Advanced International Journal for Research (AIJFR)
E-ISSN: 3048-7641 ● Website: www.aijfr.com ● Email: editor@aijfr.com

Effect of Aparveerataradi Tailam Matra Basti in Ashmari (Urolithiasis)

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Abstract

Ashmari is one of the most common diseases of Mutravaha Srotas (urinary system) which occur due to improper functioning of the filtration in the Kidneys. Urolithiasis is a condition where the stone exit the renal pelvis and move into the remainder of the urinary collecting system, which includes ureters, urinary bladder and urethra. In present era a wide range of allopathic as well as ayurvedic drugs are being used for the treatment of urolithiasis. Treatment includes both conservative as well as surgical interventions based on the size and site of calculi. Despite of different treatment modalities recurrence is still present. So, there is a need for further research for the betterment of quality of life of the patient and preventing the recurrence. To ease the obstructive and irritative symptoms of urolithiasis Basti therapy can be used. There are a few references on Samhitas and researches regarding the Basti therapy in urolithiasis. This article focuses mainly on the effect **APARVEERATARADI TAILAM** Matra Basti over the Ashmari.

Keywords - Ashmari, Mutavaha Srotas, Urolithiasis, Basti

1. Introduction

“APARVEERATARADI TAILAM”

वीरवृक्षाश्मभेदाग्निमंथश्योनाकपाटलाः। वृक्षादनीसहैरण्डभल्लूकोषीरपद्मकम्।। 91 ।।

कुषकाषषरेक्षूणामास्फोताकोकिलाक्षयोः। षतावरी ष्वदंश्ट्रा च सैत्कटाह्वयञ्जुलाः।।92।।

कपोतवंका श्रीपर्णी काष्मरीमूलसंयुता। एतैः कशायैः कल्कैष्च तैलं धीरो विपाचयेत्।।93।।

वातपित्तविकारेशु बस्तिं दद्याद्विचक्षणः। षर्कराऽष्मरिषूलघ्नं मूत्रकृच्छ्रविनाषनम्।।94।।

(भा॰प्र॰मध्य॰खण्ड 37ध्91.94)

1. Veervruksh	**9. Sonapatha**	**17. Kokilaksha**
2. Pashanbhed	**10. Usheer**	**18. Shatavari**
3. Arani	**11. Padmaka**	**19. Gokshur**
4. Shyonaka	**12. Kusha**	**20. Itkata**
5. Patla	**13. Kasha**	**21. Vetra**
6. Vrikshadani	**14. Shara**	**22. Kapotvanka**
7. Swarnkshiri	**15. Ikshu**	**23. Shriparni**
8. Eranda mool	**16. Aparajita**	**24. Kashmari mool**

1. VEERVRUKSH –

Latin Name – Terminalia arjuna
Family - Combretaceae
Rasa : Kashaya
Guna : Laghu, Ruksha
Vipaka : Katu
Veerya : Sheeta
Prabhava : Hridya
Part used - Bark
Karma - Raktastambhana, Sandhaneeya, Vranaropana
Chemical composition- Arjunolic Acid, Gallic Acid, Ellagic Acid
Pharmacological Properities- Antioxidant, Hypotensive, Anti-atherogenic **Anti-inflammatory**- Anti-carcinogenic and Anti-mutagenic

The bark contains several bioactive compounds such as triterpenoids, flavonoids, and tannins, which are believed to contribute to the beneficial effects of T. arjuna on kidney function. Studies have shown that T. arjuna bark extract significantly reduces serum creatinine levels and improves kidney function in rats with CKD (Pareek et al., 2011). Another study conducted on people with CKD showed that T. arjuna bark extract improved kidney function and reduced proteinuria (Khan et al., 2019).

Arjunic Acid - Arjunic acid has been shown to inhibit the formation of kidney stones by reducing oxidative stress and controlling the supersaturation of stone-forming salts in urine.

Arjungenin: T. arjuna's nephroprotective properties are also fostered by especially important flavonoid glycoside arjungenin. In renal tissues, it is involved in renal tissue regeneration, which include the capability to repair damaged kidney cells and alleviate the impact of oxidative stress caused by urolithiasis.

Tannins: T. arjuna is known for their astringent and their crystallization in inhibitory properties, and tannins in T. arjuna are able to bind to calcium oxalate crystals and prevent the aggregation and promote their dissolution.

Saponins: These compounds have a diuretic effect, enhancing urine flow and helping to flush out small stone fragments, thereby preventing the recurrence of kidney stones. Their ability to balance calcium metabolism is also crucial for stone prevention.

2. PASHANBHED

Latin Name – Bergenia ligulata
Family - Saxifragaceae
Rasa : Kashaya
Guna : Laghu and Snigdha
Vipaka : Katu
Veerya : Sheeta
Part used - Panchang
Karma - Raktastambhana, Sandhaneeya, Vranaropana and Stambhana
Chemical composition- Arbutin, Paashaanolactone, Afzelechin, Bergenin,
Pharmacological Properities- Antilithiatic and Antioxaluria.

Antilithiatic Activity -

The major contribution of B. ligulata towards pharmaceutical applications is that of an antilithiatic agent. Lower dose (0.5 mg/kg) of the EtOH extract of B. ligulata rhizome encourages diuresis in rats and is effective in dissolving preformed stones. 147.Voloboy N., Smirnov I., Bondarev A. Features of diuretic activity of arbutin and hydroquinone. Sib. Med. J. 2012;27:131–134. [Google Scholar]}The MeOH extracts of the rhizome also possess an antilitihiatic property that has been tested both in vitro and in vivo. In male Wistar rats, 5–10 mg/kg of the extract inhibited calcium oxalate crystal ($CaC_2O_4•_x$) aggregation in the renal tubes. There are several other reports that state that Bergenia extracts exerts its antilithiactic effect by diuresis, inhibition of $CaC_2O_4•_x$ crystal formation and aggregation, and hypermagnesemic and antioxidant activity.

Diuretic Activity -

Bergenia species are also known to possess diuretic properties. The EtOH extracts of B. ligulata roots were tested for their diuretic activity in rats. The Na^+, K^+, and Cl^- ion concentrations and the volume of urine excreted was measured after an interval of 5 h. It was observed that the EtOH extract showed significant diuretic activity. Singh N., Juyal V., Gupta A.K., Gahlot M. Evaluation of ethanolic extract of root of Bergenia ligulata for hepatoprotective, diuretic and antipyretic activities. J. Pharm. Res. 2009;2:958–960. [Google Scholar][Ref list] Bergenia crassifolia (L.) Fritsch. leaf extract contains 15–20% arbutin, which has the potential to treat genitourinary diseases. In a 14days experiment, the rats were injected with arbutin and hydroquinone, 5 mg/kg (seven days) and 15 mg/kg (seven days). During the experiment, the arbutin treatment increased the urine output (diuresis) along with creatinine and potassium, while hydroquinone.

3. ARANI –
Latin Name – Premna mucronata
Family - Verbenaceae
Rasa : Katu, Tikta, Kashaya, Madhura
Guna : Laghu, Ruksha
Vipaka : Katu
Veerya : Ushna
Part used – Bark and leaves
Chemical composition- Clerodendrin, D-mannitol, Hispidulin, Palmitic, Luteolin.
Pharmacological Properties- Antibacterial, Antiviral and Anti-inflammatory

Only one calculogenesis-related study has been carried out on Premna. The anticalculogenic activity of P. latifolia leaves and stems was evaluated in vitro by assessing oxalate crystal growth on gel medium in Hane's tubes via single diffusion method over period of 30 days at the concentrations of 20 and 200 mg/mL (Aravindakshan & Bai 1996). The extract effectively reduced the size of oxalate crystal in comparison to negative control and further analysis by using scanning electron microscope showed development of cracks in the crystal interior and rupture tendency. These results concluded chemolysis as an anticalculogenic mechanism of this extract. Aravindakshan C, Bai NJ.. 1996. Effect of Premna latifolia Roxb and Imperata arundinacea Cyril on in vitro oxalate crystal growth. Indian J Clin Biochem. 11:42–45. [Google Scholar].

Biradi M, Hullatti K.. 2015. Cytotoxic activity of isolated constituents from leaves of Premna serratifolia on MCF-7 and HT-29 cell lines. Bangladesh J Pharmacol. 10:205–208. [Google Scholar]

4. SHYONAKA
Latin Name – Oroxylum indicum
Family - Bignoniaceae
Rasa : Tikta, Kashaya, Madhura
Guna : Laghu, Ruksha
Vipaka: Katu
Veerya : Ushna
Part used - Bark, leaves, fruit, flower, pod, stem
Chemical composition- Prunetin, β-Sitosterol, Stigmasterol glucoside.
Pharmacological Properties- Antibacterial, Anti-inflammatory and Analgesic
Pharmacological Properties-
1) **Analgesic Activity**: The analgesic activity of hydroalcoholic extract of O. indicum stem bark was assessed using the hot plate method in Swiss albino mice by Lalrinzuali et al.. The administration of ethanolic extract at a dose of 300 mg/kg exhibited the highest activity (62.5% inhibition) as compared to positive control diclofenac showing higher analgesic activity (76.31% inhi-bition) at a dose of 20 mg/kg b.w. The leaves of O. indicum also possess significant analgesics activity. The extract of petroleum ether and ethanol showed analgesic effect having latency values of 7.22 & 0.07 and 9.02 ₫ 0.23, respectively, after 45 min for a dose of 200 mg/kg as compared to aspirin (latency (s) was 10.12 # 0.16 in a dose of 50 mg/kg). As plant products have minimum side effects compared to opioid and non-opioid analgesics.

2) **Antiinflammatory Activity:** O. indicum has been found to scavenge DPPH,

Superoxide anion, hydroxyl, nitric oxide, and Fe^{3+} radicals, which plays a

Major role in electing the inflammatory response Lalrinzuali K., Vabeiryureilai M., Jagetia G. C., Lalawmpuii P. C. Free radical scavenging and antioxidant potential of different extracts of Oroxylum indicum in vitro . Advances in Biomedicine and Pharmacy. 2015;2(3):120–130. doi: 10.19046/abp.v02i03.02It may have also suppressed the activation of proinflammatory cytokines including NF-κB, TNFα, IL-1β, and IFNγ and the activity of cyclooxygenase enzymes which are involved in inflammation. Yao Y., Chen L., Xiao J., et al. Chrysin protects against focal cerebral ischemia/reperfusion injury in mice through attenuation of oxidative stress and inflammation. International Journal of Molecular Sciences. 2014;15(11):20913–20926. doi: 10.3390/ijms151120913.

5. PATLA
Latin Name – Stereospermum suaveolens
Family - Bignoniaceae
Rasa : Tikta, Kashaya
Guna : Laghu, Ruksha
Vipaka : Katu
Veerya : Anushna
Part used – Root bark
Chemical composition- Naphthoquinone, and its root bark comprises 6-sitosterol, N-triacontanol, Lapachol, Dehydro-a-lapachone and Dehydrotectol
Pharmacological Properties- Antibacterial and Anti-inflammatory

DIURETIC ACTION : - Patla acts as a mild diuretic, reducing inflammation in the urinary tract and promoting the smooth flow of urine.
The ethanol extract of Stereospermum suaveolens was found to exhibit significant and dose dependent increase in urine volume and also the excretion of Na+, K+, Ca2+ and Cl− ions in the urine of treated rats at both the of doses (200 and 400 mg/kg, p.o.). Flavonoids, saponins, sterols and triterpenes [30, 31] are known to possess diuretic activity.

6. VRIKSHADANI –
Latin Name – Dendrophthoe falcate
Family - Loranthaceae
Rasa : Tikta, Kashaya, Madhura
Guna : Laghu, Ruksha
Vipaka : Katu
Veerya : Sheeta
Part used - Panchang
Chemical composition- Kempferol, Rutin11, Tannins, β-sitosterol,Stigmasterol, β-amyrin and Oleanolic acid
Pharmacological Properties- Anti-inflammatory3

The antiurolithiatic activity of Dendropthoe falcata due to the presence of various secondary metabolites such as alkaloids, flavonoids, glycosides, phenols, steroids, tannins etc. The plant show in vitro crystal inhibition action. It might be because of presence of saponin. Presence of various phytochemical such as flavonoids, saponins, terpenoids in the extract show the antiurolithiatic and hence the crystal formation is controlled and helps to reduce its further growth and recurrence.

the decoction of root and bark is used
as a diureti

In-vitro Crystal Inhibition

NUCLEATION ASSAY: the effect of different concentration of Dendropthoe falcata on nucleation of calcium oxalate crystal formation. The increase in the concentration of Dendropthoe falcata showed increase in the inhibition of nucleation. Maximum inhibition of nucleation was 67.6% observed at concentration of 100µg/ml.

GROWTH ASSAY: The increase in the concentration of dendropthoe falcata showed increase in the inhibition of growth. Maximum inhibition of nucleation was 66.43%observed at concentration of 100µg/Ml.

AGGREGATION ASSAY: The increase in the concentration of dendropthoe falcata showed increase in the inhibition of aggregation. Maximum inhibition of aggregation was 40.74%observed at concentration of 100µg/ml.

Miss Gondkar Shraddha R*1, Dr.P.M Gaikwad2 , Shinde Shraddha B3Dr. Vitthalrao Vikhe Patil Foundations College of Pharmacy, Ahmednagar Department of Pharmaceutical Pharmacology, Savitribai Phule Pune University, Pune, Maharashtra. TO STUDY IN-VITRO UROLIATHIASIS ACTIVITY OF DENDROPHTHOE FALCATA. (JETIR).

7. ERANDA

•**Latin Name –** Ricinus communis
•**Family -** Euphorbiacaeae
•**Rasa:** Katu, Kashaya, Madhura
•**Guna:** Snigdha, Sookshma, Teekshna
•**Vipaka :** Madhura
•**Veerya :** Ushna
•**Part used –** Root, leaves, fruit and seeds
•**Chemical Composition-** Ricinine, Albumin, Ricin, Octacosanol, Gallic Acid and Lupeol
•**Pharmacological Properties-** Antioxidant, Anti-inflammatory, Anti-diabetic, Central Analgesic, Antitumor and Anti-nociceptive.

Antiurolithiatic action:-

From the results of biochemical parameters and histopathological studies, it is obvious that the plant Ricinus communis L. has got inhibiting on the calcium oxalate crystal formation so it can be effectively

used in animal modal to treat urolithiasis. Chemical constituents of ethanolic extract of leaves of Ricinus communis L. reports as a diuretic in managment. Alkaloids, glycosides, tannins, phenolic compounds, triterpenoids etc. are responsible for diuretic activity. Mainly flavanoids and tannins are show the machanism of diuretic activity. These chemical constituents increase the urine output as well as urinary electrolyte concentration. Chemical constituents of leaves of Ricinus communis also show antioxidant activity. Mainly flavanoids are responsible for antioxidant activity. The evaluation of calcium and oxalate indicates that these two ions contribute significantly to stone formation. It has been reported, that 90% of all the stones analyzed contain calcium and that 50% to 65% contain mixture of both calcium oxalate and phosphate. Magnesium has an inhibitory action on stone. formation. Magnesium complexes with oxalate, the reducing calcium oxalate super saturation in urine. As a result growth and nucleation rate of calcium oxalate crystals were reduced. The increase in urinary uric acid excretion was observed in urolithiatic rats. Increased excretion of uric acid has been reported in stone formers and hyperoxaluric rats. Uric acid interferes with calcium oxalate solubility and it binds and reduces the inhibitory activity of glycosaminoglycans. The predominance of uric acid crystal in calcium oxalate stones and the observation that uric acid binding proteins are capable of binding to calcium oxalate and modulate it's crystallization also suggests it primary role in stone formation. Treatment of Ricinus communis lowered the excretion of uric acid and reduced the risk of stone formation. In urolithiasis, the glomerular filtration rate (GFR) decrease due to the obstruction to the outflow of urine by stones in urinary system. Due to this, the waste products, particularly nitrogenous and uric acid get accumulated in blood. CONCLUSION: The presented data indicate that administration of ethanolic extract of Ricinus communis L. Leaves to the rats with ethylene glycol induced urolithiasis reduced the formation of urinary stones and increase the total urinary output. Exact mechanism underlying this effect is not clear, but apparently related to diuretic, antioxidant effect and lowering of the stone forming constituents.

Dahiya R, Gilhotra UK and Verma AK: Evalution of anti-urolithiatic activity of Ricinus communis L. Leaves. Int J Pharm Sci Res 2017; 8(11): 4724-31.doi: 10.13040/IJPSR.0975-8232.8(11).4724-31.

8. USHEER:-

•**Latin Name –** Vetiveria zizanioides
•**Family -** Graminae
•**Rasa:** Tikta, Madhura
•**Guna:** Laghu, Ruksha
•**Vipaka :** Katu
•**Veerya :** Sheeta
•**Part used –** Mool **(**Root)
•**Chemical Composition-** Vetiselinenol , Khusimol, Allokhusiol, Benzoic Acid and Cyclocapacamphene
•**Pharmacological Properties-** Diuretic and Mild expectorant

The nephroprotective effect of standardized aqueous root extract of Vetiveria zizanioides (L.) Nash (Family: Poaceae) was investigated in doxorubicin-induced (20 mg/kg, ip) experimental nephrotoxicity model of Wistar rats. The freeze-dried aqueous refluxed (4 hr) root extract of V. zizanioides (25, 50; equivalent human therapeutic dose and 100 mg/kg) was administered separately to nephrotoxic Wistar rats (n = 6/group). Supplement of V. zizanioides resulted a dose-dependent reduction in raised serum creatinine, β_2 -microglobulin, and blood urea nitrogen and a subsequent increase in serum total protein and albumin in nephrotoxic rats ($p < .05$). An attenuation of the doxorubicin-induced features of renal

parenchymal injury was observed on H- and E-stained sections of the kidney tissues. Nootkatone, dehydroaromadendrene, isokhusenic acid, α-vetivone, and isolongifolene were identified in the methanol extract of V. zizanioides based on the GC-MS chromatogram analysis. The findings revealed that the supplement of standardized aqueous root extract of V. zizanioides had a significant dose-dependent nephroprotective activity against doxorubicin-induced experimental nephrotoxicity. PRACTICAL APPLICATIONS: Vetiveria zizanioides is a medicinal plant with a variety of therapeutic applications in kidney-related diseases. Apparently, it is used as a food ingredient due to its fresh and elegant scent and potential bioactivities. The aqueous root extract of V. zizanioides exerted relatively high antioxidant potential in vitro, substantiating the health effects of the plant pertaining to kidney diseases as a potential source of dietary antioxidant. The administration of the plant extract resulted in significant nephroprotection against doxorubicin-induced experimental nephrotoxicity revealing the significance of V. zizanioides as a promising dietary supplement in the management of kidney disease.

Amarasiri SS, Attanayake AP, Arawwawala LDAM, Jayatilaka KAPW, Mudduwa LKB. Nephroprotective activity of Vetiveria zizanioides (L.) Nash supplement in doxorubicin-induced nephrotoxicity model of Wistar rats. J Food Biochem. 2021 Sep;45(9):e13901. doi: 10.1111/jfbc.13901. Epub 2021 Aug 16. PMID: 34396545.

9. SWADAMSTRA

•**Latin Name –** Tribulus terristris
•**Family -** Zygophyllaceae
•**Rasa:** Madhura
•**Guna:** Guru, Snigdha
•**Vipaka :** Madhura
•**Veerya :** Sheeta
•**Part used –** Bark and Fruit
•**Chemical composition-** Neotigogenin, Gitogenin, Hecogenin, Neohecogenin and Diosgenin,
•**Pharmacological Properties-** Diuretic, Aphrodisiac, Ant urolithic, Immunomodulatory, Antidiabetic, Absorption Enhancing and Hypolipidemic

The diuretic properties at tribulus terristris are due to large quantitys of nitrates & essential oil present in fruits and seeds. The diuretic activity can also be attributed to the presence of potassium salt in high concentrate. The fruits of Tribulus Terristris (TT) have long been used in traditional system s of medicine for the treatment of various urinary diseases including urolithiasis. Calcium oxalate is a major type of crystal found in kidney stone. The ethanolic extract of terribulus terristris fruits and its fractions were studied to evulate its anti urolithic potential using different models. The experiments revealed that TT extract not only has a potential to inhibit nudeatm and growth of the ca ox gystals but also has aytoprotective role. TT was found to inhibit store formation in various models of urolithiasis using sodium glylcoate and ethylne glycol. Glycolate Oxidase (GOX) one of the principal enzymes involved in the pathway of oxalate synthesis converting glycolate to glyoxylate by oxidation and finally to oxalate. The antiulothic activity of TT is its Gox inhibition uercetin and kaempherol, active components of TT were found to be non-competitive and competitive inhibitors of GOX, respectively.
It is concluded that Gokshur (Teribulus Teristris) has, diuretic, antidibetic and antiurolithic effects.

Role of Gokshur in Urinary Disorder - A Review Dr. Pratibha Baghel 1*, Dr. Sujata K. Shamkuwar 2 and Dr. Barkha Thakur. International Journal of Agriculture Innovations and Research Volume 7, Issue 4, ISSN (Online) 2319-1473

10. PADMAKA

•**Latin Name –** Prunus cerasoides
•**Family -** Rosaceae
•**Rasa:** Tikta, Kashaya
•**Guna:** Laghu, Snigdha
•**Vipaka :** Katu
•**Veerya :** Sheeta
•**Part used –** Seeds and bark
•**Chemical composition-** Beta-sitosterol, Stigmasterol, Uroslic Acid, Prunetinoside and Neosakuran
•**Pharmacological Properties-** Anti-inflammatory, Anti-microbial and Diuretic

In vitro antiurolithiatic screening was done by nucleation, and aggregation assay, while preclinical evaluation was carried out on ethylene glycol (0.75% v/v) and ammonium chloride (1% w/v) rendered urolithiasic male Wistar rats. P. cerasoides fruit extract induced nucleation of multiple small sized calcium oxalate crystals and inhibited their aggregation in the metastable solutions. P. cerasoides fruit extract to a large extent prevented lithogenic treatment induced anorexia, weight loss, polydipsia, polyuria, crystalluria, hypercalciuria, hyperoxaluria, hyperuricosuria, hyperphosphaturia, hypocitraturia and hypomagnesuria. It also showed preventive effect on the deposition of calcium, oxalate and phosphate in kidney tissues and exhibited ameliorative effect on serum urea, creatinine and uric acid. Moreover, inhibitory effect on oxidative stress induced degeneration of renal tissue was also recorded from histopathological analysis of the kidneys. PCFE showed promising outcomes as an antiurolithiatic both prophylactically and curatively. The effects can be attributed to its ability to restore the equilibrium between the urinary promoters and inhibitors of CaOx crystallization, its anticrystallization activity and its ameliorating effects on renal cellularity, urine and serum chemistry.

Discovering the antiurolithiatic potential of wild himalayan cherry through in vitro and preclinical investigations

South African journal of botany (by Sweta bawari ,Archana n. Sah, Devesh tewari)

11. KUSHA

•**Latin Name –** Desmostachya bipinnata
•**Family -** Graminae
•**Rasa:** Kashaya, Madhura
•**Guna:** Laghu, Snigdh
•**Vipaka :** Madhur
•**Veerya :** Sheeta
•**Part used –** Mool (Root)
•**Chemical composition-** Alkaloids, Tannins, Phenolics, Flavonoids, Triterpenoids, Amino Acids and Glycosides

•**Pharmacological Properties-** Anti oxidant, Anti pyretic and Diuretic
Diuretic activity and nephroprotective activity of different extracts of Desmostachya bipinnata in rat was studied. The study suggested that the extracts have good diuretic property. Diuretic study was carried out as per Lipschitz method. Where successive aquoeus, ethonolic and petroleum extracts were studied for diuretic activity. The 6 hrs acute study of successive aqueous, ethonolic extracts showed increase in urine volume and K+ ion excretion as compared to control. However advanced toxicological studies remain to be performed in rodents. Extracts have shown moderate nephroprotective effect against gentamicin induced nephrotoxicity.

Lipschitz W.L., hadidian Z., kerpear K.: a bioassay of diuretics, JpharmacolexpTher. 1943; 70: 97-110.

The hydroalcoholic extract of whole plant of Desmostachya bipinnata was screened for diuretic activity in rats and the extract at dose of 500 mg per kg body weight produced significant increase in urine output in Wistar rats.
Golla U, Gajam P K, Bhimathati S S., Evaluation of diuretic and laxative activity of hydro-alcoholic extract
of Desmostachya bipinnata (L.) Stapf in rats. J Integr Med. 2014; 12(4): 372-378.

12. KASA
•**Latin Name –** Saccharum Spontaneum
•**Family -** Gramineae
•**Rasa:** Kashay, Madhur
•**Guna:** Laghu, Snigdh
•**Vipaka :** Madhur
•**Veerya :** Sheeta
•**Part Used –** Mool (Root)
•**Chemical Composition-** Saccharins,tannins, Steroid, Terpenoids, and Glycosides
•**Pharmacological Properties-** Diuretic, Lthotriptic, Emollient and Aphrodisiac

Anti-urolithiasis activity - The ethanol root extract of Saccharum spontaneum was reported to possess anti-urolithiasis activity in rats against glycolic acid and ethylene glycol-induced urolithiasis. Ethylene glycol causes a rise in the urinary concentration of urea, uric acid, calcium, oxalate, and creatinine, while glycolic acid cause rise in levels of sodium, potassium, chloride, protein, lipid peroxidation, which indicates urolithiasis in rats. Ethanol extract of Saccharum spontaneum (200 and 300 mg/kg, p.o.) restored the levels in urolithiasis rats. Ethanol extract also repairs the changes in the lysosomal enzymes like xanthine oxidase, β-D-glucuronidase in the kidney, liver, and n-acetyl-d-glucosaminidase in serum, liver, kidney, and urine of the urolithiasis rats. (Sathya & Kokilavani, 2012; Sathya & Kokilavani, 2013)
Sathya and Kokilavani. Effect of Saccharum spontaneum Linn. on Lysosomal enzymes of
Urolithiatic rats. J. Appl. Pharm. Sci., 2012; 2(09): 122-126.
20. Sathya M and Kokilavani R. Preventive effect of Saccharum spontaneum Linn. against
glycolic acid – induced urolithiasis in male wistar albino rats. Int J Pharm Bio Sci., 2013;

4(1): 1 – 10

Anti-inflammatory activity - Cream of Root extracts exhibited anti-inflammatory activity in mice against the carrageenan-induced paw edema test. Inflammation was induced by injecting 0.1 ml of carrageenan (1%).
The degree of inflammation was measured using a digital Vernier caliper at 0, 1, 2, and 3 hours after the stimulus was made. Results of this study showed that the pre-formulated 2% root extract cream of the plant possesses anti-inflammatory activity (Lapuz et al., 2016).
Lapuz AMR, Arabiran RDA, Sembrano TM, Albaniel JR, Paet JC, Maini HA. Preformulation and Evaluation of Antibacterial and Anti-Inflammatory Activities of Saccharum spontaneum Linn Root Extract Cream. Int J Chem Eng., 2016; 7(3)

13. SHARA
•**Latin Name –** Saccharum munja
•**Family -** Gramineae
•**Rasa:** Tikta, Madhura
•**Guna :** Laghu, Snigdha
•**Vipaka :** Madhura
•**Veerya :** Sheeta
•**Part used –** Mool(Root)
•**Chemical composition-** Saccharins,Tannins, Steroid, Terpenoids, and Glycosides
•**Pharmacological Properties-** Diuretic, Lthotriptic, Emollient and Aphrodisiac

14. IKSHU
•**Latin Name –** Saccharum officinarum
•**Family -** Bignoniaceae
•**Rasa:** Madhura
•**Guna:** Guru, Snigdha
•**Vipaka :** Sheeta
•**Veerya :** Madhura
•**Part used –** Bark
•**Chemical composition-** Phenolic acids, Plant sterols, Flavonoids, Terpenoids Glycosides, Fatty acids, Alcohol and Policosanols.
•**Pharmacological Properties-** Antibacterial, Diuretic and Antioxidant

15. APRAJITA
•**Latin Name –** Clitoria Ternatea
•**Family -** Fabaceae
•**Rasa:** Tikta, Kashaya, Katu
•**Guna:** Laghu, Ruksha
•**Vipaka :** Katu
•**Veerya :** Sheeta

•**Part Used –** Bark and Seeds
•**Chemical Composition-** Antharaquinone, Anthocyanins, Cardiac Glycosides, Stigmast- 4-ene-3,6-dione, Volatile Oils and Steroids.
•**Pharmacological Properties-** Antioxidant, Hypolipidemic, Anticancer, Anti-inflammatory, Analgesic

The study was undertaken to investigate diuretic effect of aqueous and ethanol extracts of the dried flowers of Clitoria ternatea in normal
rats. Qualitative analysis of various phytochemical constituents was determined by the well-known test protocol available in the literature. Aqueous and ethanol extracts of Clitoria ternateaflowers were administered to experimental rats orally at doses of 500 mg/kg p.o. Furosemide (5 mg/kg) was used as positive control in study. The diuretic effect of the extracts was evaluated by measuring urine volume and sodium content. Phytochemical screening of the extract howed the presence some common compounds like alkaloids, resins, steroids, tannins, saponins, and glycoside. Urine volume was significantly increased by aqueous and ethanol extracts in comparison to control group. While the excretion of sodium was also increased by both extracts. So we can conclude that aqueous and ethanol extracts of Clitoria ternatea produced notable diuretic effect which appeared to be comparable to that produced by the reference diuretic Furosemide. The study provided a quantitative basis for explaining the folkloric use of Clitoria ternateaas a diuretic agent.
Mahajan P, Bundela R, Jain S, Shukla K,
Phytochemical Screening and Diuretic Activity of the
Aqueous and Ethanolic Extract of Clitoria ternatea
Flowers, Journal of Drug Delivery and Therapeutics.
2022; 12(6-s):102-105

16. KOKILAKSHA
•**Latin Name –** Asteracantha longifolia
•**Family -** Acanthaceae
•**Rasa:** Madhura
•**Guna:** Guru, Snigdha, Picchila
•**Vipaka :** Madhura
•**Veerya :** Sheeta
•**Part Used –** Bark, Seeds and Panchang
•**Chemical Composition-** Lupeol, Stigmasterol and Isoflavone Glycoside
•**Pharmacological Properties-** Antitumor, Hypoglycemic, Aphrodisiac, Antibacterial and Free Radical Scavenging.

The phytochemical study shows Kokilaksha contains the potassium which acts on a dissolution of stones. The alcohol extract of the plant showed the significant increase in the total urine volume and concentrations of Na+, k+ and Cl- in the urine. These findings support traditional use as a diuretic. The phytochemical study shows Kokilaksha contains the Alkaloids which in turn increases the pH of urine and acts as an alkalizer which decreases the burning micturition. The phytochemical study shows Kokilaksha contain the Glycosides which inturn acts as a Urinary antiseptic agent, this covers the lacerated mucosal

surface and heals the tract. Kokilaksha also contains petroleum, ether, chloroform, alcohol which significantly increases the pain threshold of body and this causes the analgesic action on the body.

17. SHATAVARI

•**Latin Name –** Asparagus racemosus
•**Family -** Liliaceae
•**Rasa:** Tikta,Madhura
•**Guna:** Guru,Snigdha
•**Vipaka :** Madhura
•**Veerya :** Sheeta
•**Part used –** Mool (Root)
•**Chemical composition-** Asparagine, Arginine, Tyrosine, Flavonoids (Kaempferol, Quercetin, And Rutin), Resin and Tannin
•**Pharmacological Properties-** Antioxidants, Immunostimulants, Anti-inflammatory and Ant oxytocic

18. KAPOTVANKA

•**Latin Name –** Bacopa moneri
•**Family -** Scrophulariaceae
•**Rasa:** Tikta, Kashaya
•**Guna:** Laghu
•**Vipaka :**Madhura
•**Veerya :** Sheeta
•**Part used –** Panchang
•**Chemical composition-** Brahmine, Herpestine, Hersaponin, Monnierin (Saponin) and Bacoside A & B
•**Pharmacological Properties-** Astringent, Cooling, Brain Tonic, Antioxidant and Anti-epileptic

19. SHRIPARNI

•**Latin Name –** Gmelina arborea
•**Family -** Verbinaceae
•**Rasa:** Tikta, Kashaya, Madhura
•**Guna:** Guru
•**Vipaka :** Katu
•**Veerya :** Ushna
•**Part used–** Bark and Fruit
•**Chemical composition-**Hentriacontanol, Beta-Sitosterol, Butyric acid, Tartaric acid, Alkaloid, Resin and Saccharine
•**Pharmacological Properties-** Anthelminthic, Antimicrobial, Antidiabetic, Diuretic, Hepatoprotective and Antiepileptic agent.

The analgesic activity of O. indicumstem bark was assessed using the hot plate method in Swiss albino mice by Lalrinzuali et al. [76]. The administration ofethanolic extract at a dose of 300 mg/kg exhibited the highest activity (62.5% inhibition) as compared to positive control diclofenac showing higher

analgesic activity (76.31% inhi-bition) at a dose of 20 mg/kg b.w. The leaves of O. indicum also possess significant analgesics activity. The extract of petroleum ether and ethanol showed analgesic effect having latency(s) values of 7.22 ± 0.07 and 9.02 ± 0.23, respectively, after 45 min for a dose of 200 mg/kg as compared to aspirin (latency(s) was 10.12 ± 0.16 in a dose of 50 mg/kg). As plant products have minimum side effects compared to opioid andnon-opioid analgesics [103], proper formulations based on this plant may be helpful in near future. The analgesic activity of O. indicum stem bark was assessed using the hot plate method in Swiss albino mice by Lalrinzuali et al. [76]. The administration of ethanolic extract at a dose of 300 mg/kg exhibited the highest activity (62.5% inhibition) as compared to positive control diclofenac showing higher analgesic activity (76.31% inhi-bition) at a dose of 20 mg/kg b.w. The leaves of O. indicum also possess significant analgesics activity. The extract of petroleum ether and ethanol showed analgesic effect having latency(s) values of 7.22 ± 0.07 and 9.02 ± 0.23, respectively, after 45 min for a dose of 200 mg/kg as compared to aspirin (latency(s) was 10.12 ± 0.16 in a dose of 50 mg/kg). As plant products have minimum side effects compared to opioid and non-opioid analgesics [103], proper formulations based on this plant may be helpful in near future.