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## RESEARCH ARTICLE

### A Study on an In-Vitro Urolithiatic Activity of Aqueous Extract of Poly Herbs

Saidulu S\*, Gopala Krishna CH<sup>1</sup>, Mallikarjuna Rao B<sup>2</sup>, Vatsavai Leela Krishna<sup>3</sup>, Vallampati Prudhvi<sup>4</sup>, Baby Siva Kumari K<sup>5</sup>

\*<sup>12345</sup>A.M.Reddy Memorial College of Pharmacy, Narasaraopet, 522412, A.P, India

#### ABSTRACT

The management of kidney stones are lemon curry moringa leaf extracts. These can produce less toxic or side effects like allergic conditions. Kidney stones, or renal calculi, are solid masses made of crystals. Kidney stones usually originate in your kidneys. In the present study drugs which are used for the management of kidney stones are lemon curry moringa leaf extracts. These can produce less toxic or side effects like allergic conditions. Kidney stones, or renal calculi, are solid masses made of crystals. The aim of the present study is to evaluate the urolithiatic activity of the leaves of lemon, curry and moringa  
Keywords: Kidney stones, the leaves of lemon, moringa

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##### Corresponding Author

Ajay Kumar Ch  
23456A.M.Reddy Memorial College of  
Pharmacy, Narasaraopet, 522412,  
A.P, India.  
MS-ID: IJPNM4505



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#### 1. Introduction

The World Health Organization (WHO) defined health as "a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity"<sup>1</sup>. In the present study drugs which are used for the management of kidney stones are lemon curry moringa leaf extracts. These can produce less toxic or side effects like allergic conditions. Kidney stones, or renal calculi, are solid masses made of crystals. Kidney stones usually originate in your kidneys. However, they can develop anywhere along your urinary tract. In Asia, about 1%–19.1% of the population

suffers from urolithiasis. In this review, we find the prevalence of urolithiasis is 5%–19.1% in West Asia, Southeast Asia, South Asia, as well as some developed countries (South Korea and Japan), whereas, it is only 1%–8% in most part of East Asia and North Asia. The recurrence rate ranges from 21% to 53% after 3–5 years. Calcium oxalate (75%–90%) is the most frequent component of calculi, followed by uric acid (5%–20%), calcium phosphate (6%–13%), struvite (2%–15%), apatite

(1%) and cysteine (0.5%–1%). The incidence of urolithiasis reaches its peak in population aged over 30 years.

### **Urolithiatic activity**

#### **Urolithiasis:**

The process of forming stones in the kidney, bladder, and/or urethra (urinary tract). Kidney stones are a common cause of blood in the urine and pain in the abdomen, flank, or groin. Kidney stones occur in 1 in 20 people at some time in their life. The development of the stones is related to decreased urine volume or increased excretion of stone-forming components such as calcium, oxalate, urate, cystine, xanthine, and phosphate. The stones form in the urine collecting area (the pelvis) of the kidney and may range in size from tiny to staghorn stones the size of the renal pelvis itself.

Kidney stones, or renal calculi, are solid masses made of crystals. Kidney stones usually originate in your kidneys. Kidney stones are one of the most painful medical conditions. The causes of kidney stones vary according to the type of stone. The physical process of stone formation is a complex cascade of events, result from the growth of crystals leads to stones formation (Kok 2002). The process of stone formation is depend on volume of urine, comprise concentrations of calcium, phosphate, oxalate and sodium ions (Mandel 1989). High ion levels, low urinary volume, low pH, and low citrate levels privilege the formation of urinary calculi. The pathogenesis of urinary calculi formation is the end result of the fundamental multi-step physicochemical processes

#### **Composition of Kidney Stones:**

The main components of the stone matrix account for 2-3% of their total dry weight and consists of macromolecules generally present in the urine [12, 13]. They are described by Boyce 64 protein, 9.6% nonamino sugars, 5% hexosamineas glucosamine, 10% bound water.

#### **Types of kidney stones:**

Not all kidney stones are made up of the same crystals. The different types of kidney stones include:

#### **Calcium:**

Calcium stones are the most common. They're often made of calcium oxalate (though they can consist of calcium phosphate or maleate). Eating fewer oxalate-rich foods can reduce your risk of developing this type of stone. High-oxalate foods include:

- potato chips
- peanuts
- chocolate
- beets
- spinach

However, even though some kidney stones are made of calcium, getting enough calcium in your diet can prevent stones from forming.

#### **Uric acid**

This type of kidney stone is more common in men than in women. They can occur in people with gout or those going through chemotherapy. This type of stone develops when urine is too acidic. A diet rich in purines can increase urine's acidic level. Purine is a colorless substance in animal proteins, such as fish, shellfish, and meats.

**Struvite:** This type of stone is found mostly in women with urinary tract infections (UTIs). These stones can be large and cause urinary obstruction. They result from a kidney infection. Treating an underlying infection can prevent the development of struvite stones.

#### **Plants used:**

##### **Lemon leaf**



#### **Scientific Classification**

##### **Chemical Constituents:**

Essential oil of complex composition: limonene, pinene, citral, citronellal, terpineol, camphene, phellandrene, coumarins, flavonoids, vitamin C, carotenoids, mucilages, calcium oxalate.

##### **Uses:**

As anticatarrhal, benefits circulation, capillaprotector, antihypertensive.

##### **Curry leaf:**



##### **Chemical constituents:**

Compounds found in curry tree leaves, stems, bark, and seeds contain cinnamaldehyde,<sup>[7]</sup> and numerous carbazole alkaloids, including mahanimbine,<sup>[8]</sup> girinimbine,<sup>[9]</sup> and mahanine.

##### **Uses:**

The leaves are often stewed to flavor gulai. Though available dried, the aroma and flavor is greatly inferior.<sup>[5]</sup> The oil can be extracted and used to make scented soaps.<sup>[6]</sup> used as a herb in Ayurveda and Siddha medicine in which they are believed to possess anti-disease properties,<sup>[6][4][6]</sup> but there is no high-quality clinical evidence for such effects.

##### **Moringa:**

##### **Chemical Constituents**

Source of B vitamins, vitamin C, provitamin A as beta-carotene, vitamin K, manganese, and protein



**Uses:** Leaves used as vegetables and for traditional herbal medicine. Crystals of calcium oxalate<sup>[22]</sup> though at levels 1/25th to 1/45th of that found in spinach, which is a negligible amount. The leaves are cooked and used like spinach.

## 2. Materials and Methods

### Plant Material Collection:

The plant material of lemon leaf, curry leaf, moringa leaf was collected from the premises of A.M Reddy Memorial College of pharmacy narasaraopet, Guntur dist.

### Preparation of Lemon Plant Extracts

The leaves are collected from the market at about 6AM. Washed with water at about 2-3 times until the leaves are cleaned. Dried under the shade for 2-3 days. Powder it...Dissolve 10g of dried leaf powder with 100ml of deionized water, heat it for at least 20 min, filter the solution and the filtrate is used for urolithiatic activity

### Preparation of Curry Leaf Extract

The leaves are collected from the market at about 6AM. Washed with water at about 2-3 times until the leaves are cleaned. Dried under the shade for 2-3 days. Powder it...Dissolve 10g of dried leaf powder with 100ml of deionized water, heat it for at least 20 min, filter the solution and the filtrate is used for urolithiatic activity

**Preparation of Moringa Leaf Extract:** The leaves are collected from the market at about 6AM. Washed with water at about 2-3 times until the leaves are cleaned. Dried under the shade for 2-3 days. Powder it...Dissolve 10g of dried leaf powder with 100ml of deionized water, heat it for at least 20 min, filter the solution and the filtrate is used for urolithiatic activity

### Evaluation for Anti-urolithiatic Activity

Collection of Kidney stones from Hospital.

### Preparation of Semi-Permeable Membrane from Farm Eggs:

The semi - permeable membrane of eggs lies in between the outer calcified shell and the inner contents like

albumin & yolk. Shell was removed chemically by placing the eggs in 2M HCl for an overnight, which caused complete decalcification. Further, washed with distilled water and carefully with a sharp pointer a hole is made on the top and the contents squeezed out completely from the decalcified egg. Then distilled water and placed it in ammonia solution, in the moistened condition for a while & rinsed it with distilled water. Stored in refrigerator at a pH of 7- 7.4.

### Estimation of Calcium oxalate by Titrimetry

Weighed exactly equal wt. of the kidney stones and 10mg of the extract/compound/standard and packed it together in semi Permeable membrane by suturing. This was allowed to suspend in a conical flask containing 100ml 0.1 M TRIS buffer. One group served as negative control (contained only kidney stones). Place the conical flask of all groups in an incubator, preheated to 37°C for 2 hours, for about 7-8 hours. Remove the contents of semi-permeable membrane from each group into a test tube. Added 2 ml of 1 N sulphuric acid and titrated with 0.9494 N KMnO<sub>4</sub> till a light pink colour end point obtained. 1ml of 0.9494 N KMnO<sub>4</sub> equivalents to 0.1898mg of Calcium. The amount of undissolved calcium oxalate is subtracted from the total quantity used in the experiment in the beginning, to know how much quantity of calcium oxalate actually test substance(s) could dissolve. In the present study we taken as total groups are following.

- Group 1 (Negative Control it contains kidney stones only)
- Group 2 (Positive Control it contains kidney stones plus Cystone standard drug)
- Group 3 (Test I it contains kidney stones plus lemon leaf extract)
- Group 4 (Test II it contains kidney stones, curry leaf extract)
- Group 5 (Test III It contains kidney stones, moringa leaf extract)
- Group 6 (Test IV it contains kidney stones, lemon leaf, curry leaf, moringa leaf extracts)

## 3. Results and Discussion

The preliminary test were done and the results are shown below

**Preliminary Phytochemical Screening for lemon leaf extract:** The aqueous extract of Lemon leaf was subjected to preliminary tests and the results were tabulated in table no 01. The results showed the presence of alkaloids, saponins, tannins, glycosides, phenols.

Table No.01: Preliminary Phytochemical tests

S.NO	Phytochemical tests	Inference
1	Test for Alkaloids	Positive
2	Test for Flavanoids	Positive
3	Test for Sapoins	Positive
4	Test for Glycoside	Positive
5	Test for Phenols	Positive
6	Test for Tannins	Positive

**Table No.02: Preliminary Phytochemical screening for curry leaf:** The aqueous extract of curry leaf was subjected to preliminary phytochemical screening .the results are tablated in table no2 It was shows Glycosides, tannins, saponins, flavonoids, phenols and saponins.

**Table No.02: Preliminary Phytochemical tests for curry leaf**

S.no	Phytochemical tests	Inference
1	Test for Alkaloids	Positive
2	Test for Flavanoids	Positive
3	Test for Sapoin	Positive
4	Test for Glycoside	Positive
5	Test for Phenols	Positive
6	Test for Tannins	Positive

**Preliminary phytochemical screening for moringa leaf extract:** The aqueous extract of moringa leaf was subjected to preliminary phytochemical screening .the results are tablated in table no2. It was shows Glycosides, tannins, saponins, flavonoids, phenols and saponins.

Table No.03: Preliminary phytochemical

SNO	Phytochemical tests	Inference
1	Test for Alkaloids	Positive
2	Test for Flavanoids	Positive
3	Test for Sapoin	Positive
4	Test for Glycoside	Positive
5	Test for Phenols	Positive
6	Test for Tannins	Positive

Table No.04: Table for Antiurolithiasi

SNO	GROUPS	INITIAL WT(G)	DISSOLVED STONE WT(G)
1	Standard(cystone)	2	1.9
2	Lemon(AELL)	2	1.8
3	Curry(AECL)	2	1.6
4	Moringa(AEML)	2	1.2
5	MIXTURE	2	1.7

Table No.05: Table for % Reduction in Wt

SNO	Groups	Initial WT(G)	Final WT(G)	% Reduction in WT(G)
1	Standard (cystone)	2	0.1	95%
2	Lemon(AELL)	2	0.2	90%
3	Curry(AECL)	2	0.4	80%
4	Moringa(AEML)	2	0.8	60%
5	Mixture	2	0.3	85%

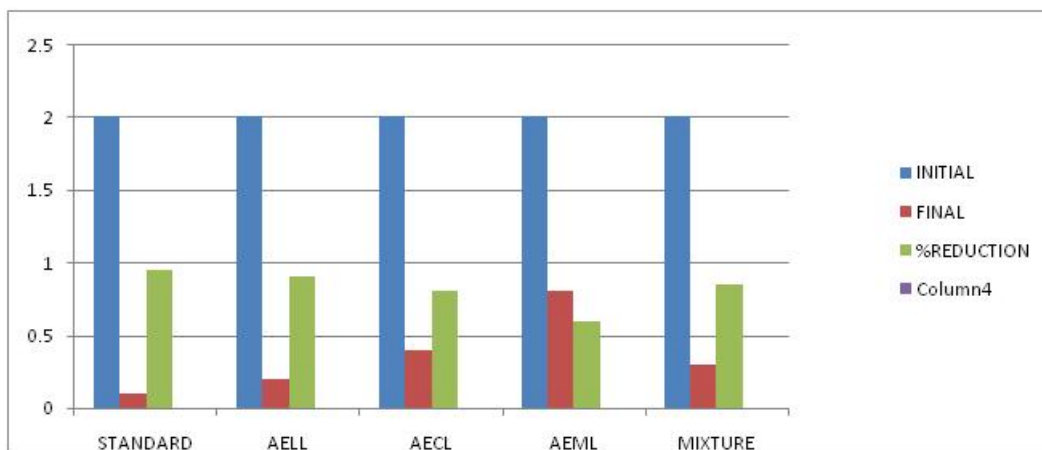


Figure1: Histogram of % Reduction in Wt of Aqueous Extracts of Poly Herbs by Using Acid-Base Titrimetric Method



## Discussion

### Phytochemical screening:

The phytochemical screening on test of lemon, curry and moringa leaves showed the presence of constituents like tannins, alkaloides, glycosides, phenol and flavanoids.

### Urolithiatic activity studies

From the result he study came to discussion of the % dissolution of aqueous extract of lemon leaf (AELL) shows 90% , the % dissolution of aqueous extract of curry leaf (AECL) shows 80% ,the % dissolution of aqueous extract of moringa leaf (AEML)shows 60%. The % dissolution of a mixture (AELL, AECL) shows 85%, the % dissolution of standard drug shows 95%. Further detailed study is required for clear understanding of mechanism of action.

## 4. Conclusion

In conclusion urolithiatic activity can be studied through the phyto chemical studies of the leaves of Citrus limonus, Murrayakoenilgi and Moringa Olifera Out of above three extracts Citrus limonusis showing fantastic effort in reducing the % dissociation of kidney stones when compared with standard drug cysteine. And study on its mechanism of action to ascertain their urolithiatic activity will throw light on mode of acting

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