Evaluation of Anti-Urolithiatic effect of Aqueous extract on *Aerva Lanata* using Ethylene Glycol Induced Renal Calculi

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Abstract: *In the presence study, formation of stone in the kidney or urinary tract. It's one of the commonest disease in our country and pain due to kidney stone. The arena of research is a cross rules. It find and alternative medicine or drugs without side effect was studied with focus of attention given to assess the extract of Aerva lanataas phytomedicine for the treatment urinary stone anti-urolithiatic activity of Aerva lanata leaves, flower, whole plant, an ethylene glycol induced urolithiasis in albino rats evaluated revealed reduced urinary biochemical parameters, serum parameter in plant extract treated on exposure to period of 30days. Besides if other serum factors such as urea, creatinine, uric acid and calcium found to be gradually decreased in supplementation of leaf extract, flower extract and whole plant extract among the three different parts of Aerva lanata flower extract and whole plant extract tested to the effective rather the leaf extract. Study further carried out cow urine and its efficacy to treat urolithiasis showed to drastic reduction in urea, creatinine, uric acid and calcium. On comparison between phytomedicine and cow urine, it was interesting to denote that phytomedicine up holded as anti-urolithiatic activity. In addition supplementation with the 100 and 200 mg/dl/day concentration of herbal syrup of Aerva lanata treated against ethylene glycol induced urolithiatic mice exhibited an enhanced urine output in volume with herbal treatment with pH of the urine shown to be an alkaline nature of with 8.26 respectively.*

Key words: *Aerva lanata, ethylene glycol, Urolithiasis, Anti-urolithiatic, Diuresis.*

1.Introduction

Nature bestowed our country with an enormous wealth of medicinal plants.Plants have been used as traditional healthcare system from the centuries. The World Health Organization has listed 20,000 medicinal plants globally in which contribution of India is 15-20% **[1]**.The World Health organization reported that 80% of global countries depend on the medicinal plants. A large body of evidence was collected to show potential of medicinal plants used in various traditional systems **[2]**. In the past decade therefore research has been focused on scientific evaluation of traditional drugs of plant origin. There is an urgent need to systematically evaluate the plants used in traditional medicine **[3].**

1.1.Types of Kidney stones

Kidney stones are hard, solid particles that form in the urinary tract in many cases, the stones are small and can pass out and body without any problems. In most of the cast the commonly occurring stones are calcium oxalate or magnesium ammonium phosphate type **[4, 5]**. The urinary tract consists of organs which filter blood to eradicate liquid waste (urine)that is excreted from the body i.e. kidney, ureter, bladder, and urethra **[6, 7, 8]**. It is characterized by the formation of a stone in the kidneys or urinary tracts **[9, 10]**. The stone type is named after its mineral composition. The most common stones are struvite (Magnesium ammonium phosphate), calcium oxalate, urate, cystine and silica **[11]**. The most common type of kidney stones worldwide contains calcium. For example, calcium-containing

stones represent about 80% of all cases in the united states; these typically contain calcium oxalate either alone or combination with calcium phosphate in the form of apatite or brushite **[12]**. This alkalinizes the urine, resulting in favourable conditions for the formation of struvite stones **[13]**. About 5-10% of all stones are formed from uric acid **[14]**.People with certain metabolic abnormalities; including obesity **[15]** may produce uric acid stones. They also may form in association with conditions that cause hyperuricosuria (an excessive amount of uric acid in the urine) with or without hyperuricemia (an excessive amount of uric acid in the serum).

In the present investigation, the study was intended to evaluate, analyses with much focus of activity of urolithiasis. The rationale for investigation on the urinary composition of stone forming patients comes from assumption that derangements of urine biochemistries may play a pivotal role in pathogenesis of nephrolithiasis. Urolithiasis (renal stone formation) is a recurrent disorder predominant in males. In India 12% of population is expected to have urinary stones, out of which 50% may end up with loss of kidney or renal damage.

Study was designed in such a way to administer ethylene glycol induce lithiasis for a period 30 days and to subsequently fed with or supplementation with extracts of *Aerva lanata,* to assess the various Phytochemical constituents or active principles of *Aerva lanata*. Present study was planned to establish the scientific validity of Anti-urolithiatic activity of *Aerva lanata* methanolic extract using ethylene glycol induced urolithiasis. Biochemical studies pertaining to determination of urea, uric acid, creatinine, calcium and phosphorus were performed for a period assessing experimental treated rats and compared with control. Moreover, urinary metabolic evaluation such as urine output was also studied treated with different concentration of extracts between control and each experimental groups **[16]**.

Hence, the present investigation entitled “Evaluation of Anti-Urolithiatic effect of aqueous extract on *Aerva lanata* leaves using ethylene glycol induced renal calculi” was studied the following steps to collect Medicinally Important plant *Aerva lanata* from Venture farm house in Salem, to prepare Methanolic extract from leaves, flower, and whole plant*Aerva lanata* were perform phytochemical analysis to detect active principle of *Aerva lanata* and to estimate the total carbohydrate and protein content from *Aerva lanata,* similarly to collect and maintain of male mice(Albino wistar), with categorize the mice into 4 different groups were induce administration of ethylene glycol to assess anti-urolithiatic activity in mice were perform serum analysis such as, supplemented with ethylene glycol and mediated by flowers, leaves, and whole plant of *Aerva lanata*, simultaneously, to determine urine output and role pH by supplementation of 100, 200 concentration of *Aerva lanata,* the study further extended with anti-urolithiatic effect of cow urine on serum parameters such as urea, creatinine, uric acid before and after addition of cow urine study were carried out.

2. Material and Methods

2.1. Plant material

The *Aerva lanata* leaves and flowers were collected from SS Biotech farm house from Salem. The plant material was dried in sun shade.

2.1.1. Preparation of extract

Leaves and flowers are grained with use of methanol. Grained leaves and flowers dissolved in 50ml of methanol.Kept in using soxhletappartus with methanol and aqueous.

2.2. Soxhlet procedure

The chemical extraction was done by following the method **[16]**. 2g of *Aerva lanata* leaf and flower was extracted in soxhlet apparatus using chloroform (100ml) as solvent for 8hours at 65^{o}C. Soxhalation is a process of continuous extraction in which the same solvent can be circulated through the extracted several times. The vapours of the solvent were taken in a condenser and the condensed liquid will be returned to the same for continuous extraction.

2.3. Phytochemical screening

Phytochemical testing is done for the methanolic extracts revealed that *Aerva lanata* was found to be positive in many tests. The details of the tests are as follows Carbohydrate, Tannins, Saponins, Flavonoids, Alkaloids, Quinones, Glycosides, Terpenoids, Phenol and Proteins was carried out.

2.4. Estimation of Total Protein by Lowry's Method

1ml of sample of the leaves and flowers extract and then 0.2ml of Alkaline copper reagent(c solution) was added. Kept in room temperature for 10 minutes. Then addition of 500µl(0.5ml) of Folin's reagent, kept for 1/2 hour incubation for room temperature (in dark room condition), after incubation solutions OD value read at 660nm.

2.5. Estimation of Carbohydrate by Duboi's Method

5ml of sample and add 1ml of diluted H_2SO_4, wait for 10 minutes. After 10mins heat fixed in water bath, kept at 1hour,then cool in room temperature for 10 minutes and then centrifuged at 5500 rpm for 10 minutes. After centrifugation 1ml supernatant was collected.Then,2.5ml of H_2SO_4 was added. Further adding of 0.5ml ofphenol, finally OD value measured at 485nm.

2.6. Animal Model

Healthy adult albino wistar rats weighing between 200-220 g were used for the study. The animals were housed in poly prophylene cages and were kept in well ventilated with 100% fresh air by air conditioning. A 12h light/dark cycle was maintained. Room temperature was maintained between 22 ± 2°C and relative humidity 40-65%. They were provided with food and water. All the animals were acclimatized to the laboratory about 7 days prior to experimentation.

2.6.1. Experimental Procedure

Ethylene glycol induced hyperoxaluria method was used to assess the anti-urolithiatic activity in albino wistar rats. Animals were divided into 4 groups of 4 animals each. All the experimental animals except normal control received 0.5ml ethylene glycol (0.75%) in drinking water for a period of 15 days and rat belong to treatment group co administered with *Aerva lanata* and cow urine at the dose of 1ml for daily twice.

2.6.2. Grouping

Group I: Control group rats received normal saline.

Group II: Administered with ethylene glycol (0.5ml) and treated with 0.5ml of leaf extract of *Aerva lanata.*

Group III: Administered with ethylene glycol (0.5ml) and treated with 0.5ml of flower extract of *Aerva lanata.*

Group IV: Administered with ethylene glycol (0.5ml) and treated with 0.5 ml of whole plant extract of *Aerva lanata.*

Group V: Administered with ethylene glycol (0.5ml) and treated with 1 ml of cow urine ark.

2.6.3. Sample (Urine) Collection and pH Analysis

All experimental animals were kept in individual cages and 24 hours urine sample were collected. After, 15 days of ethylene glycol induced calculi treatment the volume of calcium content urine was measured by Auto analyzer. After 15 days, on 16th onwards different concentration of 100 and 200 mg/dl/day of *Aerva lanata* total herbal formulation was orally supplemented wistar rats. After 30th day urine was collected and pH of urine and urinary output was analysed.

2.6.7. Serum Analysis

The blood was collected from the heart puncture under anaesthetic condition and serum was separated by centrifugation at 10,000 rpm for 10 min and analysed for UREA,CREATINE,URIC

ACID and CALCIUM. After 15 days, the *Aerva lanata* leaves and flower extract were orally supplemented to mice in order to cheek the changes if any and to elucidate the blood parameter such as UREA, CREATINE, URIC ACID and CALCIUM.

2.7. Histopathalogical Study

Tissue sample from kidney were dissected out from normal control rats and experimented treated rats. Analysis of kidney homogenate both kidney from each animal were removed by opening of abdomen. The kidney tissue were cleaned and preserved in a 10% formalin. Tissue were processed routinely and embedded in paraffin wax. Serum histology slides were prepared using Haematoxylin and Eosin staining and they were subjected to microscopic examination for the presence of glomerular conjunction, tubular cast and epithelial adhesive formation of edema and inflammatory cells were observed.

3.Results and Discussion

Urinary stone disorder is a common disorder in global country estimated to occur 12% of population with the recurrence rate of 72-81% in males and 47-57% in females. Urolithiasis is a challenging problems in nowadays and the recurrence of urolithiasis represent a serious problems because patients to have formed one stone are more likely to form another. Many standard pharmaceutical drugs poses a serious adverse effect the compromise for long term use. Many siddha medicine have been used in the treatment of urinary calculi but a lacuna of understanding mode of action exist till now. Nowadays, herbal drugs have become subject of world importance with both medicinal and economical implications. In the present investigation much focus of attention was given to evaluate the effect of *Aerva lanata*. A medicinal plant which has chamber of aroma and it is also called in English as stone breaking plant. A variety of pharmacological activities of *Aerva lanata* plant, leaves and flowers known for hepatoprotective, diuretic and nephro protective and the samples were collected and extracted. The results were noted plate: 1, 2 and 3.

COLLECTION OF SAMPLE

Plate: 1- *Aerva lanata* plant

Plate:2-*Aerva lanata* flower

Plate: 3-Soxhlet Apparatus

3.1. Phytochemical analysis

Phytochemical screening of methanolic extract of *Aerva lanata* in leaf and flower was carried out. A study revealed presence of Carbohydrate, Tannins, saponins, Flavonoids, Alkaloids, Glycosides, Terpenoids, and Proteins and the leaf was devoid of Quinones, and Phenol. However, Analysis in flower of *Aerva lanata* have been shown presence Carbohydrate, saponins, Flavonoids, Alkaloids and remarkable absence of Tannins, Quinones, Glycosides, Phenol, and Protein. The results exhibited in Table: 1 and Plate: 4(a & b).

PLATE :4- Phytochemical Screening

A)Leaf extract

B) Flower extract

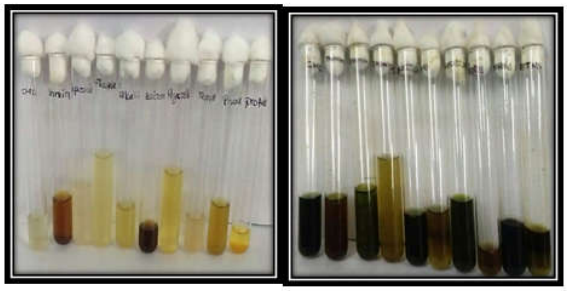


Table 1. Phytochemical Screening of Methanolic Extract of *Aerva Lanata*

S. No	Secondary metabolites	Leaf	Flower
1.	Carbohydrate	+	+
2.	Tannins	+	_
3.	Saponins	+	+
4.	Flavonoids	+	+
5.	Alkaloids	+	+
6.	Quinones	_	_
7.	Glycosides	+	_
8.	Terpenoids	+	+
9.	Phenol	_	_
10.	Proteins	+	_

Aerva lanata is an endowed with chemical such as,steroids, flavonoids, and alkaloids. This herbs has been used for its therapeutic effects in renal disease by Unani physicians to treat injury calculi **[17].**

Quantitative determination of protein in leaves and flowers were studied and the result indicate 1.0 mg/ml of total protein content was present in leaves. However, in flower of *Aerva lanata* exhibited 0.33 mg/ml of total protein content showed in Table:2. Determination of Carbohydrate by Duboi's method were studied and the results were exhibited in Table: 3, revealed 0.42 mg/ml of content of Carbohydrate recorded in leaves. Further study *Aerva lanata* showed slightly elevated level of Carbohydrate with 1.0 mg/ml. Our results were in total accordance with finding of **Mohamed [18].**

Table 2. Quantitative Estimation of Protein by Lowry's Method

S. No	Plant Material	Total Protein content in mg/ml
1.	Leaves	1
2.	Flowers	0.33

Table–3. Determination of carbohydrate estimation by Duboi's method

S. No	Plant material	Total carbohydrate content in mg/ml
1.	Leaves	0.42
2.	Flowers	1.0

3.2. Determination of Leaf Extrct of *Aerva Lanata* on Serum Parameters with and without ethylene glycol induced urolithiasis

Fig:1 and Plate: 5 and 6, illustrate effect of leaf extract *Aerva lanata* on serum parameters such as,urea, creatinine, uric acid, and calcium in mice treated with ethylene glycol for a period of 15 days. Various techniques adapted for stimulation of urolithiasis which cause acute and chronic type of hyperoxaluria.

Plate: 5. Oral supplementation for mice

Plate:6. Blood Sample Collection from Heart Puncture

In the present study, serum analysis of urea treated with ethylene glycol showed a drastic increase in urea content of the mice when compared to control mice found to be 9.03 ± 0.01. Whereas,

ethylene glycol treated rats showed and increased urea content of 0.22±0.7. However, after supplementation of leaf extract for period of 15 days significantly decrease in ethylene glycol induced mice with 15.5 mg/ml. Further the normal reference values found to be 20 – 40mg/ml. Besides significant reduction or decreases in serum urea, uric acid and calcium levels were detected. Our study coincides with the finding of **Rao [19].**

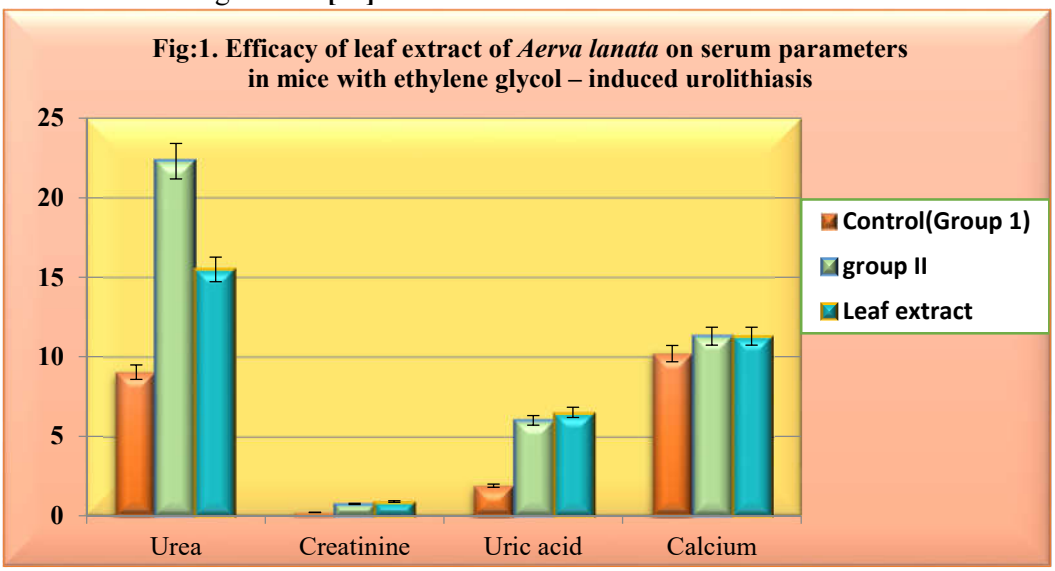
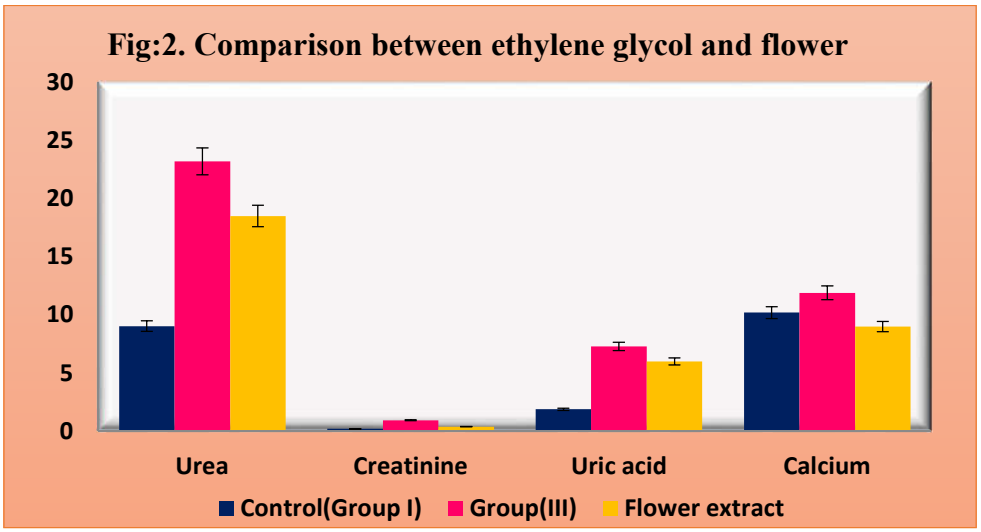


Fig: 2, depict the level of creatinine which is very important serum analysis in renal failure cases. The content of creatinine was found to be 0.75± 0.65 in ethylene glycol treated mice whereas, creatinine content executed in control mice found to be 0.22± 0.02. It is interesting known that the leaf extract of *Aerva lanata* drastically reduced the content of creatinine 0.9±0.5. Our results of evaluation of uric acid in normal control mice found to be 1.9 ± 0.01. Whereas, group II comprise in supplementation of ethylene glycol treated rats revealed a significant increase of uric acid with 6.0±0.75 respectively. Our results were coincides with **Miller [20].**

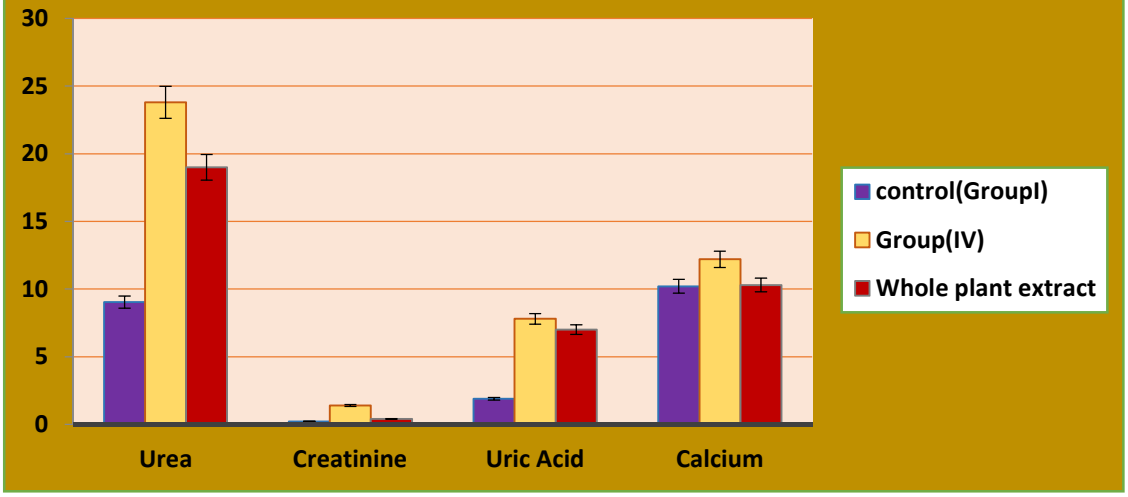
A study further extended to assess the uric acid content by supplementation of leaf extract of *Aerva lanata* found to be 2.3 ± 0.04. Further analysis of calcium content it was estimated to be 9.5±0.5. However, ethylene glycol treated rats denote a slightly increased serum calcium with 10.5±0.15 was denoted further analysis with mice presented with leaf extract the content calcium found to be decreased as 9.0±0.05 in other words serum calcium content level was restored to normal limits after treating with extract of 0.5ml of leaf extract of *Aerva lanata* (mg/ml).



3.3. Determination of flower extract of *Aerva Lanata* on serum parameters with and without ethylene glycol induced urolithiasis

Effect of flower extract of *Aerva lanata* on serum parameters between normal and urolithiatic rats **Fig: 3,** illustrate the result of serum parameters of urea, uric acid, creatinine, calcium. Similar to the tuff leaves treated experimental mice content of urea was found to be 9.03 ± 0.01 whereas, ethylene glycol treated rats exhibited to 22.2±0.13 which was analyzed to be higher values rather compare to control groups. However, on supplementation of flower extract found to decrease 15.8±0.15. Subsequently, a content of urea found to be 0.22±0.02. Our findings were in total agreement with findings of **Kumar [21]**.

Fig : 3. Effect of whole plant extract of *Aerva lanata* on serum parameters using animal model in ethylene glycol induced urolithiasis

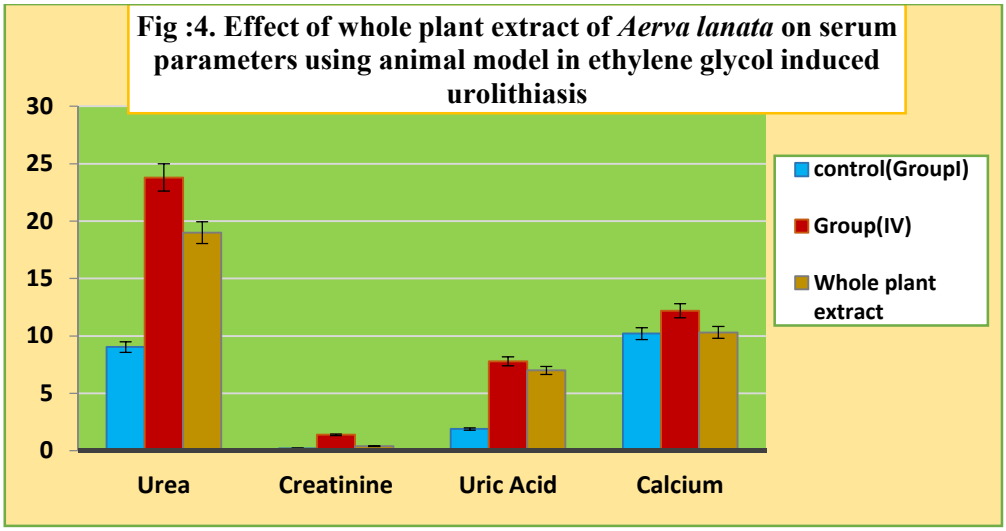


However, ethylene glycol mediated rats found to exhibit higher value of creatinine of 0.95±0.17. But it is improved in flower extract of *Aerva lanata* treated mice observed to be 0.4±0.02 content of creatinine was found almost restored to normal limits within the reference range 1.3mg/dl similarly supplementation of ethylene glycol aqueous solution to male albino wistar rats in calculi induced animals the results was found to be the level of uric acid 7.3 ± 0.15 was slightly decreased.

After, oral supplementation of flower extract of *Aerva lanata* found to be exhibit 6.5 ± 0.14 mg/dl respectively the content of uric acid in normal rats was found to be 1.9± 0.01mg/dl. The content of calcium responsible for causing stone formation was found to be exorbitantly high expressed a value of 10.2±0.04 mg/dl in control, whereas treatment with ethylene glycol aqueous solution showed a slightly increase of 11.9±0.10 mg/dl was observed. However, the flower extract of *Aerva lanata* given orally for 15 days found to be medicate ethylene glycol induced renal calculi with 8.7 ± 0.16 mg/dl. In an another fascinating report carried out with extracts of Bryophyllum pinatum leaves on ethylene glycol induced renal calculi was reported by **Finkielstin[22]**. Besides another important perspective Herbal drugs reduced urine oxalate level.

3.4. Determination of whole plant evaluation of *Aerva Lanata* on different serum parameters between normal and urolithiatic rats

In the present study to investigate the Anti-urolithiatic activity *Aerva lanata* as whole plant was studied between normal mice and compared with ethylene glycol induced urolithiasis in wister rats, all experimental animals except control group I received ethylene glycol after a period of 15 days showed in **Fig: 4**. Subsequently administration of whole plant extract was given to same Wister rat and content of urea in ethylene glycol treated rats showed23.8 ± 1.9 mg/dl which was drastically reduced in plant extract 19.0 ± 1.8 mg/dl **[23]**.



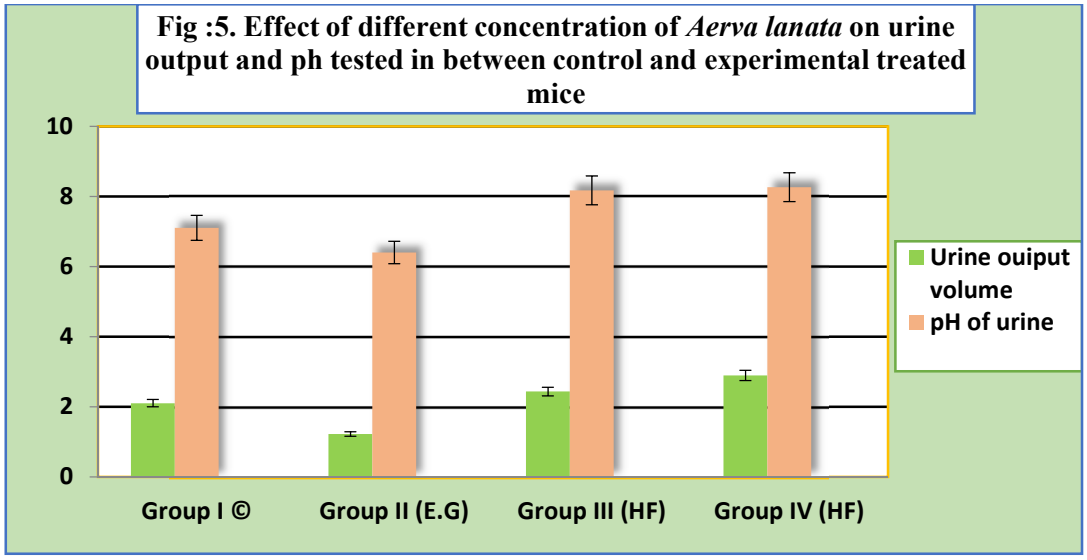
These results on comparison with normal control mice found to be 9.30± 0.01. Similarly the result of study of creatinine one of serum parameters was significantly it is decreased after oral supplement of flower extract with 0.4±0.01 mg/dl often found within reference ranges. However, ethylene glycol increased value revealed a significantly increased in urea with 1.4 ± 0.21 mg/dl was compared with normal Wister rats denoted to 0.22 ± 0.02 mg/dl. It is interesting note the ethylene glycol induced wistar mice show on increased uric acid content and calcium content with 7.8 ± 0.05 uric acid and 12.2 ± 0.12 calcium respectively both serum parameter of uric acid and calcium revealed a significantly decreased after oral treatment of whole plant extract exhibiting uric acid content of 7.0 ± 0.04 and calcium content of 9.3 ± 0.05 mg/dl respectively. When these serum parameter of uric acid and calcium was assessed with normal control mice the results was found to be 1.9 which is very less of uric acid content and 10.2 which is slightly increased in calcium content rather compared to ethylene glycol induced urolithiatic rat. Our findings were in total agreement with **Robertson [24].**

3.5. Determination of urine output and pH

Urolithiasis (Renal store formation) is a recurrent disorder seen in males. A search for anti-urolithiatic drugs with outside from natural source has assumed much importance. The effect of herbal syrup of Aervalanata against ethylene glycol induced urolithiasis in Albino wister mice carried out. The effect of plant extract *Aerva lanata* in ethylene glycol induced urolithiasis in male mice was carried out for a period of 15 days. The quantitative phytochemical analysis of *Aerva lanata* methanolic extract showed the presence of saponins, flavonoids, alkaloids, carbohydrate, tannins, glycosides, terpenoids, protein and carbohydrate in leaf constitute of Aerva lanata. Whereas in flower except phenols, proteins, tannins, quinones and glycosides other phytochemical constituents was present.

In the present study further, animals was divided into few groups each containing three animals. Vehicle control, ethylene glycol induced experimental rats, with Aerva lanata methanolic extracts in two different concentration of plant extracts with 100 g/dl/day and 200 g/dl/day as third and fourth groups. Ethylene glycol induced urolithiasis to determine the efficacy of Aerva lanata urolithiasis model stimulated the ethylene glycol was used in rats. This study indented to find out the effect of Aerva lanata as therapeutic usage against Ethylene glycol induced urolithiasis. The experiments was carried out for 15 days extracts of Aerva lanata were given as oral supplementation **(Fig:5)** depicted determination of urine output and pH exhibited between control and experimental treated mice. The result of the control study indicated urine output as 2.1± 0.07 with a pH of 7.1 ± 0.07. Our results, where in total agreement in the finding of **Sathish [25].**

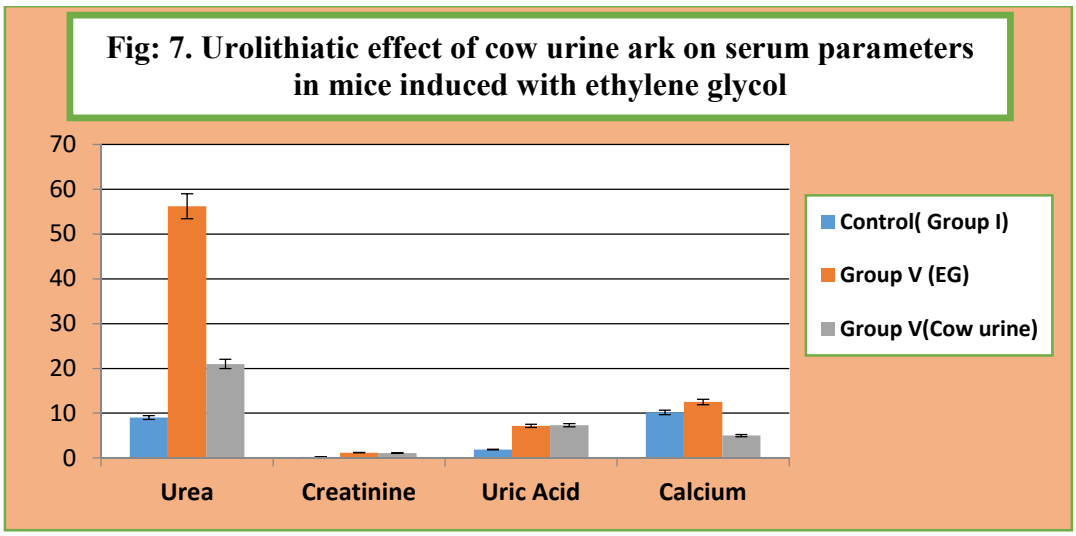
In group V experimental set with experiments Ethylene glycol induced rats revealed level of urine output of 1.22 ± 0.08 with the pH of 6.4 ± 0.09.This study was found to be elevated level of urine output and pH. The Group III set of experiments were treated with 100 mg / dl of leaf extract was found to produce an increased urine output was found which to 8.1 ± 0.11.



In another set of experiment with an increased concentration of extract 200 mg / dl found to produce a renewable increase of 2.8 ± 0.07 of urine out flow with the similar value of pH of urine found to be 8.26 ± 0.13 on comparison between normal control mice with experimentary treated mice with extract of *Aerva lanata,* revealed a pronounced result when concentration of extracts was increased output of urine and acidic pH of urine declined and passed on to alkaline range of pH. Our study coincide to the finding of J**ain [26].**

3.6. Urolithiatic effect of cow urine ark on serum parameters in mice induced with ethylene glycol

In the present investigation this study was quite different from other study. It is interesting note that evaluating of utilizing cow urine to reduce or to inhibit renal stone formation. Urinary calculi are the third prevalent disorder of the urinary system it is a problematic disorder the higher rate of recurrence even of the surgical removal a basic mechanism with treatment ethylene glycol induced calculi. These hypercalciuria leading to CaOx crystal formation. In the present study ethylene glycol induced wistar rat (**Fig:6)** revealed a significantly increased in urea with 56.2 ± 3.01 Whereas, cow urine supplemented male wistar rat showed a drastic reduction of 21.0 ± 2.09 mg / dl of urea whereas result when compared with control mice was significantly low or decreased urea content of 9.3± 0.01mg/dl the study further carried out serum creatinine ethylene glycol induced mice show 1.2 ± 0.42 mg/dl was slightly decreased when treated which cow urine with a value of 0.9 ± 0.01 mg/dl **[27]**.



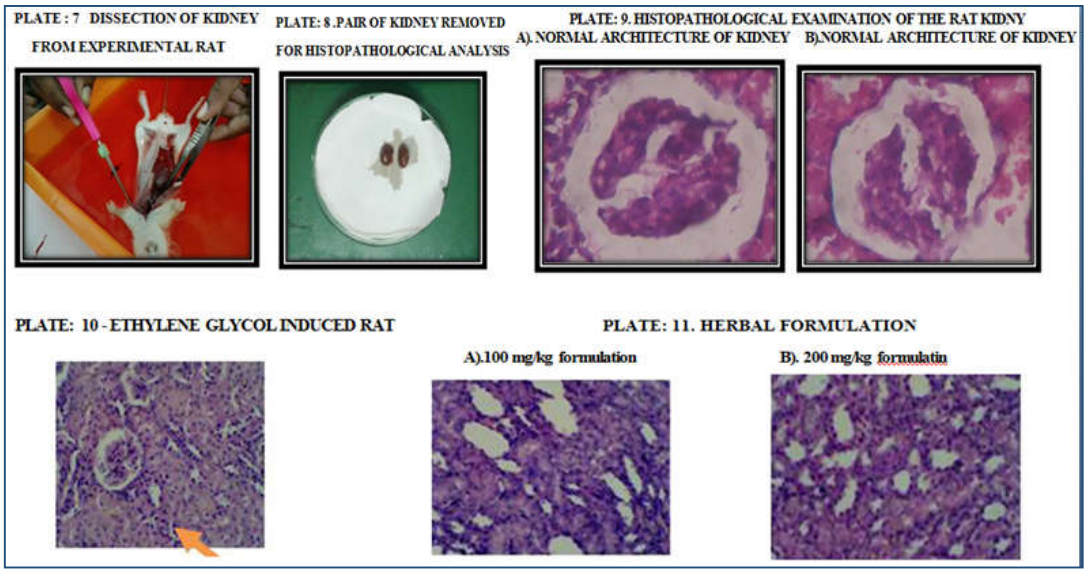
However the level of urea was found to be low in normal mice with 0.22±0.02 mg/dl. Subsequently serum analysis of uric acid with ethylene glycol rat revealed a value 7.2 ± 0.71 mg /dl

was noted similarly on supplementation cow urine for period of 15 days revealed a remarkable reduction numbered crystal deposition deleted to be 7.3 ± 0.81 mg/dl the experimented treated rats when compared with normal rats exhibited decreased or reduced uric acid content of 1.9 ± 1.5 mg/dl whereas a remarkable decrease after supplementation of cow urine with 8.1 ± 0.65 mg/dl was recorded. Further analysis on level of calcium in experimental treated rats revealed 12.5 ± 0.45 mg/dl was noted. Our finding were in total agreements with me report of **Singh [28].**

3.7. Histopathological examination of rat kidney

Tissue sample from both kidney normal group revealed normal tubules with single epithelial cell lining on histopathological studies**. Plate :7** depict dissection of kidney from experimental rat . In order to study a histopathological analysis between normal group of rats designation as control and ethylene glycol treated rats to study urolithiatic effect where in kidney section of untreated and treated cells were assess for histopathological examination **[29]**. **Plate:8,** depict pair of kidney for histopathological analysis. **Plate: 9 a, b** illustrate normal architecture of kidney cells.

Plate:10 Exhibit ethylene glycol induced rat with showed more tubular dilation and damage shown by large phages in the tissue besides abundant crystal deposition was also noted ethylene glycol induced rat caused impairment of renal function as evident from tubular damage. **Plate:11** a, revealed supplementation herbal formulation100 and 200 mg/kg as shown in the table found exhibit less crystal deposition where seen compared ethylene glycol induced animals besides necrosis as well as tubule dilation was very limited.



Kidney stones are also major disorders prevailing all over the world. About 75% of kidney stones are composed of calcium oxalate crystals. Kidney stones are hard solid particles that form in urinary tract. It is a painful urologic disorders that happen in 15% of global population. The risk factors for kidney stones are obesity, insulin resistance and gastro intestinal pathology living in warmer countries and certain dietary patterns and medications **[30]**. In tune with above discussion ethylene glycol fed animals is responsible for causing stone formation which provides a reason for increased renal retention and excretion of oxalate. Urolithiasis referred to deposit forming calcification in the urinary system which lead herbal formulation of *Aerva lanata* tissue injury.

4. CONCLUSION

In the present day medical management of urolithiasis involved endoscopic removal of stones. Has revolutionized the treatment of urolithiasis but do not prevent new stone formation. This cause side effect therefore, it is work while look for an alternative using medicinal plants. In our current research work was to evaluate the effect of *Aerva lanata* and its leaves,flowers,and whole plant extract in ethylene glycol induced urolithiasis in male rats. It is recommended prophylactic with *Aerva lanata* extracts and to modulate a drug can lead to suppress intercellular calcium from the result of the present investigation. Herbal formulation like *Aerva lanata* possessing pharmacological activities may be considered as a potential lead compound for the clinical management urolithiasis. Further research can be done towards implementing this as one of the standard drug using *Aerva lanata* for urinary

pathology. Stone forming constituents which may be attributed to the presence of natural active principle.

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