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A Review of Phytconstituents for Urolithiasis

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Abstract:- Renal calculi have become a crucial health issue everywhere in the world due to the adjustments in way of life and nutritive propensities for the present time. As of recently people medication is the significant relevance for the lithiogenisis other than the endoscopic or shock wave lithiotripsy. Various in vitro studies indicates the synergic effect of hyperoxaluria, hypercalciuria, hypocitraturia decreases in Mg level and anti-oxidant, properties change in Ph. and elevation in phosphorous and uric acid levels leads to the development of lithiasis. Generally plants extract which are anti-microbial, anti-oxidant properties are helpful in reducing stone formation and protecting from renal injury.

Keywords:- *Urolithiasis, types of stones, medicinal plants.*

I. INTRODUCTION

The blockage in the urinary tract is common and important because it increases the sensitivity to infection and stone formation.Nephrolithiasis or urolithiasis is Genesis of urinary calculi at any measure of urinary tract. Urinary calculi are worldwide in distribution but are virtually common in some geographic locations such as in parts of the United States, South Africa, India and south-east Asia.

It is estimated 2% of the population experiences renal stone disease at some time in their life. The causes of stone formation are frequently obscure, particularly in the case of calcium containing stones. The most important cause is increased urine concentration of the stones constituents, so that it exceeds their solubility in urine.

Type of Stone	Percentage of stones
Calcium oxalate	75
Mg, NH_3, PO_4	10-15
Uric acid	6
Cystine	1-2
Others/unknown	± 10

Table 1: Types of stones

As shown in above listed types of stones and their percentages 50% of the patientsdevelops the calcium stones may have hypercalciuria that is not associated with hypercalcimia. Most in these groups absorbs calcium from the food or any other type in excessive amounts (absorptive hypercalciuria) and promptly excrete in the urine and some may have a primary renal defect of calcium reabsorption (renal hypercalciuria).

II. MEDICINAL PLANTS

There are various Medicinal plants is used for treating various diseases, here some of medicinal plants may used for treatment of Urolithiasis in traditional system of medicine.

A. Aervalanata

- **Family:**Amaranthaceae.
- **Vernacular names:** Mountain knot grass, poipala, kapurijadi, Ashmahabhedah, Gorakshaganja, Pashanabheda and Pindidonda, Kondapindiaaku.

Fig. 1: Aervalanata

- **Chemical constituents**
  Alkaloids- plants containsErvine, methylervine, ervoside.Flavonoids-kaempferol, quercetin, isorhamentin A and B.Miscellaneous phytoconstituents-methyl grevillate, lupeol, lupeol acetate benzoic acid, β-sitosterol acetate and tannic acid.
- ***Aervalanata* medicinal uses:** Antioxidant, anti cancer, lowers blood sugar levels, in treatment of asthma, diarrhea and intestinal worms.
- **Antiurolithiatic activity:** *Aervalanata* is very very well known for treating kidney stones.

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B. Pedalium murex

- **Family:** Zygophyllaceae
- **Vernacular names:**PedaliumMicrocarpumDecne, PedaliumMuricantumSalsilb, RogeriaMicrocarpaKlotzscn, Brihat Gokhru, Large Catropes, Peru-Neranji, Annaineringi, GhokhruKalaan, Enugu Palleru, PeddaPalleru, KaituNeinjil.

Fig. 2: Pedalium murex

- **Chemical constituents:** Leaves contain several flavonoids, alkaloids, steroids, resins, saponins, protein, dinatoin glycosides. Herman, phytosterols, tannins and carbohydrates are present in steam. Roots of this plant contain reducing sugars, phenolic compounds, xanthoproteins, and triterpenoids. Fruits contain stable oil and aromatic oil. Nonacosane, tritriacontane, triacontanoic acid, sistosterol-beta-D-glucoside, rubusic acid, luterin are the major constituents of seeds. Flowers contain dinatin and quercetine-7-glucoside.
- **Medicinal uses of *pedalium murex:*** Anti-bacterial, Anti-hyperlipidemia, **Anti-nephrolithiatic**, Anti-inflammatory, Anti-ulcer, Anti-oxidant, Hepatoprotective, nephroprotective.Decoction of the plant are used in painful urination and urinary disorders, calcilietc,.

C. Creativenurvala

- **Family:** Capparaceae
- **Vernacular names:** Crataevanurvala, varuna, kumaraka, ulimichettu.

Fig. 3: Creative nurvala

- **Chemical constituents:** The chemicals present in this plant are β-sistosterol, betulinic acid, catechin, kaempferol, lupeol, diosgenin.
- ***Crataevanurvala*Medicinal uses:** Anti-fertility, Analgesic, Anti-diarrheal, Anti-arthritic, Anti-cardio protective, **Anti-urolithiatic**, Anti-diabetic, and Anti-inflammatory properties.The decoction of bark is effective in the treatment of diseases of kidney stones.

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D. Bryophyllumpinnatum

- **Family:** Crassulaceae
- **Vernacular names:** Kalanchoepinnata, parnbeej, hemsagar, air plant, good luck leaf, floppers, ranapala.


Fig. 4: Bryophyllumpinnatum

- **Chemical constituents :** Brayophyllumpinnatum contains n-alkane, n-alkanol, alpha and beta amycine, β-sitosterol. Leaves contain wax hydrocarbonons, wax alcohols, isocitric, citric acid, glycosides of querecetine and kaempferol, fumaric acid, bryophyllin B, and phenolic compounds.
- ***Bryophyllumpinnatum* medicinal uses:** Bryophyllum pinnate used to treat clinical conditions such as asthma, bronchial affections, nephrolithiasis, painful urination, urolithiasis, hypertension and kidney stones.Leaves used for **urolithiatic activity.**

E. Tribulusterrestris

- **Family:** Zygophyllaceae
- **Vernacular names:** tribulusterrestrislinn, laghugokhru, small caltrops, land caltrops, china palleru.


Fig. 5: Tribulusterrestris

- **Chemical constituents:**Flavonoids, Steroidal Saponins, Tannins, and Alkaloids.
- ***Tribulusterrestris*medicinal uses:**The plantGokhru churna is herbal ayurvedic medicine in powder form used to treat painful urination, kidney diseases, inflammation and cough. An ethanolic extract of TT fruits was tested forurolithiasis or stone induced by glass bead implantation in albino rats. A novel antiliyhiatic protein having cytoprotective potency was purified from Tribulusterrestris.

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F. Achyranthes aspera Linn

- **Family:** Amaranthaceae
- **Vernacular names:** Apamarga, Mayura, Prickly Chaff Flower, Uttareni.
- **Chemical constituents:** Carbohydrates, Phenolic Compounds, Saponins, Alkaloids And Tannins.
- ***Achyranthes aspera*medicinal uses:** *Achyranthes aspera* it is used in preparation of ayurvedic medicines and also traditional medicines in Asia and Africa to treat various diseases such as bacterial infectious diseases and kidney stones diseases.

Fig. 6: Achyranthes aspera Linn

Plant name	Material
Alcearosea (Malvaceae)	Hydro-alcoholic/ roots
Ammivisnaga (Apiaceae)	Aqueous/ seeds
Musa paradisiaca (Musaceae)	Aqueous/ steam
Berberis vulgaris(Berberidaceae)	Aqueous methanolic/ root
Berginialingulata (Saxifragaceae)	Aqueous methanolic/ rhizomes and leaves
Boerhaviadiffusa (Nyctaginaceae)	Ethanolic/ plant
Bombaxcieba (Malvaceae)	Aqueous and Ethanolic/ fruit
Commiphorawightii (Burseraceae)	Aqueous/ root
Costusspiralis (Costaceae)	Aqueous/ plant
Vacciniumoxycoccos (Ericaseae)	Juice
Cynodondactylon(Poaceae)	Butanolic fraction and remnant, ethyle acetate fraction/ roots
	Aqueous/ herb
Herniariahirsuta (Caryophyllaceae)	Aqueous/ calyces
Hibiscus sabdariffa (Malvaceae)	Aqueous and alcoholic/ roots
Moringaolifera (Moringaceae)	Aqueous/ plant
Phyllanthusniruri (Phyllanthaceae)	Aqueous/ fruit
Pinuseldarica (Pinaceae)	Aqueous/ tubercles
Raphanussativus (Brassicaceae)	Aqueous/ roots
Rotulaaquatica (Boraginaceae)	Hydro-alcoholic/ roots
Rubicacardifolia (Rubiaceae)	Aqueous and alcoholic/ leaves
Salvadorapersica (Salvadoraceae)	Aqueous/ twings
Sesbania grandiflora (Fabaceae)	Hydro-alcoholic/ fruits
Solanumxanthocarpum (Solanaceae)	Aqueous/ bark
Terminalia arjuna (combertaceae)	

Table 2: Other Various phytoconstituents used in treatment of urolithiasis

III. CONCLUSION

In this study we have probably say urinary stone formation is depends on super saturation of urinary salts and crystal retention in urinary tract. The main cause of formation of these stones absorbs calcium from the food in excessive amounts (absorptive hypercalciuria). Our nature has diverse source of medicinal plants used in treatment of urolithiasis among these phytoconstituents*Aervalanata, Pedalium murex, Brayophyllumpinnatum,* shows effective results in Antiurolithiasis compared with other phytoconstituents.

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