described in Ayurvedic classics encompass various dietary and lifestyle causes. These factors contribute to the manifestation of *Mutrakrichra* (urinary disorders) by disturbing the balance of the doshas *(Vata, Pitta, and Kapha)*. The summarized etiological factors are:

***Aahara janya Hetu* (Dietary Causes)**

- Consumption of *Ruksha Aahara* (dry foods) leading to *Pitta* and *Vata* aggravation.
- Excessive intake of alcoholic beverages causing *Vata* and *Pitta* imbalance and urinary tract infections.
- Consumption of fatty meats aggravating *Kapha*.
- Intake of fish causing *Kapha* and *Pitta* aggravation.
- *Adhyasana* (eating before the digestion of the previous meal and *Ajirna* (indigestion) causing aggravation of all three *Doshas.*

***Vihara Janya Hetu* (Lifestyle Causes)**

- Excessive physical exercise leading to dehydration and *Vata* aggravation.
- Constant riding causing *Vata* aggravation.
- Suppression of urine flow leading to *Vata* aggravation.
- Trauma or injury to the urinary tract.

Classification of *Mutrakrichra Roga* (Urinary Disorders)

Table 1: Classification of *Mutrakrichra Roga* (Urinary Disorders)

Types	*Charaka Samhita*	*Sushruta Samhita*	*Astanga Hriduya*	*Yogratnakara*	*Bhavaprakasha*	*Sharangadhara*	*Kashyap samhita*
Vataja	+	+	+	+	+	+	+
Pittaja	+	+	+	+	+	+	+
Kaphaja	+	+	+	+	+	+	+
Sannipatika	+	+	+	+	+	+	+
Sukraja	+			+	+	+	
Raktaja	+						+
Ashmarija	+	+		+	+	+	
Sharkaraja	+	+					
Abhighataja		+				+	
Purishaja		+		+	+	+	
Shalyaja				+	+		

These classifications help in understanding the varied presentations and etiologies of *Mutrakrichra Roga* as described by different Ayurvedic scholars.[2]

***Samprapti* (Pathogenesis)**

In Ayurvedic pathogenesis, the manifestation of diseases involves the interaction of *Doshas (Vata, Pitta, Kapha)* and *Dushyas* (body tissues). Various causative factors such as *Atimaithuna* (excessive sexual activity), *Nityadrutaprustayana mutravegadharana* (holding urine for prolonged periods), and *Ativyayama* (excessive exercise) lead to the aggravation of *Vata dosha*, especially *Apana Vayu*. Similarly, over-consumption of *Madya* (alcohol), *Matsya* (fish), and foods with *Katu amla lavana rasa* (pungent, sour, and salty tastes) causes aggravation of *Pitta dosha*, particularly *Pachaka Pitta*. Intake of *Anupamamsa* (fatty meats), *Adhyashana* (eating before digestion of the previous meal), and *Ajirna bhojana* (indigestion) aggravate *Kapha dosha*, leading to *Agnimandya* (reduced state of digestive power) and vitiation of all three *Doshas*.

The vitiation of *Doshas*, along with impaired digestive capacity, results in the formation of *Ama* (undigested toxins). *Ama* combined with the *Doshas*, forming *Ama dosha*, which then produce symptoms characteristic of urinary tract disorders such as *Peeta mutra* (yellowish urine), *Sadaha mutra pravritti* (burning micturition), *Basti* and *Mutrendriya gurutwa* (inflammation of the bladder), and *Shweta, Snigdha,* and *Picchila mutra* (turbid urine with the presence of leucocytes).

Acharya Charaka provides insight into the pathogenesis of *Mutrakrichra Roga,* describing how the vitiated *Doshas*, influenced by specific etiological factors, aggravate either individually or collectively in the urinary bladder or urinary passage, leading to the manifestation of urinary disorders like *Mutrakrichra Roga*.[3]

Data Extraction

The primary classical Ayurvedic texts were selected for this study. These texts are renowned for their comprehensive coverage of Ayurvedic principles and treatment modalities, including those related to *Mutrakrichra Roga*. An in-depth literature review was conducted regarding different single drugs through electronic media, research articles and various text books.

Following Data has been extracted from different *Samhita* for enlisting the drugs which are used in *Mutrakrichra* (Urine related disorder):

Table 2: Drugs used in treatment of *Mutrakrichra* mentioned in different Manuscripts of Ayurveda

Drugs	C.S.[4]	S.S.[5]	A.H.[6]	A.S.[7]	BP.S.[8]	H.S.[9]	BP.N.[10]	B.R.[11]	Y.R.[12]	C.D.[13]	V.D.[14]
Atibala					+					+	
Apamarga											+
Darbha	+	+						+	+		
Ela							+	+	+		
Ervaru	+	+			+			+	+		
Goksura	+	+	+	+	+		+	+	+		+
Hapusha		+									
Jati											
Kadali	+							+	+		
Kadamb	+										
Kamal	+					+					
Karpas	+										
Kasa	+						+	+	+		+
Ketaki	+							+			
Kumari								+			+
Kumuda	+										
Kusa	+							+	+	+	+
Kusumbha	+						+				
Salparni	+	+		+				+			
Prishnaparni	+	+		+				+			
Brihati	+	+		+				+	+		
Kantakari	+	+		+				+	+		
Mulaka								+			
Nimba											
Prasarini										+	
Sali	+							+	+		
Shatavari						+			+		
Shringataka	+								+		
Shitivaar	+		+	+	+						
Vidari	+							+	+		
Draksha								+	+		
Ikshu								+	+		
Kushmanda								+	+		
Amalaki								+	+		
Madhuka								+	+		
Daruharidra								+			
Tandula								+			
Shilajatu								+			
Narikela								+	+		
Kesara								+			

Sara								+	+		
Aragwadha								+	+		
Duralabha								+	+		
Pashanabheda	+						+	+	+		
Haritaki							+	+	+		
Guduchi							+	+	+		
Nagara								+			
Kasheruka								+	+		
Yavakshar								+	+		
Pippali								+	+		
Eranda								+	+		
Vasa								+	+		
Surya bhakta								+			
Dhanyak								+	+		
Vidanga								+			
Udumbara								+	+		
Shalmali								+			
Sarshapa								+			
Tulsi							+	+			
Bilva								+			
Mustaka								+			
Parpata								+	+		
Sahadevi								+			
Katuki								+			
Sariva								+			
Shrikhanda								+			
Madhavi								+			
Punarnava								+			
Bala							+	+	+		
Ashwagandha								+	+		
Tambula								+			
Tila								+	+		
Hingu								+	+		
Masha								+			
Kareera								+			
Amra									+		
Shunthi									+		
Agnimantha								+	+		
Shyonak								+			
Patala								+			
Gambhari								+			
Ervaru Beeja									+		

Katak									+		
Patha									+		
Kalingaka									+		
Nyagrodha									+		
Plaksha									+		
Ashwatha									+		
Parish									+		
Trivrut									+		
Pushkaramoola									+		
Palash									+		
Ankola									+		
Dadima									+		
Jeerak									+		
Vibhitaki									+		
Shatpatri							+				
Champa							+				

(Abbreviations- C.S.- *Charaka Samhita*, S.S.- *Sushruta Samhita*, A.H.- *Ashtanga Hriduya,* A.S.- *Ashtanga Sangraha*, BP.S.- *Bhavaprakash Samhita*, H.S.- *Harita Samhita*, BP.N.- *Bhavaprakasha Nighantu*, B.R.- *Bhaishajya Ratnavali*, Y.R.- *Yoga Ratnakara,* C.D.- *Chakradutta*, V.D.- *Vaidya Manorama*)

From above data following drugs were found to be more effective and selected for detailed review:

Gokshur

Gokshur (*Tribulus terrestris*), widely used in traditional Ayurvedic medicine, offers various health benefits including diuretic, aphrodisiac, and rejuvenating properties. It supports urinary tract health, aiding in the treatment of urinary disorders such as infections and kidney stones. *Gokshur* has been mentioned to have *Basti shodhana* (bladder cleansing/purifying) and *Asmari hara* (removing renal calculi) properties[15]. It also enhances libido, manages erectile dysfunction, and improves reproductive health in both men and women. Consumed in forms like capsules, powders, or teas, *Gokshur* has been subject to clinical studies. One study on 30 UTI patients demonstrated significant symptom improvement with *Gokshur* decoction[16], while another pilot study on 57 patients with Diabetic Nephropathy showed a reduction in urinary protein levels, indicating its potential benefit in reducing protein loss[17].

Punarnava

It is scientifically known as *Boerrhavia diffusa*, is a versatile herb with a long history of use in traditional medicine systems like Ayurveda. It's renowned for its diuretic properties and is often utilized to support kidney health, reduce fluid retention, and manage various urinary disorders. Additionally, *Punarnava* is valued for its anti-inflammatory and antioxidant properties, making it a popular choice for promoting overall well-being and vitality.

A study has shown that *Punarnava asava* is clinically significant in relieving urinary tract infection symptoms and improving urinary frequency and flow[18].

Yastimadhu

Liquorice with its *Madhura rasa* (sweet taste), *Guru Snigdha guna* (heavy and unctuous quality), *Sheeta veerya* (cool potency), and *Madhura vipaka* (sweet post-digestive effect) does *Indriya prasadana* (enhances sensory perception) and support cognitive function, including memory. Its anti-inflammatory and antioxidant properties could potentially contribute to memory enhancement. Furthermore, by facilitating cholinergic transmission, *Yastimadhu* may aid in learning and memory processes. Additionally, its strengthening properties may benefit the nervous and urinary systems, including urinary bladder muscles and sphincters, potentially helping to regulate bladder contraction and reduce urinary frequency[19].

Draksha

Draksha, commonly known as grapes or *Vitis vinifera*, supports urinary system health due to its antioxidant-rich composition. Its antioxidants combat oxidative stress, potentially reducing inflammation and protecting against urinary tract infections (UTIs). *Draksha's* natural diuretic properties aid in urine production, flushing out toxins and potentially preventing kidney stone formation. Its cooling nature soothes urinary tract irritation and discomfort

associated with conditions like UTIs or urinary urgency. Aqueous extracts from *Vitis Vinifera*, specifically the Hamburg species, exhibit a mild diuretic effect, enhancing uric acid elimination without notable changes in urinary pH or sediment composition. No pathological elements were detected in the urinary sediment, suggesting a benign impact on urinary system health[20].

Narikela

Coconut (*Cocos nucifera*) offers numerous properties beneficial to urinary health. Coconut water, derived from young coconuts, acts as a natural diuretic, promoting urine production and toxin elimination due to its high potassium content. Its hydrating properties help maintain urinary tract function and prevent dehydration. Coconut's antimicrobial properties may also prevent urinary tract infections (UTIs) by inhibiting bacterial growth[21]. Consuming coconut products supports urinary system health. Research suggests that coconut water exhibits antioxidant properties and slightly inhibits in vitro struvite crystallization, while fermented coconut water demonstrates antioxidant, anti-uropathogenic, and anti-struvite urolithiasis effects. Further analysis using various techniques confirmed their impact on struvite crystallization[22].

Pashanabheda

Pashanabheda, scientifically known as *Bergenia ligulata*, is a herb used in Ayurvedic medicine for its diuretic and lithotriptic effects, aiding in the management of urinary stones and related conditions. It is believed to dissolve kidney stones and alleviate symptoms like pain and discomfort during urination. Additionally, *Pashanabheda* possesses anti-inflammatory and antimicrobial properties, enhancing its therapeutic potential in urinary health. Clinical studies have shown significant efficacy of *Pashanabheda* in managing urolithiasis, providing relief from associated symptoms[23]. In vitro experiments demonstrated the herb's ability to inhibit calcium oxalate crystallization, indicating its potential as a preventive agent against urinary stone formation[24].

Dasamula

Dasamula, with its potent anti-inflammatory and diuretic properties, aids in managing urinary disorders in Ayurveda. It relieves symptoms associated with urinary tract infections, such as burning sensation during urination or frequent urination, by reducing inflammation and promoting urine flow. Additionally, *Dasamula* supports kidney function, reduces the risk of urinary stones, and contributes to overall urinary health due to its rejuvenating properties. According to Ayurvedic principles, it is a valuable herb in the management of various urinary disorders.

The study aimed to assess the lithotriptic activity of *Paatala Kshara* in treating urolithiasis and examined *Paatala Kshara Yoga* in detail. Results indicated better overall improvement in the trial group (66.7%) compared to the control group (53.3%), with superior symptomatic relief. Additionally, the trial drug exhibited better lithotriptic action and facilitated the descent of calculi compared to the control drug[25].

Ela

Ela, commonly known as *cardamom*, is celebrated for its aromatic flavour and diverse health benefits, including potential advantages for urinary health. Rich in antioxidants, *Ela* may reduce inflammation in the urinary tract and protect against urinary tract infections (UTIs). Its diuretic properties can enhance urine production, aiding in toxin elimination and supporting overall urinary system function. Integrating *Ela* into one's diet or consuming it as herbal tea may help maintain urinary tract health and prevent related issues.

A study explored the inhibitory effects of various extracts of *Elettaria cardamomum* seeds on calcium oxalate crystal formation and growth in vitro. Results revealed that both alcoholic and aqueous extracts showed superior potency in inhibiting crystal formation and aggregation compared to ethyl acetate and petroleum ether extracts. These findings highlight the potential of *Elettaria cardamomum* extracts, particularly alcoholic and aqueous extracts, as effective inhibitors of calcium oxalate crystal formation, suggesting their usefulness in managing conditions related to urinary stone formation[26].

Dhanyak

Dhanyak, or coriander, is recognized for its diuretic properties, aiding in urine production and toxin elimination, thereby potentially reducing the risk of urinary tract infections and kidney stones. Its anti-inflammatory and antimicrobial properties further promote urinary system health by reducing inflammation and inhibiting harmful bacteria growth. Incorporating *Dhanyak* into one's diet may help maintain urinary tract health and prevent related issues.

A study suggests that coriander fruit has diverse effects on the gut, including stimulation, inhibition, and hypotension, possibly mediated through cholinergic and calcium antagonist mechanisms. Additionally, its diuretic activity may enhance its efficacy in managing hypertension. Overall, coriander fruit exhibits promising potential in influencing gut function and regulating blood pressure through various physiological pathways[27].

Trina panchmula

Trina panchmula, an herbal combination of five roots used in Ayurveda, demonstrates effectiveness in

treating urinary disorders due to its diuretic, anti-inflammatory, and antimicrobial properties. It helps alleviate urinary tract infections, cystitis, and urinary retention. The study evaluating *Trina panchmula* reported consistent positive outcomes with no adverse reactions or toxicity observed. It emerged as a safe alternative to conventional antibiotics for urinary tract issues. Although the exact antimicrobial mechanism remains unclear, its ability to alleviate urinary complications suggests potential diuretic or anti-inflammatory properties as contributing factors to its efficacy[28].

RESULTS AND DISCUSSION

The compilation of drugs used in the management of *Mutrakrichra roga* (Urinary disorders) from different *Samhitas* revealed a total of 100 unique herbal drugs. These drugs are categorized based on their properties and traditional uses in Ayurveda for treating urine disorders. The most commonly mentioned herbs include *Gokshur* (*Tribulus terrestris*), *Punarnava* (*Boerrhavia diffusa*), *Darbha (Desmostachya bipinnata*), *Kusa* (*Desmostachya bipinnata*), *Kasa* (*Saccharaum spontaneum*), *Prisnaparni* (*Uraria picta*), *Shalparni* (*Desmodium gangeticum*), *Shitivaar* (*Celosia argentea*) and *Pashanbheda* (*Berginia ligulata*).

While there were similarities in the drugs mentioned across the *Samhitas*, there were also notable differences in dosage, preparation, and combination of herbs. For example, *Charaka Samhita* emphasizes the use of *Gokshura* in powder form, while *Sushruta Samhita* recommends it in decoction form. Such variations highlight the diverse approaches to treating urine disorders in Ayurveda. Overall, the compilation of drugs used in *Mutrakrichra roga* provides a comprehensive overview of the traditional Ayurvedic management of urine disorders. Further research is needed to validate the efficacy and safety of these herbal remedies in contemporary healthcare practices.

CONCLUSION

The compilation and comparative analysis of drugs used in the management of *Mutrakrichra roga* from different classical Ayurvedic texts provide valuable insights into the traditional Ayurvedic approach to treating urine disorders. The study revealed a rich repository of herbal drugs and formulations with diuretic, lithotriptic, and anti-inflammatory properties, aimed at restoring the balance of *Doshas* and promoting kidney health.

Despite variations in dosage, preparation, and combination of herbs across different *Samhitas*, certain drugs such as *Gokshura* (*Tribulus terrestris*), *Punarnava* (*Boerrhavia diffusa*), etc. were consistently recommended for the management of *Mutrakrichra roga*. These herbs are known for their beneficial effects on the urinary system, including improved urine flow, reduced inflammation, and prevention of urinary tract infections. The compilation of drugs from different Samhitas underscores the holistic nature of Ayurvedic medicine, which emphasizes the interplay of physical, mental, and spiritual aspects of health. The traditional knowledge preserved in these texts provides a valuable resource for modern healthcare practitioners seeking alternative and complementary approaches to managing urinary disorders.

Further research and clinical studies are warranted to validate the efficacy and safety of these herbal remedies in contemporary healthcare practices. The integration of Ayurvedic principles and formulations with modern medical approaches holds promise for enhancing the management of *Mutrakrichra roga* and improving the overall health and well-being of individuals suffering from urine disorders.

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