

MEDICINAL PLANTS OF BUXAR DISTRICT OF BIHAR USED IN TREATMENT OF URINARY TRACT AND KIDNEY STONES

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ABSTRACT

A floristic survey of ethnomedicinal plants was conducted at Buxar district of Bihar to assess the potentiality of plant resources. The study revealed that 12 plant species belonging to 11 families are used as anti-urolithiatic agents in local remedies. The information on medicinal uses is based on the exhaustive interviews with local healers and herbalists, practicing traditional system of medicine. Details of the plants, parts used method of preparation; dosage and mode of administration have been reported. *Bryophyllum pinnatum* (Lamk.) Oken. and *Gomphrena celosioides* Mart. are most effective and commonly used in treatment of urinary tract and kidney stones. These may prove precious potential source of bioactive compounds of therapeutic value against uro- and nephro-lithiasis and hence need further critical scientific testing, phytochemical examination and clinical evaluation for the purpose.

KEYWORDS :Medicinal plants, Traditional medicine, Ethnomedicine, Kidney stone, Urolithiasis, Urinary Tract Stone

Urinary tract and kidney stones ailments have affected human beings since antiquity. Ancient Vedic literature describes stones as Ashmari. The occurrence of these stones has been increasing in rural and urban societies (Mishra and Kumar, 2000). A large population of India suffers from urinary tract and kidney stones, formed due to deposition of calcium, phosphates and oxalates. The chemicals start accumulating over a nucleus, which ultimately takes the shape of a stone. These stones may persist for indefinite time, lead to secondary complications causing serious consequences to patient's life. It is very painful and a proper cure is very much needed to get rid of the problem (Zaidi et.al 2006). Though the treatment of urinary tract and kidney stones has been revolutionized by the development of non invasive methods of stone disruption but the patients always try to refrain from surgical procedures. Moreover, it also carries the factors like high cost, availability, side effects, etc.; the recurrence rate is also high (50-80%) (Zaidi et.al 2006). As no suitable medical therapy is available for such stone disorders, it is imperative to search for some new or less known medicinal plants, which may be a potential source for new bioactive compounds of therapeutic value. Such exploration assumes tremendous significance when herbal medicine is gaining importance throughout the world (Anonymous, 2006; Jain, 2006; Pushpagandhan, 2006; Purohit, 2005; Purohit & Prajapati, 2003). Of late, there has been a growing

resurgence and revival of interest in indigenous systems of medicine and traditional herbal remedies, which are regarded as quite safe, with minimal or no side effects, cost effective, readily available and easily affordable (Hussain, 2006; Iqbal, 2005; Sinha, 1996) . People living in interior and inaccessible remote rural areas have excellent knowledge about medicinal utility of the local flora. People in such areas of the district have been traditionally using indigenous folk remedies to cure various diseases for generations and passing on this knowledge orally. Because of prompt and positive effect of herbal treatment they have strong faith in their own folk medicinal preparations or crude formulations (Chandra et. al., 2005).

MATERIALS AND METHODS

The study area is the city Buxar which is the district headquarters of the district Buxar. The river Ganga and Karmanasa divide it from Uttar Pradesh. Total area occupied by the city Buxar is 24.7 km². It located at 25°34' North and 85°34' East. It has an average elevation of 56 meters (186 feet) above the sea level. The rivers flowing through the city are Ganga and Karmanasa. River Ganga forms the border in North and in the West the Karmanasa. The soil form is low laying alluvial plane of river Ganges and her tributaries - Thora and Karmanasa. The present district of Buxar consists of areas under Buxarsadar and Dumraon Subdivision of the old Bhojpur district and came

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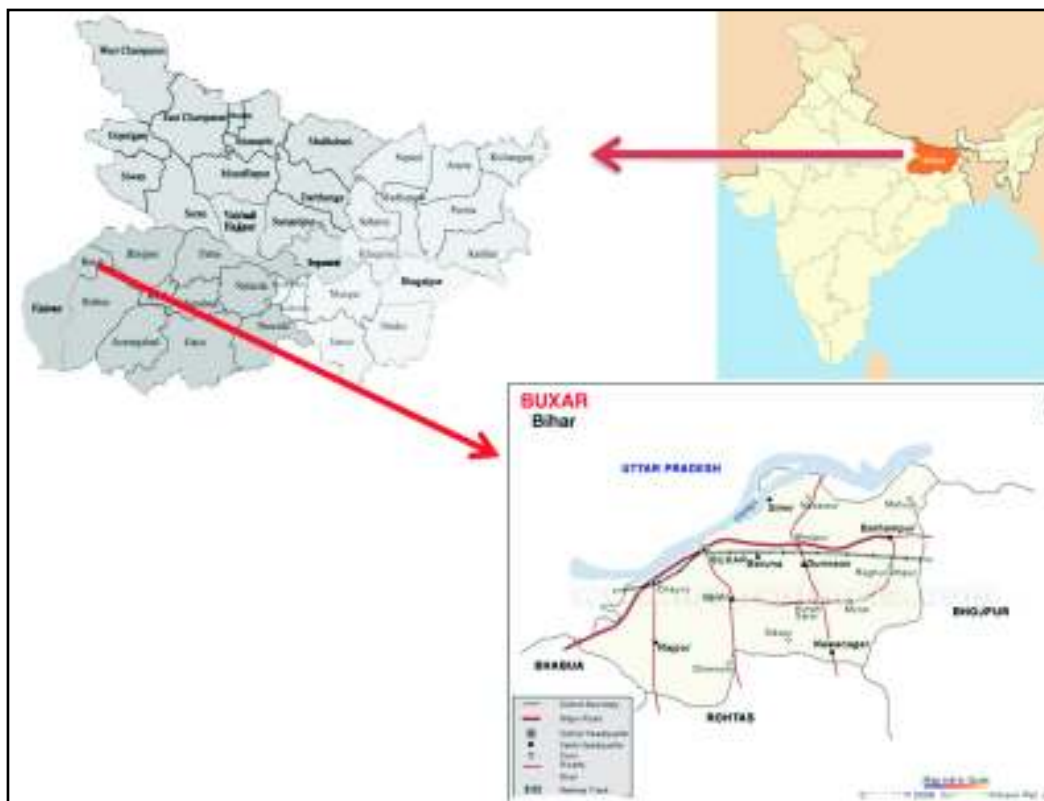


Figure 1 : Map of Study Area (Source: www.mapsofindia.com)

in existence in the year 1991. Buxar district is bounded on the north by Ballia district of Uttar Pradesh, on the south by Rohtas district, on the west by Ghazipur and Ballia districts, and on the east by Bhojpur district.

Due to its very rich and diverse flora, with a majority of the same being used in traditional folk medicine, there is immense scope for their potential commercial use as well. However studies relating to their ethnobotany have not been attempted yet and thus there is a complete lack of information about their traditional usage. The paper attempts to present briefly the information about some of the plants being used in this area for their anti urolithiatic, litholytic and litho-expulsive properties.

The study was conducted as per prescribed standard methodology of ethnobotanical (Jain, 1989; Martin, 1995; Rao & Hajra, 1995). Frequent field visits were regularly conducted throughout the year in the areas. The plants were collected with the help of herdsmen, farmers and other local people. The information about ethnomedicinal uses, local names of plants, plant parts used,

formulation and preparation of recipes, dose, duration and mode of administration were sought from local healers and herbalists practicing traditional system of medicine more specifically, the holymen, priests, hakims vaidyas, ojhas, bhagats, etc. Besides this village headmen, aged and experienced elderly knowledgeable men and women, and other rural folks were also consulted. The collected plants were properly preserved and correctly identified with the help of local and regional flora (Duthie, 1903-20; Kirtikar and Basu, 1999; Hooker, 1872 to 1896; Raizada, 1976; Dubey, 2004; Hains, 1925; Bor, 1960; Mishra and Verma, 1992; Saini et al., 2010 etc).

RESULTS AND DISCUSSION

Ethnomedicinal properties of the plants being used in the treatment of urinary tract and kidney stones is given mentioning plant names, families, local names and their medicinal uses, including plant parts used, method of recipe preparation, dose regimen and mode of administration as reported by the local people (Table 1). Occurrence of

Table 1 : Medicinal Plants Used in Treatment of Urinary Tract and Kidney Stones

S N	Plant name	Family	Local name	Mode of intake and use
1.	<i>Abutilon indicum</i> (L.) Sweet	Malvaceae	<i>Kanghi</i>	Leaf juice taken twice daily for two weeks is efficacious for the treatment of urinary tract and kidney stones.
2.	<i>Aerva lanata</i> (L.) Juss.	Amaranthaceae	<i>Chaya</i>	Whole plant decoction of <i>Chaya</i> , along with castor (<i>Ricinus communis</i> L.) root and <i>Gokhuru</i> (<i>Tribulus terrestris</i> L.) fruits is given twice a day for two weeks to cure stones. Root decoction is also used.
3.	<i>Boerhaavia diffusa</i> L.	Nyctaginaceae	<i>Bishkapra</i> , <i>Punarnava</i>	Root decoction is taken daily for one month to expel kidney stones.
4.	<i>Bryophyllum pinnatum</i> (Lamk.) Oken.	Crassulaceae	<i>Patharchata</i> , <i>Ajuba</i> , <i>Ghavpatta</i> , <i>Parnbeej</i>	Fresh leaf juice along with 2 -3 <i>Kalimirch</i> (<i>Piper nigrum</i> L.) powder is taken twice a day for 15 days to expel stones.
5.	<i>Crataeva nurvala</i> Buch-Ham.	Capparaceae	<i>Barna</i> , <i>Varuna</i>	Bark decoction twice daily for seven days is given in urinary tract infection (UTI) and for removal of stones from urinary tract.
6.	<i>Cynodon dactylon</i> (Linn.) Persoon	Poaceae	<i>Doobghas</i> , <i>Doobra</i> , <i>HariDoob</i>	Root decoction is given with honey or <i>misri</i> (clarified and crystallized sugar) twice daily for 3 weeks to cure urolithiasis.
7.	<i>Daucus carota</i> Linn.	Apiaceae	<i>Gajar</i>	One glass <i>gajar</i> juice is taken regularly for a fortnight to remove stones from urinary bladder and kidney.
8.	<i>Gomphrena celosioides</i> Martius	Amaranthaceae	<i>Kasia</i>	Whole plant juice along with 4 <i>Piper nigrum</i> Linn. and lemon juice twice a day is taken for 10 days to cure urolithiasis.
9.	<i>Ricinus communis</i> Linn.	Euphorbiaceae	<i>Arandi</i> , <i>ArandAndi</i> , <i>Chian</i>	Root decoction along with half a gram <i>sunthi</i> (dried and powdered rhizomes of <i>Zinziber officinale</i> Rosc.), one pinch of <i>heeng</i> (<i>Ferula asfoetida</i> Linn.) and common salt is taken twice daily for 7 days to treat kidney stones.
10.	<i>Solanum surattense</i> Burm	Solanaceae	<i>BerKateli</i> , <i>NeeliKateli</i>	Root powder along with <i>Bari Kateli</i> (<i>Solanum indicum</i> L.) root powder is given with curd daily for two weeks to expel kidney stones.
11.	<i>Trianthema portulacastrum</i> Linn.	Ficoideae	<i>Saunthi</i> , <i>Lalsubuni</i> <i>Patharchata</i> , <i>Bishkapra</i>	Fresh leaf juice is given twice a day for a week in case of stones problem in both urinary tracts and kidneys.
12.	<i>Tribulus terrestris</i> Linn.	Zygophyllaceae	<i>Gokhuru</i> , <i>Chhotagokhuru</i>	Fruits and root decoction thrice a day is taken regularly for a fortnight to help in expelling kidney stones.

urinary tract and kidney stones is a common clinical disorder, which has afflicted mankind since ancient times. Urolithiasis is an entity, which has high morbidity and low mortality but having serious and significant socio-economical impact. The prevalence of urolithiasis is estimated to be 1-5%. However, its frequency varies with differences in dietary habits of different people, food and

water contamination in different geographical areas and their level of development and environmental pollution, etc. The overall probability of forming stones differs in various parts of the world. Its worldwide prevalence is estimated to be 2-5%, while it is 2-13% in developed countries (Zaidi, 2006).

During ethnobotanical survey of district Buxar, 12 plant species belonging to 11 families were recorded as effective remedies used by local people to treat and cure stone ailments of urinary tract and kidney. These crude drug preparations inhibit further stone formation and their enlargement, dissolve or break the calculi and stones, expel them and reduce and relieve the suffering and pain. Some of these plants have also been reported earlier, being used in anti-urolithiatic and lithotriptic preparations from different parts of the country. A survey of Vedic literature was conducted to elucidate pharmacognostic aspects of herbal crude drugs of plant sources for the cure of urinary tract stones. *Boerhaavia diffusa* L. was among the important medicinal plants used for the treatment of stones during Vedic period. Decoction of *B. diffusa* L. whole plant is employed in the treatment of calculi by tribal people of Saurashtra, Gujarat, while its roots are used in the treatment of urinary stones by tribals of Akola and Sangamner talukas of Ahmednagar, Maharashtra (Bhat 2002; Petkar et al., 2002). Fruit decoction of *Tribulus terrestris* L. or their powder is taken in the treatment of renal calculi by tribal people of Gwalior and Saurashtra. Among all the plants surveyed *Bryophyllum pinnatum* (Lamk.) and *Gomphrena celosioides* Mart. are most effective and most commonly used preparations for their anti-lithiatic properties by the local people of the area due to their prompt action and positive results. The study emphasizes the need for the critical scientific examination and proper clinical evaluation of these plant species for their therapeutic ingredients, which could be used against different stone disorders and diseases.

ACKNOWLEDGEMENT

The authors are grateful to Principal, M.V. College, Buxar and Principal, Udai Pratap (Autonomous) College, Varanasi for facilities provided during investigation. Special thanks to Dr. M.P. Singh a well-known Taxonomist and Ethnobotanist of Eastern U.P. and Bihar for extended guidelines and encouragement during identification and field investigation.

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