1. LITERATURE REVIEW

1. Baheti D. G., (2013) reported antiurolithiatic activity of a polyherbal formulation against calcium oxalate induced urolithiasis in rats and a polyherbal formulation constituted with extracts of plants Plectranthus mollis Spreng, Didymocarpus pedicellata, Taraxacum officinale, Dendrophthoe elastic desr and Citrus medica Linn was evaluated for antiurolithiatic activity against commonly occurring calcium oxalate urolithiasis. The analysis of the polyherbal formulation showed the presence of triterpenoids and flavonoids and glycosides. The presence of these different constituents and its interaction with other similar phytoconstituents may be responsible to alter the therapeutic profile of individual formulations. The overall presence of phytochemicals is in accordance with the previous published reports wherein antiurolithiatic action was established.

2. Kishore D.V., (2013) reported effect of ethanolic extract of Portulaca Oleracea linn. on ethylene glycol and ammonium chloride induced urolithiasis and found that antiurolithiatic activity of the plant may probably be due to synergism of diuretic activity, crystallization inhibition, improved renal function along with antioxidant activity.

3. Panchal M., (2013) reported phytochemical screening and standardization of polyherbal formulation “renolith” for renal stone and found phytochemical constituents found to be present in the raw material used for the preparation of renolith possibly facilitate the desirable therapeutic efficacy of standardized medicinal formulation as a whole, and also could help in knowing the underlying mechanisms of the pharmacological action.

4. Singla S.K.,(2013) reported Prophylactic effect of coconut water (Cocos nucifera L.) on ethylene glycol induced nephrocalcinosis in male wistar rat and found that treatment with coconut water inhibited crystal deposition in renal tissue as well as reduced the number of crystals in urine. Furthermore, coconut water also protected against impaired renal function and development of oxidative stress in the kidneys.

5. Reddy C. S., (2013) reported evaluation of Phoenix dactylifera fruits for Antiurolithiatic activity and found that Aqueous and n-Butnaol extracts of Phoenix dactylifera exhibited strong antiurolithiatic activity. These extracts were showing antiurolithiatic activity significantly in the dose level of 200 mg/kg.Various
experimental procedures result in basically two type of hyperoxaluria acute and chronic.

6. Bouabdelli F., (2012) reported Antimicrobial Activity of 22 Plants Used in Urolithiasis Medicine in Western Algeria and found that most of the studied plants are potentially a good source of antimicrobial agents and demonstrates the importance of such plants in urolithiasis medicine and alternative healthcare.

7. Kachchhi N.R., (2012), reported evaluation of the antiurolithiatic activity of methanolic extract of *Celosia Argentea* roots in rats and found that *Celosia argentea* root is good and effective in prevention of crystal aggregation which may be because of its diuretic activity ability to alter promoters and inhibitors level.

8. Mohite M. S., (2012) reviewed pharmacological Properties of *Abutilon indicum* and concluded that *Abutilon indicum* have several pharmacological properties like, hepatoprotective, wound healing, immunomodulatory, analgesic, antimalarial, antimicrobial, hypoglycemic activity. The main chemical constituents are carbohydrates, steroids, glycosides, flavonoids, tannins and Phenolic compounds. Hence in this review article, effort has been taken to collect and compile the details regarding *Abutilon indicum* which will be useful to the society to venture into a field of alternative systems of medicine.

9. Sindu P.S., (2012), reported evaluation of selected medicinal plants for antiurolithiatic activity and fond that Garlic stimulates the production of nitric oxide and hydrogen sulphide which relax the blood vessels; this improves the circulation of the kidneys and prevents the formation of infection stones. Garlic is also believed to contain vitamin B-6 which helps to reduce the levels of urinary oxalate and the seeds of pomegranate can be considered as natural remedy for kidney stones. This may be related to their astringent property.

10. Tiwari A., (2012), reviewed on potent indigenous herbs for urinary tract infirmity: urolithiasis and reported that as herbs and herbal drugs have clinically proven effects like immunomodulation, adaptogenic and antimutagenic, they play a vital role in treatment of kidney stone disease. Number of medicinal plants shows antiurolithiatic activity such as Kanghi (*Abutilon indicum*), Chaya (*Aerva lanta*), Bishkapa or purnava (*Boerhaavia diffusa*), Ajuba (*Bryophyllum pinnatum*), Gokhuru (*Tribulus terrestris*), Makka (*Zea mays*) etc.In the present article, an attempt has been made to emphasize on potent indigenous herbs used in treatment of urolithiasis.
11. Hajzadeh M.A.R. (2011) reported Preventive effect of *Cynodon dactylon* against ethylene glycol-induced nephrolithiasis in male rats and found that *C. dactylon* extract was able to reduce the growth of urinary stones in the rat. Therefore, the beneficial action of *C. dactylon* extract on human kidney stones may be suggested.

12. Yadav R. D., (2011) reviewed Herbal plants used in the treatment of urolithiasis and found that a number of medicinal plants are evaluated mainly against calcium oxalate and magnesium ammonium phosphate types of kidney stones, employing various experimental models of urolithiasis. Most of these studies were preliminary, carried out in animals and are not sufficient for the development of a pharmaceutical product. Still, intensive preclinical and clinical studies are required to evaluate the efficacy and toxicity of these plant products. Further, chemical studies of the plants are needed to isolate the active principles and investigate them in order to identify a promising Lead compound.

13. Pareta S.K., (2010) reported *Boerhaavia diffusa* Linn aqueous extract as curative agent ethylene glycol induced urolithiasis and found that *Boerhaavia diffusa* Linn. caused diuresis and hasten the process of dissolving the preformed crystal deposits, improved the renal function by increasing the removal of nitrogenous waste product and decreased the oxalate excretion probably by interfering with metabolism. All these activities synergistically attribute to the antiurolithiatic activity to *Boerhaavia diffusa* Linn.

14. Abdul M.M., (2010) reported Cytotoxic and Antimicrobial Activity of the Crude Extract of *Abutilon Indicum* and found that n-hexane and methanol extract exhibited statistically insignificant activity against the tested microorganisms and the chloroform extract exhibited statistically significant antimicrobial activity against only *Sacina lutea*.

15. Dashputre N. L., (2010) reported Immunomodulatory Activity of *Abutilon Indicum* linn on Albino Mice and found that *A. indicum* triggers both specific and non-specific responses to a greater extent. The study comprised the acute toxicity and preliminary phytochemical screening of *A. indicum*. From the results obtained and phytochemical studies the immunostimulant effect of AI could be attributed to the flavonoid content.

16. Ghatapanadi S. R. (2010) reviewed medicinal plants of north Karnataka used in treatment of kidney stones and urinary Tract infections and reported that ethno botanical survey of north karnataka 13 plants belonging to 10 families were recorded as effective remedies used by the local people to treat the renal calculi and urinary
tract infections. These crude drug preparations inhibit further stone formation, dissolve of break the calculi and expel them and relieve the suffering and pain.

17. Golwala D. K., (2010) reported anticonvulsant activity of *Abutilon indicum* leaf and found that antiseizure effect of *Abutilon indicum* may be due to part of linoleic acid and/or flavonoid compounds present in the extracts. Thus the results of both doses of AIE, demonstrates a very striking and potent antiepileptic activity, it may be useful in both types of epileptic conditions like Grand mal and Petit mal epilepsy.

18. Verma N.K., (2009), reported modulatory effect of noni-herbal formulation against ethylene glycol-induced nephrolithiasis in albino rats and found that biochemical analysis showed that the rats treated with EG alone had higher amounts of calcium in the kidneys compared to negative control rats. This EG-induced increase in kidney calcium levels was inhibited by the administration of NONI formulation. Histology showed that rats treated with EG alone had large deposits of calcium oxalate crystals in all parts of the kidney, and that such deposits were not present in rats also treated with NONI formulation. These data suggest that NONI formulation has a protective activity against urolithiasis.

19. Beghalia M., (2008) reported Screening for Anti-crystallisation Calcium Oxalate Urolithiasis Activity in Algerian Plants and found that Extracts of *Ammodaucus leucotrichus* and *Ajugaiva* potently inhibit the nucleation, growth and aggregation phases of calcium oxalate crystallisation, while extracts of *Erica multiflora*, and *Globularia alypum* (flowers), inhibited nucleation and growth of the crystals but not their aggregation.


22. Karadi R. V., (2006) reported Effect of *Moringa oleifera* Lam. root-wood on ethylene glycol induced urolithiasis in rats and found that Supplementation with aqueous and alcoholic extract of *Moringa oleifera* root-wood significantly reduced the elevated urinary oxalate, showing a regulatory action on endogenous oxalate synthesis. The
increased deposition of stone forming constituents in the kidneys of calculogenic rats was also significantly lowered by curative and preventive treatment using aqueous and alcoholic extracts

23. Satish H.,(2006) reported comparative study of methanolic extract of *Bergenia ligulata* with isolated constituent bergenin in urolithiatic rats where the methanolic extract has shown significant activity by reducing oxalate, calcium.

24. Micali S.,(2005) reported evaluation of patients with renal stones composed of calcium oxalate, received extracorporeal shock wave lithotripsy. *Phyllanthus niruri* plant was used for the treatment of urolithiasis.

25. Yasunori I.,(2005) reported the preventive effects of green tea on renal stone formation and role of oxidative stress in nephrolithiasis and found that the inhibitory effect of green tea on calcium oxalate urolithiasis is most likely due to antioxidant effect.

26. Josi V.S.,(2005) reported that herbal extract of *Tribulus terrestris* and *Bergenia ligulata* can inhibit growth of calcium oxalate monohydrate crystals invitro and found that the aqueous extract of *Bergenia ligulata* produced maximum inhibition of COM crystal growth followed by aqueous extract of *Tibulus terrestris*.

27. Atmani F.,(2004) reported the effect of aqueous extract from *Herniaria hirsuta* L. on experimentally nephrolithiasis rats and described that the aqueous extract of *Herniaria hirsuta* decreased urinary calcium level significantly in 2 weak.

28. Kohjimoto Y.,(2004) reviewed the future perspective on the prevention of nephrolithiasis and found that calcium oxalate crystals can bind to renal epithelial cells in stone formation.

29. Bhatnagar V.,(2004) reported effect of cystone on pediatric urolithiasis with special reference to urinary excretion of calculogenesis inhibitors. And found cystone appears to be an effective and safe treatment for long term use.

30. Atmani F. ,(2003) reported prophylaxis of calcium oxalate stones by *Herniaria hirsuta* on experimentally induced nephrolithiasis in rats and found that *Herniaria hirsuta* has an impressive prophylactic effect on calcium oxalate stones in nephrolithiasis rats.

31. Barbas C.,(2002) reviewed nephrolithiasis markers for urinary analysis and concluded that enzymatic method is more common in clinical laboratory.
32. Takahiro Y., (2001) shows the effects of allopurinol on renal stone formation and osteopontin expression in rat urolithiasis model and reported that the rate of renal stone formation was lower in the allopurinol groups than in the stone group.

33. Atmani F., (2000) reported the effect of an aqueous extract from *Herniaria hirsuta* on calcium oxalate crystallization in vitro and shows that aqueous extract of *Herniaria hirsuta* promoted the nucleation of calcium oxalate crystals increasing in their number but decreasing their size.

34. Souccar C., (1999) reported Evaluation of the antiurolithiatic activity of the extract of *Costus spiralis* Roscoe in rats and concluded that the presented data indicate that administration of the water extract of *C. spiralis* to rats with experimentally-induced urolithiasis reduced growth of urinary stones, supporting folk information regarding the plant antiurolithiatic activity. The mechanisms underlying this effect are still unknown, but are apparently unrelated to increased diuresis and excretion of urinary salt forming stones.

35. Umashankar D., (1999) determined the active constituent bergenin and (+) afzelechin from different parts of *Bergenia ligulata* by High pressure liquid chromatographic. And bergenin was found major component of *Bergenia ligulata*, rhizomes with the concentration being about 7 times greater than that of (+) afzelechin.

36. Khan S. R., (1997) reported the analysis of animal models of kidney stone formation and shows that a rat model of calcium oxalate nephrolithiasis can be used to investigate the mechanism involved in human kidney stone.

37. Grases F., (1995) reported the effect of aqueous extract of *Herniaria hirsuta* and *Agropyron repens* on calcium oxalate urolithiasis risk in rats and reported that the possible effect of the *Agropyron repens* can not be assigned to any positive effect of the studied main urolithiasis risk factors.