J. Pharm. Res. 2023;22(3):133–141

Print ISSN: 0973-7200
Online ISSN: 2454-8405

Journal of Pharmaceutical Research

Review Article

An Overview on Pashanabedha Medicinal Plants

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ARTICLE INFO

Article history:
Received 24.07.2023
Accepted 03.10.2023
Published 15.10.2023

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https://doi.org/
10.18579/jopcr/v22.3.23.24

ABSTRACT

One of the major kidney diseases that needs a well-targeted therapeutic approach is urolithiasis. For the treatment of lithiasis, a number of medications are available, including diuretics and stone inhibitors, however clinical examination of these medications has revealed a frequency of relapses, adverse effects, and drug interactions. This has served as the justification for the development of new antilithiatic medications, and the hunt for novel molecules has now included herbal medications that provide superior defence and lower relapse rates. Plant-based medications are becoming more popular and are being researched for a variety of illnesses, including lithiasis. A set of medicinal plants known as pashanabheda (literally, "stone-solving") are utilised by Ayurvedic doctors in India as anti-urolithiatic medications. The present article reviews the antilithiatic activity of some of the medicinal plants. Here attempt is made to review a few medicinal plants with documented anti-urolithiatic action. In this study, some of the significant plants noted for their antilithiatic effects have been highlighted.

Keywords: Urolithiatic; AntiUrolithiatic; Maceration; Turbidimetry; Calcium Oxalate

INTRODUCTION

The term "urolithiasis" derives from the Greek terms ouron, which means "urine," and lithos, which means "stone". Persons who have urolithiasis develop kidney or urinary tract stones[1]. The most typical kind of stone comprises calcium together with either oxalate or phosphate[2]. The most frequent type is the magnesium ammonium phosphate or calcium oxalate type, both of which are typically found[3]. The location and size of the calculi affect the urinary stone disease symptoms in different ways[4]. Stones can be detected using imaging techniques like x-rays, computed tomography, and ultrasound[5].

In the current medical system, kidney stones are typically treated with surgical and interventional techniques such extracorporeal shock wave lithotripsy, percutaneous nephrolithotomy, and ureteroscopy[6]. These surgical techniques are expensive recurrence is rather typical. Due to the current medical system's lack of clinically effective medications that can be used to dissolve kidney stones or stop their formation and recurrence, doctors must rely on complementary and alternative therapies[7]. The reasons why individuals choose herbal medicine include side effects, expense, development of resistance, insufficient supply of synthetic pharmaceuticals[8]. Plant-based medical research has received a lot of attention and is a huge source of new pharmacological entities. It can be used as an alternative to or in addition to conventional therapy[9]. A set of medicinal plants known as pashanabheda (literally, "stone-solving") are utilised by Ayurvedic doctors in India as anti-urolithiatic medications[10].

Pedalium murex

P. K. Patel et al., investigated the anti-urolithiatic activity of fruit extract from *Pedalium murex* (family Pedaliaceae) in male rats with urolithiasis brought on by ethylene glycol. Male wistar rats were administered doses of 100, 200, and 400 mg/kg of methanol extract, which reduced calcium, uric acid, hyperoxaluria, improved renal function, and had an antioxidant effect[11].

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Table 1: Some of the medicinal plants which shows anti-urolithiatic activity

Slno	Common name	Botanical name	Parts used	Extract	Dose	Reference
1	Bada-gokhru	*Pedalium murex*	fruit	methanol extract	100, 200 and 400 mg/kg	11
2	Scent leaf	*Ocimum gratissimum*	leaves	Soxhlet extraction -alcohol	1000mg\ml	12
3	Scutch grass Guezzah	*Cynodon dactylon* *Pituranthos scoparius* *Herniaria fontanesii*	roots	Maceration-acetone (100%), methanol (100%), acetone-water (50%-50%) and methanol-water (50%- 50%) Decoction-distilled water	5g/L	13
4	Life leaf	*Bryophyllum pinnatum*	leaves	Maceration-hydroalcoholic (70% v/v ethanol in water)	200 mg/kg	14
5	Keremo	*Maerua Angolensis*	leaves	Cold extraction method-water, ethanol and chloroform	Chloroform extract-30 mg/ml	15
6	Halas	*Cissus Rotandifolia*	leaves	Soxhlet apparatus-70% methanol and 30% distilled water	400 mg / kg	16
7	Rabano negro	*Raphanus sativus*	tubercele	Soxhlet extraction method -Aqueous	140mg/kg	17
8	Crab grass	*Digitaria sanguanalis*	stem	Soxhlet extraction method-Butanol	10 mg	18
9	Carrot	*Daucus carota*	root	Cold maceration method-70% methanol	1000 μg/ml	9
10	Tailed pepper	*Piper cubeba*	fruits	Soxhlet apparatus-ethanol	3200 μg/ml	19
11	Papaya	*Carica papaya*	roots	Cold maceration method- aqueous, alcoholic, hydroalcoholic	80mg/ml dilution	20
12	Gaub tree	*Diospyros malabarica*	fruits	Soxhlet extraction-ethanolic	250mg/kg and 500mg/kg	21
13	Sarpunkha	*Tephrosia purpurea*	roots	Ethanol and aqueous	300 mg/kg	22
14	Spiral ginger	*Costus spiralis*	Whole plant	Boiling-aqueous	0.5g/kg/day	23
15	Drumstick tree	*Moringa oleifera*	Dry seeds	Soaking and filteration-70% aqueous and methanol	500mg/kg	24
16	Slender amaranth	*Amaranthus viridis*	roots	Soaking- distilled water	200 mg/kg	25
17	Cumin	*Cuminum cyminum*	seeds	Maceration-distilled water	30mg/ml	26
18	Baruna	*Crataeva magna*	bark	Soxhlet apparatus -ethanol	400mg/kg	27
19	Gokru	*Tribulus terrestris*	fruit	aqueous	750mg/kg	28
20	Aquatic rotula	*Rotula aquatica*	Fresh plant	aqueous	100-500μg/ml	29
21	Prostrate false Agathis	*Lepidagathis prostrata*	Whole plant	Soxhlet apparatus-Methanol	3 mg/ml	30
22	Black night shade	*Solanum nigrum*	fruit	Hydroalcoholic	400 mg/kg	31
23	Blue green algae	*Spirulina platensis*	algae	Distilled water	100mg/ml	32
24	Date palm	*Phoenix dactylifera*	fruit	Soxhelation-n butanol and aqueous	200mg/kg	33
25	Asthma weed	*Euphorbia hirta*	wholeplant	Cold percolation-Alcoholic Hydroalcoholic water	5mg/ml	34

Continued on next page

Table 1 continued

26	Indian lilac	*Melia azadirachta*	Aerial parts	Decoction-aqueous	400 mg/kg	[4]
27	Copperleaf, Indian acalypha, Indian-nettle	*Acalypha indica*	leaves	Maceration-ethanol and methanol	10mg of the extract	[35]
28	Dwarf pineapple pineapple	*Ananas nanus Ananas comosus*	fruits	Decoction- distilled water	_	[36]
29	Guelder rose	Viburnum opulus	fruits	Maceration--hexane, ethyl acetate (EtOAc), and methanol (MeOH)	100 mg/kg	[37]
30	Udahalu & Balunakuta	*Passiflora foetida Stachtarpheta indic*	wholeplant	Soaking and boiling-distilled water	2mg/mL 1 mg/mL	[38]
31	Tiny morning glory	*Ipomoea eriocarpa*	leaf	Ethanol	200mg/kg	[39]
32	Musk mallow	*Abelmoschus moschatus*	Dried seeds	Soxhlet apparatus-chloroform and 70% v/v methanol solution	Chloroform-400mg\kg	[40]
33	Hair knot plant	*Pergularia deamia*	whole plant	Soxhlet extraction-Pet ether	100mg/kg	[41]
34	European golden rod	*Solidago virga-aurea*	whole plant	Soxhlet's apparatus - methanol	750mg\kg body weight	[42]
35	Life plant	*Kalanchoe pinnata*	leaves	Boiling-aqueous extract	20mg\ml	[43]
36	Indian olibanum	*Boswellia serrata*	roots	methanol	0.5g/kg/day	[44]
37	Mondell pine	*Pinus Eldarica*	fruits	decoction method-distilled water	500 mg/kg/day	[45]
38	Red fox	*Celosia argentea*	root	Soxhlet-Methanolic	250mg/kg and 500mg/kg	[46]
39	Gray nicker	*Caesalpinia bonducella*	seeds	Soaking-95% ethanol	1000 μg/ml	[47]
40	Desert Horse Purslane Madhunashini	*Trianthema portulacastrm Gymnema sylvestre*	leaves	Soxhlet apparatus - 70% ethanol in the ratio of 1:4(drug: solvent)	200-400mg\kg	[48]

Ocimum gratissimum

Kumkum Agarwal et al., investigated anti-urolithiatic activity of *Ocimum gratissimum*. The activity was carried out by nucleation assay and synthetic urine assay. A maximum inhibition of 66.08% was observed at a dosage of 1000 mg/ml of plant extract in the nucleation assay % inhibition of calcium oxalate crystal data. According to a synthetic urine assay, there are fewer calcium oxalate monohydrate crystals present, and crystal growth is also inhibited as plant extract concentration rises, with the minimum inhibition being 37.93% at 25% extract concentration and the maximum inhibition being 62.07% at 100% extract concentration [12].

Pituranthos scoparius

Benalia, H et al., carried out high *in vitro* anti-urolithiatic effect of *Pituranthos scoparius* roots extracts. When compared to sussinimidepharbiol, the hydromethanolic extract of *Pituranthos scoparius* aerial portion and the aqueous extract of *Cynodon dactylon* (5g/L) roots demonstrated inhibition on calcium oxalate crystallisation (51,14 and 50,59%, respectively) [13].

Bryophyllum pinnatum

R.B. Pandhare et al., examined the anti-urolithiatic effects of a hydroalcoholic extract of *Bryophyllum pinnatum* in rats with urolithiasis brought on by sodium oxalate. It was noted that the sodium oxalate-induced invitro anti-urolithiatic activity was reversed by turbidometry, nucleation assay, growth ion excretion, and urine CaOx concentration in the extract-treated rats at dosages of 50, 100, and 200 mg/kg body weight [14].

Maerua angolensis

Abimelek Solomon et al., carried out anti-urolithiatic activity of the leaf extracts of *Maerua Angolensis*. Results revealed that aqueous extract at the concentration of 10 and 30 mg/ml shows the highest percentage nucleation inhibition. Water, ethanol and chloroform extract (10 and 30 mg/ml) shows significant anti-urolithiatic activity compared to cystone. Chloroform extract (30 mg/ml) shows the highest percentage of aggregation inhibition. In titration method the highest dissolution of kidney stone was found in ethanol extract(30mg\ml)(55.73%) [15].

Cissus rotandifolia

Hussein S Gumaih et al., evaluated *Cissus rotandifolia* (CR) anti-urolithiatic activity on ethylene glycol induced rats. Results revealed that methanolic extract of CR for 28 days at 200 mg/ kg and 400 mg / kg bodyweight decreases serum urea, creatinine, and MDA of CR groups [16].

Raphanus sativus

Vargas S R et al., evaluated anti-urolithiatic and diuretic properties of *Raphanus sativus* bark extract were investigated. Rat urinary bladders were surgically implanted with zinc discs to experimentally cause urolithiasis. Animals treated with the aqueous extract showed a significant reduction in stone weight compared to control groups after the procedure. When compared to the control, this extract demonstrated a rise in the volume of urine after 24 hours [17].

Digitaria sanguanalis

Krishna Priyanka. B et al., Evaluated *in vitro* anti-urolithiatic activity of *Digitaria sanguanalis*. Result confirms that drug butanolic extract can dissolve the calcium oxalate crystals efficiently [18].

Daucus carota

Sweta Bawari et al., reported the Anti-urolithiatic Activity of *Daucus carota*: An *in vitro* Study. *Daucus carota* (family Apiaceae) roots extract concludes that the ethanol extract at the dose of 1000 μg/ml inhibits the calcium oxalate crystals by nucleation, growth and aggregation assay which concludes that ethanol extract of root shows anti-urolithiatic activity than the standard cystone [9].

Piper cubeba

S. Suman et al., studied *in-vitro* and *in-vivo* anti-urolithiatic activity of ethanolic extract of *Piper cubeba* belong to family piperaceae shows anti-urolithiatic maximum activity at 3200 μg/ml. Invivo studies were carried out by feeding mice orally with (2000 mg / kg, b.w) . Ethanolic extract showed the decrease in the serum creatinine, uric acid, and levels of calcium, oxalate and phosphate in urine and kidney homogenate [19].

Carica papaya

Amandeep Singh et al., evaluated *in-vitro* antiurolithiatic activity of *Carica papaya* roots belong to family Caricaceae revealed aqueous and alcoholic extracts of *C. Papaya* roots on ethylene glycol (EG) induced urolithiatic rats. Root extract of *Carica papaya* shows decrease in the calcium oxalate crystals with the dilution of 10mg/ml,40mg/ml, 80mg/ml [20].

Diospyros malabarica

Laxmikant Maruti Purane et al., studied *Diospyros malabarica* (family Ebenaceae) anti-urolithiatic activity on rats. Ethylene glycol-ammonium chloride was used to induce urolithiasis in male rats. Ethanol extract of the fruit of *Diospyros malabarica* was also given the extract protect the rats from elevated serum, urea, creatinine, calcium,

phosphorous level thus decreases and prevent the growth of kidney stone[21] .

Tephrosia purpurea

Ajay Shukla et al., investigated for anti-urolithiatic activity of roots against *Tephrosia purpurea* ethylene glycol-induced renal calculi in rats. Ethanol extract (300 mg/kg) and aqueous extract (300 mg/kg) both are given. Both extracts reduce increased levels of calcium, oxalate, phosphate excretion in urine and serum creatinine levels was restored to the normal results revealed that ethanol extract is more effective[22].

Costus spiralis

Araújo Viel T et al., carried out anti-urolithiatic activity of the extract of *Costus spiralis* Roscoe in rats.

Rat's urinary bladders were implanted with calcium oxalate crystals or zinc discs, and the water extract of *Costus spiralis* Roscoe was examined for its anti-urolithiatic action on the development of calculi on the implants. After a 4-week operation, oral administration of *Costus spiralis* Roscoe extract (0.25 and 0.5 g/kg per day) slowed the development of calculi but did not stop the smooth muscle of the organ from enlarging. The isolated urinary bladder preparations did not respond differently in both the presence and absence of the extract (0.3-3 mg/ml) or atropine (0.3-3 nM) to the muscarinic agonist bethanecol[23].

Moringa Oleifera

Hina Ali et al., carried out anti-urolithiatic activity of *Moringa oleifera* (family Moringaceae) Seed Extract. Extract was given to calcium oxalate (CaOx) urinary crystals induced albino rats at different concentration (100, 300 and 500mg/kg) using cystone as a standard and urine analysis was carried out. *Moringa oleifera* Seed posses anti-urolithiatic activity[24].

Amaranthus viridis

S Asha et al., revealed the anti-urolithiatic activity of *Amaranthus viridis* on ethylene glycol induced male rats. Extract treated rats was analysed for biochemical parameters such as calcium, phosphorus, creatinine, uric acid and concluded that rats treated with *A.viridis* extract 200 mg/kg the urinary excretion of creatinine was decreased in calculi induced animals[25].

Cuminum Cyminum

Vithursha S et al.,carried out antiurolithiatic activity of *Cuminum cyminum* seed extract. Seeds were macerated with distilled water and different concentration of 10mg/ml, 20mg/ml, and 30mg/ ml was prepared and urolithiatic activity was estimated by titrimetric method. Results revealed the reduction of *calcium oxalate* stones 1.71mg in 10mg/ml test group, 1.86mg in 20 mg/ml test group and 2.09mg in 30mg/ml test group and dissolution percentage 34.20%, 37.30%and 41.80% respectively[26].

Crataegus militum

Mekap SK et al., carried out anti-urolithiatic activity of *Crataegus militum* bark. Two standard models (*in vivo*) of rat urolithiasis were used to test Lour. Bark, for its anti-urolithiatic efficacy. The two techniques used were, respectively, ammonium chloride (2%) + ethylene glycol (0.75%) and lactose (30%) + ethylene glycol (1%) caused urolithiasis. The ethanol extract (400 mg/kg bw) significantly (P0.05) decreased the increased levels of blood calcium (3.25 0.30) and urine calcium (2.33 0.18). When compared to the hazardous group, the ethanol extract (400 mg/kg bw) considerably decreased the urine uric acid level using both models: lactose (30%) + ethylene glycol (1%); and ammonium chloride (2%); and ethylene glycol (0.75%). When the results of the ethanol extract (400 mg/kg bw) group were compared to those of the group receiving Cystone (5 ml/kg bw), a conventional polyherbal medication, they revealed strong anti-urolithiatic efficacy[27].

Tribulus terrestris

Jyoti Kaushik et al., carried out Anti-urolithiatic activity of *Tribulus terrestris* (family Zygophyllaceae) was extracted and given with standard drug cystone in a drinking water to male wistar rats groups at the dose of 75 mg/kg, 225 mg/kg, 750 mg/kg respectively. Result revealed the change in the body weight. Extract at the dose of 750mg/kg b. Wt shows maximum anti-urolithiatic activity compared to cystone[28].

Rotula aquatica

Shashikala et al., evaluated Lour for anti-urolithiatic activity invitro.

A spectrophotometer was used to evaluate the turbidity in the presence or absence of extract at 620 nm in order to study the effect of extract (100, 200, 300, 400, and 500 g/ml). The calcium oxalate crystals number and size were both increased but decreased by the herb extract of *R. aquatica*. Despite the existence of calcium oxalate monohydrate particles, it also encouraged the production of calcium oxalate dehydrate crystals. Results revealed that petroleum ether, chloroform, and methanol extracts of the leaf and stem have less ability to prevent crystal formation and aggregation than water extract of the root does[29].

Lepidagathis prostrata

Raviraj Anand Devkar et al., evaluated anti-urolithiatic and anti-oxidant potential of *Lepidagathis prostrata*: A Pashanbhed plant belong to family Acanthaceae. It was

determined that LPEA exhibits the best dose-dependent suppression of CaOx nucleation (IC50: 336.23 30.79 mg/mL) and aggregation (IC50: 149.63 10.31 mg/mL), which was considerably (p50.05) better than conventional Cystone[30].

Solanum nigrum

Rats with urolithiasis caused by ethylene glycol were studied by Abeer A. A. Salama et al., for the anti-urolithiatic efficacy of *Solanum nigrum* hydroalcoholic extract. Adult male albino rats of the wistar strain were given doses of *Solanum nigrum* extract (200 and 400 mg/kg) in the curative group. The effects of ethylene glycol on all biochemical markers and histopathological changes were reversed by treatment with dosages of *Solanum nigrum* extract[31].

Spirulina platensisis

N. J. P. Subhashini et al., carried out *in vitro* anti-urolithiatic activity of c-phycocyanin isolated from *Spirulina platensisis* a blue green algae. The C-PC inhibit the nucleation of calcium oxalate by disintegrating into small pieces as the concentration increases(10mg/ml,20mg/ml,40mg/ml,80mg/ml,100mg/ml) which confirms the extract contain anti-urolithiatic agents[32].

Phoenix dactylifera

Challa Srinivas Reddy et al., investigated anti-urolithiatic activity of *Phoenix dactylifera*. Five groups were given the test compounds of n-Butanol and aqueous extract, with cystone serving as the reference standard. The levels of creatinine, urea, and uric acid are evaluated after ethylene glycol-induced hyperoxaluria is chosen as a screening approach for the development of kidney stones. In compared to the control, creatinine, urea, and uric acid levels were considerably decreased by the n-butanol and aqueous extracts of *P. dactylifera* fruits at doses of 200 mg/kg. However, the effectiveness of both extracts to lower urea and uric acid levels was less than that of the standard medicine cystone and was greater for the n-butanol extract than for the aqueous extract. The n-butanol extract of these two extracts had greater anti-urolithiatic efficacy[33].

Euphorbia hirta

Shesham Kumari et al., carried out anti-urolithiatic activity of *Euphorbia hirta* plant extracts belong to family Euphorbiaceae. Results revealed by microscopical examination (Calcium Oxalate Crystal Size Analysis) shows, the hydroalcoholic extract (5mg/ml) inhibit the calcium oxalate significantly compared to alcoholic and aqueous extract[34].

Melia Azadirachta

Nagiat T Hwisa et al., studied on anti-urolithiatic activity of *Melia azadirachta L.* aqueous extract in rats belong to family Meliaceae. Stones were induced to urinary bladder of sprague dawley male albino rats by foreign body insertion technique (zinc discs). Aqueous extract at the dose of 400 mg/kg body weight was given and analysed. Results reveals that the reduction in the weight of the stone on zinc disc and pH of urine came to normal between 5.5 and 7.0[4].

Acalypha indica

Konda Ravi Kumar et al., Evaluated invitro anti-urolithiatic activity of ethanolic and methanolic leaf extracts of *Acalypha indica* belong to family Euphorbiacea. Results revealed 10mg of the methanolic extract of the leaf inhibition and aggregation of calcium oxalate crystals is more compared to ethanolic extract[35].

Ananas fruit

N F A Rahim et al., carried out invitro anti-urolithiatic activity of Ananas fruit aqueous extract. *Ananas nanus* and *Ananas comosus* fruits belongs to family Bromeliaceae. Studies revealed that *A. nanus* shows 2.5 times more anti-urolithiatic activity by titrimetric method and 4.4 times more activity by turbidity assay compared to *A. comosus*[36].

Viburnum opulus

Mert Elhan et al., carried out anti-urolithiatic activity of *Viburnum opulus* (family Caprifoliaceae) on sodium oxalate induced urolithiasis rat. The extract at the dose of 100 mg/kg and 500 mg/kg is given to male wistar rats were urolithiasis was induced by sodium oxalate. Urine and serum parameters were analysed shows anti-urolithiatic activity[37].

Passiflora foetida and Stachytarpheta indica

Jeewananda et al., investigated anti-urolithiatic activity of *Passiflora foetida* and *Stachytarpheta indica* on prepared calcium oxalate crystals. *P. foetida* and *S. indica* extracts were prepared by soaking with distilled water and diluted with distilled water to get different concentration (4 mg/ml, 2 mg/ml, 1 mg/ml, 5 mg/ml, 0.25 mg/ml, 0.125 mg/ml) added to urine (crystal formed) using cystone as a standard. Optical density is measured by UV-Visible spectrophotometer at 620 nm wavelength. Results revealed maximum absorption at 2mg/mL concentration of *S. indica* (higher activity) and 4mg/mL concentration of *P. foetida*[38].

Ipomoea eriocarpa

Das M et al., carried out anti-urolithiatic activity of ethanol leaf extract of *Ipomoea eriocarpa* against ethylene glycol-induced urolithiasis in male wistar rats 1% ethylene glycol

(v/v) with 1% ammonium chloride were used to induce stones. The values in urine, serum, and kidney homogenate were considerably (P 0.001) returned to near-normal levels by the ethanol extract treatment. Histopathological analyses showed that ethanol extract treatment markedly reversed calcium oxalate crystal deposits in the renal tubules as well as congestion and dilated parenchymal blood vessels[39].

Abelmoschus moschatus

Anil T. Pawar et al., evaluated anti-urolithiatic activity of extract of seed *Abelmoschus moschatus* (family: Malvaceae) against zinc disc implantation induced urolithiasis in rat. Anti-urolithiatic activity revealed that maximum dose of chloroform extract of *A. moschatus* (400 mg/kg) shows significant activity[40].

Pergularia daemia

S. Suman et al., carried out *Pergularia deamia* whole plant anti-urolithiatic activity against ethylene glycol induced urolithiatic rats. Results shows that pet.ether extract of *Pergularia deamia* (100mg/kg) decrease the elevated levels of oxalate, calcium and oxalate compared to standard. Pet. ether extract (200mg/kg) treatment decreases the BUN, Creatinine ($P<0.01$) compared to standard[41].

Solidago virgaurea

G Durga Madhuri et al., evaluated anti urolithiatic activity of *Solidago virgaurea* against ethylene glycol induced renal calculi in rats. Activity was evaluated by calcium oxalate nephrolithiasis using male albino wistar rats and cystone as a standard. Various doses of 250,500 and 750 mg/kg methanol extract of *S.virgaurea* was given and result shows that 750 mg/kg dose is a more effective urolithiatic activity[42].

Kalanchoe pinnata

Rohan Sharadanand Phatak et al., evaluated *Kalanchoe pinnata* aqueous extract anti-urolithiatic activity (20mg/ml) by nucleation and aggregation assays. Nucleation assay reveals that the extract have antiurolithiatic activity[43].

Boswellia serrata

Sujata Kushwaha et al., evaluated the antiurolithiatic activity of the extract of *Boswellia serrata* Roxb in Rats. Methanolic extract of root was evaluated on calcium oxalate crystal implants or zinc disc implants in wistar albino rats. Methanolic extract decreases the renal stone and weight by 44% when given at 0.25 and 0.5 g/kg per day[44].

Pinus Eldarica

Hossein Hosseinzadeh et al., carried out *Pinus Eldarica* (family Pinaceae) fruits aqueous extract anti-urolithiatic activity in rats. Fruit extract (500 and 1000 mg/kg/day) was given to ethylene glycol induced rats reveals that (1 g/kg) increases calcium excreation in prophylactic group[45].

Celosia argentea

Kachchhi NR et al., evaluated anti-urolithiatic activity of *Celosia argentea* roots in rats treated groups given low doses (250 mg/kg) and high doses (500 mg/kg) of methanol extract of *Celosia argentea* roots inhibited urine pH improvement, diuresis, and weight loss considerably. In numerous biological samples, all of the treatments drastically reduced the levels of promoters such calcium, oxalate, uric acid, and inorganic phosphate while increasing the amounts of magnesium and citrate-like inhibitors. The medication also reduced oxidative stress and renal function deterioration, as shown by analyses of BUN and creatinine, MDA, proteins, catalase, and histopathology, respectively. In order to avoid urolithiasis, *Celosia argentea* root methanolic extract has proven to be a successful medication[46].

Caesalpinia bonducella

Ajay Kumar et al., carried out antioxidant, anti-inflammatory, anti-urolithiasis, diuretic and analgesic activity of *Caesalpinia bonducella* seeds. Ethanolic extract of seeds at concentrations of 10-1000μg/ml shows minimum number and small size of crystals in nucleation and aggregation assay[47].

Trianthema portulacastrum and Gymnema sylvestre

Sree lakshmi K et al., carried out anti-lithiatic activity of *Trianthema portulacastrum* (family Aizoaceae) and *Gymnema sylvestre* (family Asclepiadaceous) against urolithiasis induced by ethylene glycol in male wistar rats at doses of 200mg/kg and 400 mg/kg b.wt administered by oral route. Parameters like urine analysis and serum analysis was performed resulted in restoration of urine and serum on EG&AC induction[48].

CONCLUSION

Chemicals from plants have been utilized to cure human diseases. Natural products have rekindled interest in medication research. Thus, efforts should be focused on identifying and characterizing the active principles and clarifying how structure and activity relate to one another. Ayurveda oldest system of medicine, gives clues for generating plant chemicals with therapeutic potential. It plays a important role to isolate, characterise, and standardise the important ingredients from plant sources using ayurveda expertise backed by modern research. Better antiurolithiatic medications with lesser adverse effects can be produced by combining traditional and modern expertise and herbs are enormous in our country. Herbal drugs are more promising

so, in the current review discussion is about antiurolithiatic drugs.

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