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RENAL CALCULI DISSOLVING PLANTS; A CONSISE REVIEW

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ABSTRACT

The formation of renal calculi, also known as urolithiasis, is a multifaceted process that arises from a series of physicochemical events. These events include calcium calculi, struvite calculi, uric acid, and cysteine calculi, which are growth, aggregation, and retention within the renal system. Epidemiological studies indicate that calcium oxalate is the most common mineral found in the majority of renal calculi. Epidemiology has significantly enhanced our comprehension and management of renal calculi. The formation of renal calculi, also known as urolithiasis, is a multifaceted process that arises from a series of physicochemical events. These events include calcium calculi, struvite calculi, uric acid, and cysteine calculi, which are growth, aggregation, and retention within the renal system. Epidemiological studies indicate that calcium oxalate is the most common mineral found in the majority of renal calculi. Epidemiology has significantly enhanced our comprehension and management of renal calculi. Such studies have measured alterations in disease patterns and the associated burden, while the identification of risk factors has transformed clinical practices and offered valuable insights into the pathophysiological mechanisms underlying calculi formation. Given the complexity of nephrolithiasis, a thorough understanding of its epidemiology, especially the interplay among various factors, may facilitate the development of strategies aimed at minimizing the risk of calculi formation. The examination of the urine composition of calculi offers insights into the pathogenesis and supplementary investigations to identify underlying conditions. Such analyses enable healthcare providers to develop tailored approaches aimed at reducing the likelihood of future calculi occurrences. At present, the information concerning the risk factors associated with nephrolithiasis is disjointed, and the connections among these factors are still unclear. Medicinal herbs have been employed for centuries due to their safety, efficacy, cultural acceptance, and reduced side effects compared to synthetic pharmaceuticals. This review critically assesses the potential efficacy of herbal remedies in the treatment of urolithiasis. The examination of the urine composition of calculi offers insights into the pathogenesis and supplementary investigations to identify underlying conditions. Such analyses enable healthcare providers to develop tailored approaches aimed at reducing the likelihood of future calculi occurrences. At present, the information concerning the risk factors associated with nephrolithiasis is disjointed, and the connections among these factors are still unclear. Medicinal herbs have been employed for centuries due to their safety, efficacy, cultural acceptance, and reduced side effects compared to synthetic pharmaceuticals. This review critically assesses the potential efficacy of herbal remedies in the treatment of urolithiasis.

KEYWORDS: Renal calculi, Kidney stone, Herbal plants, Risk factors, Treatments.

NTRODUCTION

Nephrolithiasis is a medical condition defined by the development of solid crystalline formations in the urinary space of the renals. When treated by healthcare professionals, this condition is termed urolithiasis (from "uro" meaning kidney and "lithiasis" meaning stones). Over the past few decades, urolithiasis has become more commonplace worldwide. Urolithiasis frequently occurs repeatedly and lasts a lifetime. The illness has a 50% chance of recurring in 5 - 10 years and a probability of 75% in 20 years. According to certain research, a rise in renal calculi is anticipated as a result of a number of environmental factors, such as dietary and lifestyle modifications and global warming. Nevertheless, the exact causes of the increasing incidence and recurrence of urolithiasis remain unknown. Renal calculi disease has a significant impact on both individuals and communities due to its high frequency in working-age adults. It has also emerged as a public health concern, especially among populations living in hot, dry areas. The delicate balance between the liquid and its solutes might be upset by a simple change in fluid volume or an increase in mineral concentration. Infections or metabolic alterations may result in an increase in the concentration of minerals in the renals. The precipitation of urine salts can cause bacterial growth, deteriorated tissue, cells that have excited their skin, or a microscopic blood clot, among other things, to concentrate around the foreign particle and create an encrust over it. Once a stone starts to form, it increases fast. The surface area available for mineral deposition steadily grows as stone size increases. The complicated and multi-step process of kidney stone development involves growth, aggregation, crystal nucleation, and urine supersaturation. Systemic conditions such as diabetes, obesity, cardiovascular disease, hypertension, and metabolic syndrome are caused by kidney stone production. The kidneys are two bean-shaped structures located just below the rib cage on each side of the spine. Urine flows from the kidneys to the bladder through two thin tubes of muscle called the ureters, one on each side of the bladder. The main function of the kidneys is to filter blood, removing excess ions and water from the body. The bladder stores urine, and the kidneys, ureters, and bladder are all part of the urinary tract. Furthermore, nephrolithiasis is increasingly acknowledged as an indicator of systemic disease and a potential predictor of metabolic and cardiovascular issues.

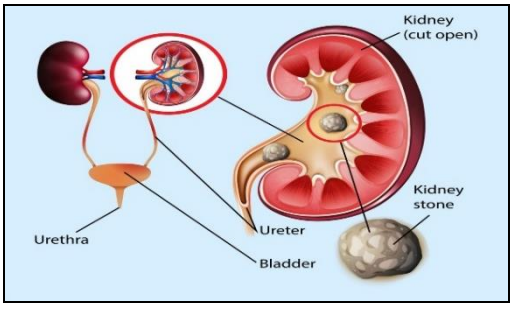

Fig. No. 1: Formation of Renal calculi.

COPONENTS OF RENAL CALCULI

There are crystalline and non-crystalline renal calculi. Proteins, lipids, polysaccharides, and glycosaminoglycans (GAGs) comprise the non-crystalline phase. The most prevalent substance in the non-crystalline phase is proteins (64%), which are followed by hexosamine as glucosamine (5%), water (10%), non-amino carbohydrates (9.6%), and inorganic ash (10.4%). Renal calculi development is significantly influenced by the non-crystalline phase. Phospholipids contribute to the production of calcium phosphate and calcium oxalate renal calculi and account for 8.6% of all lipids involved in calculi formation. Another important component of all kinds of calculi matrices is albumin. The individual's diet affects the pH of their urine. If urine's pH is less than 7, it is considered acidic; if it is

greater than 7, it is considered alkaline. Acidic urine is usually the cause of uric acid calculi. The composition of stones in urine with a pH below 7 is typically 50% calcium oxalate, 5% calcium phosphate, and 45% a combination of the two substances.

TYPES OF RENAL CALCULI

Renal calculi are typically categorized into four types based on their etiology and position.

Calcium calculi

Calcium phosphate and calcium oxalate cause calcium calculi. About 80% of all urinary calculi are calcium calculi, which are the most common type of renal calculi. Pure calcium oxalate (CaOx) makes up 50% of calcium calculi, followed by calcium phosphate (CaP, also known as apatite) at 5% and a combination of the two at 45%. Brushite, also known as hydroxyapatite or calcium hydrogen phosphate, is the primary component of calcium calculi. Most renal calculi contain calcium oxalate, which is present as CaOx monohydrate (COM), also known by its mineral names: CaOx dihydrate (COD, $CaC_2O_4 \cdot 2H_2O$), Calcium oxalate monohydrate, $CaC_2O_4 \cdot H_2O$), or both together, which make up more than 60%. The most thermodynamically stable type of calculi is called COM. COM is shown in clinical calculi more often than COD. The formation of calcium oxide is caused by a variety of reasons, including hyperuricosuria, hyperoxaluria, hypocalciuria (resorptive, renal leak, absorptive, and metabolic disorders), hypomagnesuria, hypercystinuria, and citraturia. Calcium phosphate calculi develop when the pH of the urine is higher than 7.5, while CaOx stones are typically promoted by a pH of 5.0 to 6.5.Compared to other renal calculi types, calcium calculi are more likely to reoccur.

Struvite calculi

Struvite calculi, often known as infection, is made up of magnesium ammonium phosphate ($MgNH_4PO_4 \cdot 6H_2O$). calculi. Struvite frequently joins the calculi matrix with CaOx and CaP, particularly carbapatite. Urease-producing bacteria, including Proteus species and Klebsiella species, are linked to urinary tract infections (UTIs) with this type of calculi. Urinary alkalinization brought on by this illness promotes the formation of struvite crystals by increasing ammonium production. Strucvite calculi often referred to as infection, struvite calculi is composed of magnesium ammonium phosphate ($MgNH_4PO_4 \cdot 6H_2O$) calculi. Struvite often combines with CaOx and CaP, especially carbapatite, to form the calculi matrix. Urinary tract infections (UTIs) with this kind of calculi are associated with urease-producing bacteria, such as Proteus and Klebsiella species. This disease causes urinary alkalinization, which increases ammonium production and encourages the creation of struvite crystals. As predicted, a new study has shown that calculi formers with high struvite composition in ranal calculi matrix are linked to Proteus spp.-positive urine cultures. Apart from bacteria that produce urease, other bacteria, such as Escherichia coli and Enterococcus species, have also been linked to struvite calculi.

Uric acid calculi or urate

Uric acid calculi is accounts approximately for 3–10% of all calculi types. Diets high in purines especially those containing animal protein diet such as meat and fish, results in hyperuricosuria, low urine volume, and low urinary pH ($pH<5.05$) contributes to uric acid calculi formation. Peoples with gouty arthritis may form calculi in the ranal most prevalent result in of uric acid nephrolithiasis is idiopathic, and uric acid calculi are more common in men than in women.

Cysteine calculi

A unusual kind of ranal calculi called cystine calculi is related to the inherited condition cystinuria. Autosomal inheritance genes, such SLC3A1, which regulates the renal cystine transporter, are to blame. Excessive cystine transport due to this genetic condition lowers urine cystine reabsorption, which elevates urinary cystine concentration or causes cystinuria. Because cystine is somewhat insoluble in urine at normal pH levels it precipitates, crystallizes, and forms cystine calculi.

Fig. No. 2: Types of Renal Calculi [I. Calcium calculi II. Uric acid calculi III. Stuvite calculi IV. Cysteine calculi].

EPIDEMIOLOGY

In a number of ways, epidemiology can aid in knowing about and therapeutic management of calculi disease. First, the impact of disease and changes in patterns can be measured by epidemiologic study. Second, understanding factors related to risk in significant epidemiologic research might bring light on pathophysiologic mechanisms involved in the production of calculi. Third, these kinds of studies allows for the study of how various dietary components or gene-environment interactions interact with one another. Given the complexity of nephrolithiasis, methods to lower the risk of calculi formation may result from knowledge of the epidemiology, especially the relationships between various factors. These methods measure the prevalence, incidence, mortality, and disability of urolithiasis.

PATHOPHYSIOLOGY

Environmental and genetic factors significantly contribute to the intricate and diverse characteristics of urolithiasis. The process of urinary stone formation encompasses multiple mechanisms, with the development of calcium oxalate stones being distinct from that of other stone types. Dysfunction in renal acidification, combined with changes in renal excretion or excessive absorption in the gastrointestinal tract, results in the buildup of metabolites that promote stone formation. The formation of calcium oxalate (CaOx) stones involves several unique pathomechanisms, with Randall plaques and mineral deposits being particularly significant. Nevertheless, the origins and underlying mechanisms of CaOx stone formation remain inadequately understood, highlighting the need for additional research to develop effective prevention and treatment methods. Recent investigations indicate that the initial formation of interstitial apatite crystals may play a crucial role in the onset of CaOx stones. Decreased urine volume leads to an increased concentration of compounds that contribute to stone formation, thereby facilitating crystallization and the development of stones. This makes urine volume a significant element in the pathophysiology of urolithiasis. The likelihood of kidney stone formation is heightened when urine volume is diminished, which may occur due to dehydration, certain medications, or medical conditions that affect fluid balance or urinary function. Insufficient water intake is one of the most common reasons for the formation of kidney stones. Certain health conditions may elevate the likelihood of kidney stone formation. Renal tubular acidosis is characterized by the kidneys' inability to excrete acids from the bloodstream into the urine, resulting in heightened blood acidity. Additionally, other disorders such as cystinuria,

hyperparathyroidism, and frequent urinary tract infections can further contribute to the risk of developing kidney stones. Continued research is essential to gain a comprehensive understanding of the pathophysiology associated with these conditions and to formulate effective prevention and treatment approaches for urolithiasis.

SIGN AND SYMPTOMS

The following are common renal calculi symptoms.

I. An difficult, unexpected, wavy, and severe pain that extends throughout the back and may spread to the lower abdomen or genital area. Some female patients claim that the agony is worse than the labour pains related to childbirth. It creates a situation where pain and suffering come and go. The signs and indicators are
II. A sudden urge to urinate.
III. Burning sensation when urinating.
IV. Red blood cells, the urine will have a dark or red hue. In certain cases, the blood's the colour is so faint that it is invisible to the human sight.
V. Nausea and vomiting sensations.
VI. Pain at the tip is experienced by male patients.

RISK FACTORS

One of the most essential factors in encouraging or delaying renal calculi formation is diet. Other factors, involving as environment, body weight, genes, and water intake, dietary intake, can also lead to the formation of the calculi. These are some of the conditions that can make renal calculi more likely to occur.

I. Body dehydration.
II. It is possible for renal calculi to be inherited. A hereditary condition called cystinuria because raises the risk of cystine calculi.
III. Increased dietary intake of proteins, lipids, sodium, and sugar may raise the risk of renal calculi.
IV. Compared to other illnesses, struvite calculi can develop more readily in people with renal infections (particularly in women) and urinary tract infections (UTIs).
V. Ranal calculi may be more likely to occur in obese people.

DIAGNOSIS

Blood testing

Blood tests detect elevated levels of uric acid or calcium. The findings of blood tests aid in ranal health monitoring and may prompt a doctor to look into other medical issues.

Urine testing

A 24-hour urine collection test may reveal that the renals are excreting either too few chemicals that prevent calculi from developing or too many minerals that cause them. The doctor may order at least two urine collections over two days in order to do this test.

Imaging

Renal calculi in the urinary tract may be detected using imaging testing such as abdominal x- ray, ultrasound of kidney, plane film radiography, computized tomography, intravenous pyelogram, magnetic resonance imaging.

Obstruction can be ruled out using the following tests:

A. **Abdominal x – ray:** An abdominal x-ray is a low-radiation image of the abdomen that is captured on film or a computer. X-rays of the abdomen are used to determine where kidney stones are located in the urinary tract. An abdominal x-ray cannot detect all types of stones.
B. **Utrasound of the kidney:** The first imaging test used to examine the abdomen and kidneys is ultrasound. An imaging technique that is safe, non-invasive, and non-radioactive is ultrasound. Since the transducer reflects the majority of ultrasound waves, kidney stones appear brighter and more hyperechoic in ultrasound images.
C. **Plane film radiography:** It might be enough to use plain-film radiography of the kidneys, ureters, and bladder (KUB) to record the size and location of radio urinary calculi that are transparent. Radiography is the most effective method for detecting calcium-containing stones, such as calcium phosphate and calcium oxalate stones. Pure uric acid stones and stones primarily made of cystine or magnesium ammonium phosphate are examples of less radiopaque calculi that may be challenging, if not impossible, to identify on plain-film radiographs. When assessing patients with known stone illness initially, KUB radiographs are helpful in tracking patients with known radiopaque stones throughout time.
D. **Computized tomography:** Simple abdominal X-rays may not detect small renal calculi, but dual energy or high-speed computerized tomography (CT) can detect even the smallest calculi. A noninvasive test, an ultrasound, and intravenous urography—which entails injecting dye into an arm vein and capturing X-rays (intravenous pyelogram) or CT pictures (CT urogram) as the dye passes through the renals and bladder—are other imaging possibilities.
E. **Intravenous pyelogram:** IVP studies typically take an hour to finish; however, they can take four hours or more to complete. The patient receives an injection from the doctor of a specific dye, typically iodine. After the dye reaches the kidneys and passes through the urinary tract, a technician will take X-rays. In the process, to enhance the quality of the image captured during an IVP, pressure is applied around the abdomen using a big bandage. Although intrusive, IVP was, until recently, the most economical way to identify stones. Spiral CT is currently recommended when it is available since it provides a quicker diagnosis and is more precise, secure, and reasonably priced. Patients who have kidney failure shouldn't utilize IVP. Standard dyes also carry the risk of causing an allergic reaction.
F. **Magnetic resonance imaging:** Magnetic resonance techniques. Although MRIs are showing promise in the diagnosis of urinary tract obstruction, they are not yet reliable in detecting small stones or those that do not result in a blockage. However, because MRI doesn't entail radiation, it might be a favorable choice for expectant mothers.

TREATMENT USED FOR RENAL CALCULI

The size, location, and type of renal calculi all impact how they are treated. 90% of calculi smaller than 4 mm will pass without the need for surgery or additional medical treatments. Only 20% of calculi larger than 6 mm pass on their own. Typically, calculi accumulate at the ureter's constricted sections. mostly at the point where the renal and ureter meet. The next location is where the blood veins to the legs cross the ureter, halfway to the bladder. The area where the bladder and ureter meet is the narrowest. Burning and frequent urination are common symptoms when calculi become lodged. Hippocrates rejected the existence of any calculi, while Roman the Elder recommended infusions of Paeonia officinalis and Cicer arietinum with Mentha species to get rid of renal and bladder calculi. but instead of using solvents for relief, used diuretics. Among other things, Avicenna recommended utilizing melon seeds, scorpion egg ashes,

laurel, and cypress oil to break down stone. Additionally, a number of medications for dissolving the stone are mentioned in previous Hindu texts.

Pashanbhed

A study has been carried out in recent years for the chemistry and clinical studies of plants called pashanbheda, which are utilized to dissolve ureteral stones. The Ayurvedic medical system uses the narcotic pashanbheda for a number of ailments, but mostly as a diuretic and lithotriptic. It is said to have had the ability to break and crumble the commonly used drugs and stones. Its identity remains undetermined. Aerva species, Alternanthera sessalis in South India, Rotula aquatica in Mysore, Ammaunia baceifera in Kerala, Coleus species, Bauhinia racemose, Didymo carpus, Bryophyllum spp., Ocimumbasilicum pedicellate in Bengal, and numerous other plants have been referred to as Pashanbheda. Bergenia ligulatasyn (now). By this name, Saxifrage ligulata is a well-known organism. Several names have been given to Bergenia ligulata because of its chemical efficacy in removing urinary stones, including Asmaribheda, Pashana, Pashanbheda, Nagabhid, Ashmabhid, Ashmhed, Shilabhed, Parwatbhed, and Upalbhedak (melting or penetrating slabs of stone), among others. This drug, commonly referred to as Pashanbhed. It is recommended for the treatment of abdominal tumors, the dissolution of calculi, and painful urination. The medications are referred to by several synonyms in the Sushruta Samhita, such as pasanbhed for the treatment of uric acid calculi and ashnibhid for biliary calculi. Sushruta Samhita states that patients with Vataja Ashmari benefit from the decoction of Pashanbhed, Ashmantaka, Satavari, Vrihati, Bhalluka, kola, kulatha, and varana (Crataevanurvula) as well as the benefits of kataka seeds, whereas Pittaja benefits from Trikantaka, Patala, Kusa, Ashmabhid, Punarnava, Silajatu, and Sirisha. ChiktsitSthanam-Upalbhed mentions Ash tang Hridaya medications for extreme pain because of Ashmabid for biliary calculi, obstructed micturition, and Pashanbheduric acid calculi.

Sushruta

Samhita Sushruta In 'Viratarvadigana,' the Celosia argental plant "Sitivaraka" is examined for urinary illnesses such as Ashmari's calculi, gravels (sarkara), dysuria (mutra krichhra), and urine suppression, among others. In Sushruta Samhita, Acharya Sushruta provides a detailed description of it, along with information on its surgical and medical treatment. The location, nature, and intensity of pain, as well as the elements that aggravate and alleviate it, have all been explicitly addressed by Acharya Sushruta. According to Acharya Sushruta, the two stone-formation processes. One occurs when the urine becomes stagnant and oversaturated, and the other occurs when the crystalloids in the urine crystallize. According to reports, the lithotriptic nature of South Indian plants includes Aerva species, Ammaniabaccifera, and Nothosasrva brachiate. It is believed that Celosia argental is very useful in treating urinary ashmari stones. The aqueous decoction is used to dissolve and excrete stones. Shila pushp or Patharphodi, a didymo carpus pedicellate, is good for kidney and bladder stones. For vesicular calculi, Homonoia riparia, also called Kshudra Pashanbhed or Pashanbhed, is beneficial. The use of Pashanbhed treating bladder stones is another name for the aquatic rotula Rhabdialycioides. Bergenia ligulata, often known as Pashanbheda, and Saxifraga ligulata have strong lithotriptic and diuretic properties. Bryophyllumcalycinum, also known as Pashanbheda in Bengal, Kalanchoe pinnalasyn, and other medications don't have any lithotriptic or diuretic effects. Pashanbhed, also known as Bridelia Montana, has not yet shown up for any such efforts.

Ayurveda

This "knowledge of life span" is what "ayurveda" signifies. With origins on the Indian subcontinent around 3,000 years ago, it is among the oldest known medical systems. It is based on the Panchmahabhutas theory, which holds that the five basic elements of earth, water, fire, air, and sky make up everything, including living creatures. Urolithiasis was discovered and given the name Ashmari by ancient medical scientists thousands of years ago. It comes from the Sanskrit term "Ashman," which literally translates to "a stone-like structure." The basis of Ayurvedic treatments is the individual's body (prakriti), which is made up of three doshas or bodily humours (vata, pitta, and kapha), and how their imbalance leads to sickness situations. Urinary stones are commonly referred to in Ayurveda as mutraashamari (mutra-urine; ashma-stone; ari-enemy) (mahagad), and urolithiasis has been considered one of the eight most troublesome conditions. According to Ayurvedic literature, there are four types of urinary calculi: phosphatic stones (sleshmaashmari), urate stones (pittaashmari), oxalate stones (vataashmari), and spermolith or seminal concretions (sukraashmari). Urinary stones are managed and treated in Ayurveda using surgical techniques, alkaline fluids, and herbal remedies. Shodhana and Shamana are Ayurvedic terms for panchakarma treatments, which include medicated emesis, purgation, and enemas, as well as internal and external oleation and sweat induction. Therapy has been proposed to address conditions brought on by urinary stone.

Herbal folk drug used in treatment of urolithiasis

Sr. No	Scientific name	Family	Plants part used	Medicinal use
1.	Abutilon indicum (L.)Sweet	Malvaceae	Seed and leaf extracts	The extract is given for urinary disorders
2.	Abrus precatorius Linn	Malvaceae	Leaves	Used for urinary disorder and kidney stone.
3.	Actinidaphne angustifolia (Blume) Nees	Lauraceae	Leaves	Used in treatment of urinary stone.
4.	Aerwa lanata (L.) Juss.ex Schlt	Amaranthaceae	Leaves	Plant extract with cuminum cyminum fruits and sugar is given for 10 -15 days to cure kidney stones
5.	Aeschynomene indica Linn	Papilionaceae	Young tendor leaves	Used to treat kidney stone.
6.	Ageratum conyzoides L	Asteraceae	Leaves	Leaf extract given twice a day for reduce kidney stone.
7.	Argemone maxicana(L)	Papaveraceae	Root	Used in treatment of urolithiasis
8.	Amaranthus Cauedatus	Amaranthaceae	Leaves	Used to reduce kidney stone
9.	Amaranthus spinosus L.	Amaranthaceae	Root	Root paste is used to reduces irritation in urinary duct
10.	Amaranthus viridis L.	Amaranthaceae	All Parts	Given to cure kidney stone
11.	Amarathus conyzoides L.	Amaranthaceae	Leaves	Leaf extract given in twice a day
12.	Ammi visnaga	Umbelliferae	Seeds	Seeds extracted for treatment of anti nephrolithiasis
13.	Anisomeles malabarica (L.) R. Br. ex Sims	Lamiaceae	Whole plant	Used in treatment of renal calculi.
14.	Anogeissus latifolia Wall. ex Guillem. & Perr.	Combretaceae	Stem bark	treating kidney stones and urinary tract infections
15.	Apium graveolens	Apiaceae	Leaves and Umbles	Used in treatment of kidney stone
16.	Asparagus Racemosus	Liliaceae	Root	Root used for diuretic
17.	Baliospermum solanifolium (Burm.) Suresh	Euphorbiaceae	Root	Used in treatment of diuretic

18.	Bambusa nutans wall	Poaceae	shoot	It helps for dissolving kidney stone.
19.	Bauhinia variegata	Caesalpiniaceae	Bark and leaves	Used kidney stone.
20.	Benincasa hispida (Thunb.) Cogn	Cucurbitaceae	Fruits	Fruits used for urinary tract infection and kidney stone
21.	Berberis vulgaris Linn.	Berberidaceae	Whole plant	Treatment of urinary tract disease
22.	Bergenia cilliata Haw. Sternb	Saxifragaceae	Rhizome	Rhizome used for urinary disorders
23.	Beta vulgaris L.	Amaranthaceae	Rhizome	Daily two glass of rhizome juice for seven days two cure kidney stone.
24.	Bombex ceiba Linn.	Bombacaceace	Stem and Bark	Given for urinary problems
25.	Bonnaya brachiate link and otto	scrophulariaceae	Whole plant	Used in treatment of kidney stone
26.	Bonnaya reptans (Roxb.) spreg.	Scrophalareaceae	Whole plant	Given for dissolving kidney stone
27.	Benincasa hispida(Thund) cogn	Cucurbitaceae	Fruit	Fruit used in treatment of kidney stone.
28.	Borhaaviadiffusa Linn.	Nyctaginaceace	Root	Root decoction is taken daily for one month in kidney stone.
29.	Bryophyllum pinnatum	Crassulaceae	Leaves	Used in treatment of kidney stone.
30.	Butea monosperma (Lam.) Taub. (Lam.)	Leguminosae	Seed	Given for kidney disease
31.	Calamus rotang L.	Arecaceae	Rhizome	Reduce treatment of kidney stone
32.	Cardia grandis Roxb.	Boragineae	Fruits	Used in treatment of urolithiasis
33.	Carica papaya L.	Caricaceae	Root	Used in treatment of urinary tract infection.
34.	Carthamus tinctorius L.	Compositae	Fruit, leaves	Given for reduce kidney stone
35.	Cassia fistula L.	Leguminosae	Stem bark	Used for kidney stone
36.	Celosia argentea L.	Amaranthaceae	Seed	Reduce renal stone
37.	Celtis timorensis span	Ulmaceae	Aerial part	Given in treatment of kidney stone
38.	Ceropegia bulbosa Roxb.	Asclepidaceace	Tubers	Decoction of tubers orally to get rid of urinary bladder stone
39.	Chenopodium album Linn	Chenopodiaceae	Leaves	Cooked leaves as a vegetables given in urinary trouble
40.	Cincer arietinum	Fabaceae	Seeds	Used in treatment of kidney stone
41.	Corbichoniadecumbens (Forrsk.)	Molluginaceae	Leaves	Crushed leaves given orally for reduce kidney stone.
42.	Coscinium fenestratum (Gaertn.) Colebr.	Menispermaceae	Root stem	Used urinary disorder and kidney stone
43.	Costus specious(Koen)SM.	Costaceae	Tubers	Decoction of tubers orally for urinary complaints
44.	Crataeva nurvala	Capparidaeae	Stem bark	It helps reduction in renal oxalate level and increase in antioxidant status
45.	Cynodon dactylon	Gramineae	Aerial portion of plant	Used in treatment of kidney stone
46.	Dalbergia sissoo DC.	Leguminosae	Heart wood	Given for treatment of kidney stone
47.	Dendrophthoe falcate (L.f.) Ettingsh	Loranthaceae	Fruit/Leaves/ Stem/Root/flowers	It helps in reduction of kidney stone
48.	Digera muricata(L.) Mart	Amaranthaceae	Leaves	Used in kidney stone.
49.	Diospyros melaoxylonroxb	Ebenaceace	Fruit and flower Bark	Fruit and flower bark powder is used in urinary tract disorders.

50.	Equisetum debile Roxb.	Equistaceae	All Parts	Whole plants juice along with 1 gram piper nigrum Linn. Twice a day for 7days
51.	Garcinia pedunculata Roxb. ex Buch.-Ham.	Clusiaceae	Fruit	Fruit used for treatment of kidney stone.
52.	Gomphrena celosioides Mart.	Amaranthaceae	Whole plant	Juice along with piper Nigrum Linn and lemon juice twice a day for 7days
53.	Grewia flavescens A.Juss	Tiliaceace	Root powder and decoction of Roots	For removal of stops bleedings in urinary tract
54.	Hernaria hirsute L.	Caryophyllaceae	Flower	Used in treatment of kidney stone
55.	Hygrophila auriculata (Schumach.) Heine	Acanthaceae	Roots	Reduce treatment of renal calculi
56.	Hyoscyamus niger L.	Solanaceae	Seed	Used in treatment of urinary tract infection and kidney stone.
57.	Imperata cylindrica (L.) Raeusch.	Poaceae	Root	Reduce inflammation of kidney stone
58.	Jasminum auriculatum	Oleaceae	Flower, Roots	Help in significant reduction of elevated urinary oxalate
59.	Lycopodium clavatum	Lycopodiaceae	Leaves	Used in treatment of kidney stone
60.	Mimusops elengi L.	Sapotaceae	Bark, fruit, seeds	Reduces deposition of stone forming constituents in the kidneys.
61.	M. longifolia	Sapoteaceae	Seed	Used for removal of kidney stone
62.	Momordica dioica Roxb. ex Willd.	Cucurbitaceae	Root	Roots are given for the treatment of kidney stone
63.	Moringa oleifera	Moringaceae	Leaves	Leaves powder is used taken for kidney stone
64.	Nigella sativa	Ranunculaceae	Seed	Used in treatment of kidney stone
65.	Ocimum tenuiflorum L.	Lamiaceae	Whole plant	It helps to reduce kidney stone
66.	Pedalium murex Linn.	Pedaliaceae	Fruits	Decoction of fruits used for continuance of urine and other complaints of urinary system
67.	Phyllanthus niruri L.	Phyllanthaceae	Leaves	Used for reduce the size of kidney stone
68.	Phyllanthus acidus (L.) Skeels	Phyllanthaceae	Fruit	Used in treatment of kidney stone
69.	Phyllanthus fraturnus	Euphorbiaceae	Whole plant	Used in treatment of kidney stone.
70.	Punica grantum	Lythraceae	Peel, seeds of plant	Oil and juice are used to treat kidney failure
71.	Saccharum spontaneumL.	Poaceae	Roots	Reduce calcium oxalate calculi
72.	Salvadora persica L.	Salvadoraceae	Fruits, Leaves, Root, bark	Used for treatment of kidney disorder
73.	Salvia hispanica L.	Lamiaceae	Seeds	Used in treatment of kidney stone
74.	Sesamum indicum L.	Pedaliaceae	Seeds	Seeds given for treatment of renal calculi
75.	Sesbania bispinosa W.F. Wight	Leguminosae	Root	Reduce kidney stone
76.	Solanum nigrum Linn	Solanaceae	Seed	Used to treat urolithiasis
77.	Solanum surattence	Solanaceae	Root powder	Used in urinary lithiasis
78.	Solanum xanthocaepum	Solanaceae	Fruit	Used for UTI infections and urinary retention
79.	Stephania hernadifolia walf	Menispermaceae	Leaves	Given in the treatment of

				dissolving kidney stones
80.	Stereospermum chelonoides (L.f.) DC.	Bignoniaceae	Roots	Used in treatment of anti urolithic activity
81.	Tagetes erecta Linn	Asteraceae	Leaves	Used in treatment of kidney stones
82.	Tenacetum parthenum	Graminae	Leaves and blooms	Used in treatment of kidney stones
83.	Tinospora cordifolia	Asclepiadaceae	Whole plant	Plant extract used for reduce inflammation of kidney stones
84.	Trachyspermum ammi	Apiaceae	Seed like fruits	Used in diuretic
85.	Tribulus terrestris Linn.	Zygophyllaceae	Leaves	Used in treatment of kidney stone
86.	Tridex procumbes L.	Asteraceae	Leaves	Leaf paste is used taken for kidney stone.
87.	Tubiflora acaulis (L.F)kuntze	Acanthaceace	Leaves	Leaf powder with water used in kidney stone
88.	Typha elephantine Roxb.	Typhaceae	Root	Root used in treatment of renal calculi
89.	Typha australis K. Schum. & Thonner	Typhaceae	Rhizome root	Given for treatment of urinary tract infection and kidney stone
90.	Vallaris solanacea Kuntze	Apocynaceae	Root	Used in kidney stone
91.	Vigna unguiculata (L.) Walp.	Leguminaceae	Seeds	Used in anti urolithic activity.
92.	Xanthium strumarium Linn	Asteraceae	Root	Used in treatment of urolithiasis.
93.	Zingiber officinale	Zingiberaceae	Root	Root powder used for diuretics

CONCLUSION

Herbal remedies are growing in popularity due to their durability and lack of side effects. The use of natural and ayurvedic botanicals to treat Renal calculi has grown in favour. It has been shown that a variety of plants with active ingredients include can increase excretion of calcium calculi, stuvite calculi, uric acid calculi and cysteine calculi are incidence and clearance of Renal calculi. A thorough examination of history may uncover various dietary and lifestyle risk factors that contribute to an individual's susceptibility to calculi disease. The pathophysiology of urolithiasis is an ever changing process encompassing a sequence of events, ranging from supersaturation and nucleation to crystal aggregation and, ultimately, the formation of calculi. There are various procedures for the treatment of kidney stones, including natural medicine, as well as surgical removal of stones, which are currently popular options. However, many people prefer herbal therapy for the removal of kidney stones. Herbal treatments are considered the safest and most cost-effective options available, but they do require time to show their effects.

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