

Scoparia dulcis L. as a remedy for urolithiasis

■ T.V. BINU AND B. VIJAYAKUMARI

SUMMARY

Urinary tract and kidney stone ailments have affected human beings since antiquity. The occurrence of these stones has been increasing in rural and urban societies. A large population of India suffers from urinary tract and kidney stones, formed due to deposition of calcium, phosphates and oxalates. Antiurolithiatic studies were done with two assays, namely nucleation assay and aggregation assay. CaOx crystals were grown in the *in vitro* technique. The effect of root and shoot extracts of *Scoparia dulcis* L. was studied on the growth and inhibition of CaOx crystals. By comparing the activities of the two extracts shoot and root, the greater antiurolithiatic activity was shown by root sample with a concentration of 500 µl.

Key Words : Urinary tract and kidney stone, Antiurolithiatic, *In vitro* technique, *Scoparia dulcis* L.

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Plant kingdom is an everlasting reservoir of wonderful molecules with varying biological activities. Many higher plants accumulate extractable organic substances in quantities sufficient to be economically useful as chemical feed stocks or raw materials for various scientific, technological and commercial applications. It is very painful and a proper cure is very much needed to get rid of the problem. Though treatment has been revolutionized by the development of non-invasive methods, but it carries the factors like high cost, availability and side effects. As no suitable medical therapy is available for such stones disorders, it is imperative to search for some new or less known medicinal plants, which may be a potential source for new bioactive compounds of therapeutic value. Such explorations assume tremendous significance when herbal medicine is gaining importance throughout the world. (Misra and Ashwani, 2000).

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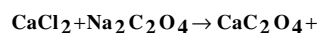
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MATERIALS AND METHODS

Aqueous root and shoot extracts of the plant *Scoparia dulcis* L. were used for the study.

Nucleation assay (Atmani and Khan 2000) :

Solution of calcium chloride and sodium oxalate were prepared at the final concentrations of 5 mmol/L and 7.5 mmol/L, respectively in a buffer containing Tris 0.05 mol/L and NaCl 0.15 mol/L at pH 6.5. To 100 µL of herb extracts (at different concentrations 100 to 500 µg/ml), 950 µL of calcium chloride solution was mixed. Crystallization was started by adding 950 mL of sodium oxalate solution. The temperature was maintained at 37°C. The optical density of the solution was monitored at 620 nm. The rate of nucleation was estimated by comparing the induction time in the presence of extract with that of control. The growth of crystals was expected due to the following reaction.



Aggregation assay (Atmani and Khan, 2000) :

The method was described by Atmani and Khan (2000) with some minor modifications. 'Seed' CaOx monohydrate (COM) crystals were prepared by mixing calcium chloride and sodium oxalate at 50 mmol/L. Both solutions were equilibrated to 60°C in a water bath for 1 hr and then cooled to 37°C