ROLE OF HERBAL PLANTS IN THE TREATMENT OF LITHOTRIPSY

Samriti Faujdar*, Sarvesh Kumar Paliwal, Sharda Sambhakar

Department of Pharmacy, Banasthali University, Tonk-304022, Rajasthan, India.

ABSTRACT

Medicinal plants have been known as a rich source of therapeutic agents for the prevention of various ailments. It is a common disorder estimated to occur in approximately 12% of the population, with a recurrence rate of 70-81% in males, and 47-60% in females. Herbal drugs finds place in treating kidney stone. Now people motivate towards the herbal drugs due to the side effects associated with synthetic drug. The aim of the present review is to provide details of the plants used in the lithiasis.

Keywords:- Lithotripsy, Diuretic, herbal plants, Salingbog, Gokhru.

INTRODUCTION-

Lithiasis is the formation of calculi or stone which is a concretion of material mainly mineral salts in any part of the body. Antilithics are the agents that prevent the formation or promote the dissolution of formed calculi. Lithiasis mostly occurs in any part of the whole urinary tract which includes the ureter, urinary bladder and kidney as well as it also occurs in the gallbladder.

Plants with lithotriptic activity

1. *Tinospora cordifolia*

*Tinospora cordifolia* is a large glabrous, deciduous, climbing shrub of Menispermaceae family found in Tropical India. Chemical constituents present in plants are alkaloids, diterpenoids lactones, glycosides, steroids, sesquiterpenoids, phenolics, aliphatic compounds.

*Correspondence for Author:
*Samriti Faujdar
Department of Pharmacy, Banasthali University, Tonk (Raj.), India. faudarsamriti@gmail.com,*
and polysaccharides\textsuperscript{4}. Its root is used for its anti stress, anti-leprotic and anti-malarial activities\textsuperscript{5,6}.

![Guduchi](image)

**Guduchi**

Neuroprotective and ameliorative properties are due to their antioxidant and trace element contents\textsuperscript{7}. *Tinospora cordifolia* is known to be a rich source of trace elements (Zinc and Copper) which act as antioxidants and protects cells from the damaging effects of oxygen radicals generated during immune activation\textsuperscript{8}. It increases the blood profile and has lead scavenging activity. *Tinospora cordifolia* has been claimed to possess learning and memory enhancing, antioxidant, and anti-stress activity. *Tinospora cordifolia* enhanced the cognition in normal and cognition deficits animals in behavioural test Hebb William maze and the passive avoidance task. Mechanism of cognitive enhancement is by immunostimulation and increasing the synthesis of acetylcholine, this supplementation of choline enhances the cognition. Myriad actions of Guduchi may be attributed to its antioxidant and immunomodulatory properties\textsuperscript{9}.

2. **Trianthema Portulacastrum**

*Trianthema portulacastrum* commonly known as Bishkhapra is an annual prostrate herb of ice-plant family found in Africa and South-America. The plant contains punarnative and trianthenol.

The plant has a potential value as a source of organic matter because of presence of nitrogen, potassium and phosphorus. The plant contains steroids, flavonoids, fats, triterpenes, carbohydrates, tannins and alkaloids\textsuperscript{10}. Tetraterpenoid trianthenol and chloroform extract of
plant both showed antifungal activity\textsuperscript{11}. The ethanol extract of \textit{T. portulacastrum} showed analgesic activity. The methanolic extract of plant produced significant antihypertensive and hypolipidemic activity\textsuperscript{12}. Leave extract showed a significant dose-dependent hepatoprotective effect. Its root is known for its antipyretic, analgesic, spasmolytic and anti-inflammatory activity\textsuperscript{13}. An infusion of the root is administered in jaundice, strangury and dropsy. Leaves used as diuretic in edema and dropsy\textsuperscript{14}.

\textit{Trianthema Portulacastrum}

3. \textit{Raphanus sativus}

\textit{R. sativus} is an erect herb with napiform roots belonging to family Brassicaceae found in Africa, Europe, Australia and North America. The plant contains triterpenes, alkaloids, flavonoids, tannins, saponin and coumarins\textsuperscript{15}.

\textit{Raphanus sativus}

In folklore medicine, leaves are used for diarrhea, constipation and dropsy\textsuperscript{16}. Seeds of the plant are used to promote menstruation and treating stomach cancer. It is reported that \textit{R. sativus} showed hepatoprotective, antioxidant and antiurolithiatic activity\textsuperscript{17,18}. Study on the freshly squeezed radish juice revealed gastroprotective potential related to mucus secretion\textsuperscript{19}. 
4. *Crataeva religiosa*

Salinbobog is a moderate size deciduous tree belonging to family Capparaceae is distributed from India to Micronesia and Polynesia. The plant contains saponins, tannins, triterpenoid lupeol, epiafzelchin - 5- glucoside from the bark\(^{20}\).

In ethnobotany, leaves are used for irregular menstruation. Decoction of roots and bark are used for urinary calculi and various urinary disorder\(^{21}\). Leaves are used to stimulate appetite, increases bile secretion and as laxative. Methanolic extract of leaves showed wound healing properties superior to that of penicillin\(^{22}\).

A pentacyclic triterpene lupeol was tested for anti-inflammatory activity. Lupeol isolated from *C. religiosa* has been shown to possess antiarrhythmic activity through suppression of immune system. Studies revealed that lupeol suppressed various immune factor such as phagocytic activity of macrophages, T-lymphocyte activity including CD4+ cell mediated cytokine generation. Cytotoxic triterpene were identified from the seeds of *C. religiosa* which are responsible for antimutagenic potential\(^{23}\).

5. *Tribulus terrestris*

*T. terrestris* is a procumbent herb belonging to family Zygophyllaceae is found throughout India. It is a common weed in dry, waste lands during rainy reason. Aqueous extract of the plant administered to sodium glycolate fed rats produced a significant reduction in urinary oxalate secretion and a significant increase in urinary glyoxylate excretion as compared to in sodium glyoxylate fed animals\(^{24}\).
Gokhru plant contains alkaloids, resins, tannins, sugars, sterols, essential oil, peroxidase, diastase and glucoside\textsuperscript{25}. Decoction of fruits in rats and aqueous extract in rats and dogs exhibited diuretic effect\textsuperscript{26}. Gokhru is useful in urinary stone infection. It is reported that \textit{T. terrestris} possess aphrodisiac activity probably due to androgen increasing property\textsuperscript{27}.

5. \textbf{Kulattha}

\textit{Vigna unguiculata} is an annual, branched, sub-erect or trailing annual native to India and is distributed throughout the tropical regions\textsuperscript{28}. Seeds are anthelmintic, astringent, diaphoretic, diuretic, emmenagogue, expectorant, febrifuge, ophthalmic and tonic. Seeds are useful in haemorrhoids, tumours, scrofula, bronchitis, heart diseases, nephrolithiasis, urolithiasis, leucorrhoea, menstrual disorders, colic, splenomegaly, cough, asthma, ophthalmopathy, fever, urticaria and rheumatoid arthritis\textsuperscript{29}.

\textbf{Vigna unguiculata}

The chief chemical constituent of seed are Urease, strepogenin, p-sitosterol, genistein, 2'-hydroxygenistein, dalbergioidin, kievitone, phaseollidin, isoferreirin, coumesterol, psoralidin, 5-0-a-Lrhannopyranosyl (1 +2)-0-P-D-glucopyranoside, phyto-haemagglutinins, P-Nacetyl glucosaminidase, \textit{a-} & P-galactosidases, a-mannosides, P-glucosides, 5-hydroxy-7,3'4'-trimethoxy-&methyl isoflavone-5-neohesperidoside, Dglucose,D-galactose, L-
rhamnose, D-arabinose and L-ascorbic acid and amino acids *viz.*, glycine, alanine, cysteine, serine and aspartic acid. Leave and stem of plant contains genistein, 2'-hydroxygenistein, dalbergioidin, kievitone, phaseollidin, coumesterol, psoralidin, lectin like glycoprotein, dolichin A and dolichin B and isoferreirin (5,7,4'-trihydroxy-2'-methoxy isoflavanone) are also present in plant. Seeds are reported to have shown anhepatoprotective, hypocholesterolemic, diuretic hypotensive, anti-spasmodic, abortifacient, myocardial stimulant, hypolipidaemic, spasmylytic, antistress, hypoglycaemic, virus inhibitory activity.

6. *Bergenia ligulata*

*Bergenia ligulata* commonly known as Pashanbhed belonging to family Saxifragaceae is distributed in temperate Himalayas from Kashmir to Bhutan and in Khasia hills. The plant contains bergenin, azelechin, pashaanolactone, β-sitosterol, Stigmesterol, Tannic acid, gallic acid, Parasorbic acid, Isovaleric acid and 1,8-cineole.

*Bergenia ligulata*

Rhizome of the plant is used in kidney and gall bladder stone. Crushed rhizomes are used for treating chronic ulcers. Rhizome powder is used to increase aphrodisiac activity. Leaves and rhizome powder is boiled in water and given for cough and cold.

Pashanbhed had reported to show antiviral, antilithic, diuretic, antibacterial, anti-inflammatory and anti-bradykinin activity.

REFERENCES


