



RESEARCH ARTICLE

# EFFECT OF A POLYHERBAL FORMULATION ON GLYCOLIC ACID-INDUCED UROLITHIASIS IN RATS

Sarang Jain<sup>1\*</sup> and Ameeta Argal<sup>2</sup>

<sup>1</sup>Research Scholar, Institute of Pharmaceutical Science and Research Center, Bhagwant University, Sikar Road, Ajmer-305 004, Rajasthan, India

<sup>2</sup>Department of Pharmaceutical Chemistry, Rajeev Gandhi College of Pharmacy, Kolar Road, Bhopal-462 042, Madhya Pradesh, India

\*E-mails: sarangjain123@rediffmail.com, ameetaargal@yahoo.com  
Tel.: +91 9826418494, +91 9926905557.

Received: April 24, 2013 / Revised: April 29, 2013 / Accepted: April 30, 2013

**The present study was done to evaluate the antiurolithiatic effect of a polyherbal formulation on glycolic acid-induced urolithiasis in rats. Oxalate urolithiasis was produced by the addition of 3% glycolic acid to the diet for a period for 42 days. In this study the level of oxalate, calcium and phosphorus was significantly increased whereas the level of sodium and potassium was significantly decreased. Treatment with cystone significantly decrease the level of oxalate, calcium and inorganic phosphorus. There was a significant increase in the kidney weight (both dry and wet weight) of animals receiving 3% glycolic acid which was significantly reduced by the treatment with cystone and polyherbal formulation. Results suggested that the increase in calcium and phosphate excretion could be due to defective tubular reabsorption in the kidneys while treatment with polyherbal formulation and ABP (alcoholic *Bryophyllum pinnatum*) at the dose of 200 mg/kg markedly reduced the levels of these ions, showing the protective effect of polyherbal formulation and ABP against urolithiasis.**

**Key words:** Antiurolithiatic activity, Polyherbal formulation, ABP, Glycolic acid.

## INTRODUCTION

Urinary stone disease continues to occupy an important place in everyday urological practice. The average life time risk of stone formation has been reported in the range of 5-10%. Urolithiasis is the third most common disorder of the urinary tract, the others being frequently occurring urinary tract infections and benign prostatic hyperplasia (Hiatt *et al* 1982).

The worldwide incidence of urolithiasis is quite high and in spite of tremendous advances in the field of medicine, there is no truly satisfactory drug for the treatment of renal calculi. Most patients still have to undergo surgery to be rid of this painful disease. Hyperoxaluria is the main initiating factor for urolithiasis (Anderson *et al* 1967; Robertson and Peacock, 1980). Recurrent stone formation is a common part of the medical care of patients with the stone disease. Calcium-

containing stones, especially calcium oxalate monohydrate, calcium oxalate dehydrate and basic calcium phosphate are the most commonly occurring ones to an extent of 75-90% followed by magnesium ammonium phosphate (Struvite) to an extent of 10-15%, uric acid 3-10% and cystine 0.5-1%.

In most of the cases the commonly occurring stones are calcium oxalate or magnesium ammonium phosphate type. Many remedies have been employed during the ages to treat urinary stones. In the traditional systems of medicine, most of the remedies were taken from plants and they were proved to be useful though the rationale behind their use is not well established through systematic pharmacological and clinical studies except for some composite herbal drugs and plants (Coll *et al* 2002; Otnes, 1983; Williams, 1995). Keeping in view the