



STUDY OF *IN-VITRO* ANTI UROLITHIATIC ACTIVITY OF *Alysicarpus monilifer* LEAVES (L)

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ABSTRACT

Urolithiasis is a very common problem that are caused in worldwide population. The present study was to evaluate anti urolithiatic activity of leaves of *Alysicarpus monilifer*. In this study we are using neeri as a standard drug. As this study reveals that the alcoholic (Methanolic) extract showing significant effect in kidney stone reduction. It reduces the kidney stone formation. The methanolic extract of *Alysicarpus monilifer* effectively dissolves calcium oxalate stones..

Keywords: Methanolic extract, *Alysicarpus monilifer* leaves, Neeri, tris buffer.

INTRODUCTION

Nephrolithiasis or renal stone disease remains a significant health problem in the adult population, with serious medical consequences, throughout a patient's lifetime. The worldwide incidence of urolithiasis is quite high, and more than 80% of urinary calculi are calcium oxalate stones alone or calcium oxalate mixed with calcium phosphate [1]. It is a process of stone formation which occurs either in the kidney and or in any part of the urinary tract including the ureters and bladder [2]. The worldwide incidence of urolithiasis is quite high, and more than 80% of urinary calculi are calcium oxalate (CaOx) stones alone or CaOx mixed with calcium phosphate [3]. Urolithiasis is the solid non-metallic minerals in the urinary tract. This is the third most common condition of the urinary tract after urinary tract infection and pathologic condition of prostate[4]. Remedial plant's contents are used for the improvement of novel drug compounds that are used in the treatment of various types of diseases like liver and heart problems, cancer, diabetes and atherosclerosis etc [5].

Various sophisticated investigations, including radiological and other laboratory techniques are not sufficiently helpful to elucidate the exact causes and mechanisms of stone formation [6]. However, various factors that might be responsible for the formation of stone have been extensively studied recently.

Alysicarpus monilifer is a low growing much branched annual or perennial herb, 5-15 (-50) cm tall. Leaves simple; ovate, elliptical or lanceolate, cordate at the base, 2.5-7.5 cm long, prominently nerved, glabrous or sparsely pubescent beneath. Racemes spicate, axillary and

terminal, 1-15 cm long; flowers lax in dense along racemes. Pods distinctly moniliform, 3-5 jointed, 1-2 cm long, calyx not longer than first joint; glabrous or sparsely pubescent; articles 2.5-3 mm long and 2-3 mm wide, with a smooth to reticulate surface sculpture. *Alysicarpus monilifer* L. (DC.) (Fabacea), commonly known as Samervo (Gujarati) or Juhi ghas (Hindi), is a turf forming legume and native to Africa and Asia. In India it is distributed throughout the plains- Madras, Jammu, Bombay, Punjab, Gujarat except Kutch and Bulsar, Madhya Pradesh and Uttar Pradesh [7]. Drugs with multiple mechanisms of protective action provide minimizing the diseases [8].

Plant collection and Authentication

The plant leaves of *Alysicarpus monilifer* was collected from the local regions of Narsapur and the plant was authenticated by D.Venkateshwara Rao Deputy director Telangana Forest Academy, Dullapally, Hyderabad, Rangareddy, Telangana.

Chemicals used in the present study

Methanol, Neeri, Tris buffer, KMnO₄, Calcium chloride, Sodium Oxalate.

Preparation of plant extract

The leaves of *Alysicarpus monilifer* was collected and washed with tap water to remove all dirty materials. Leaves was dried under shade until completely dried. The dried leaves was powdered and sieved by passing through sieve shaker. For every 50gms of powder

500ml of Methanol was added for soxhlet extraction for 72hours. After extraction the solvent was evaporated by using rotary evaporator. Finally this extract was used for evaluating anti urolithiatic activity.

EXPERIMENTAL METHOD

The experimental kidney stones of calcium oxalate (CaOx) were prepared in the laboratory by taking equimolar solution of calcium chloride dehydrate in distilled water and sodium oxalate in 10ml of 2N Sulphuric acid. Both were allowed to react in sufficient quantity of distilled water in a beaker, the resulting precipitate was calcium oxalate. The precipitate was freed from traces of Sulphuric acid by ammonia solution, washed with distilled water and dried at 60°C. The dissolution percentage of Calcium oxalate was evaluated by taking exactly 1mg of calcium oxalate and 10mg of the extract, packed it together in semipermeable membrane of egg. This was allowed to suspended in a conical flask containing 100ml of 0.1M Tris buffer. First group served as a blank containing only 1mg of calcium oxalate. The second group served as a positive

control containing 1mg of calcium oxalate along with the 10mg standard drug, i.e, neeri. The 3rd group along with 1mg of Calcium oxalate contain methanolic extract. The conical flasks of all groups were kept in an incubator preheated to 37°C for 2h. Remove the contents of semi permeable membranes from each group into separate test tubes, add 2ml of 1N Sulphuric acid to each test tube and titrated with 0.9494N KMnO₄ till a light pink colour end point obtained. The amount of remaining undissolved calcium oxalate is subtracted from the total quantity used in the experiment in the beginning to know the total quantity of dissolved calcium oxalate by various solvent extracts [9].

RESULTS AND DISCUSSION

Lithiasis occurs because of supersaturation of urine due to hyperoxaluria and hyper calciuria. From this study the results found that the *Alysicarpus monilifer* leaves showing significant effect in the dissolution of Calcium oxalate crystals.

Table 1. %Dissolution of calcium oxalate by *in vitro* anti urolithiatic activity of *Alysicarpus monilifer* leaves

S. No	Groups	% Dissolution of Calcium oxalate
		Methanolic extract of <i>Alysicarpus monilifer</i>
1	Blank	0%
2	Positive control	85%
3	Methanolic extract	87%

Fig 1.....



CONCLUSION

It can be concluded that the reduction of stone forming constituents in urine and their decreased kidney retention reduces the solubility product of crystallizing salts such as calcium oxalate and calcium phosphate, which could contribute to the anti-urolithiatic property of leaves of *Alysicarpus monilifer*.

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CONFLICT OF INTEREST

No interest

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