

Anti-Urolithiatic Activity of *Andrographis Paniculata* On Calcium Oxalate Crystals: A preliminary in-vitro Study

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Since centuries ago, uses of medicinal herbs to cure diseases are precious in folk and ayurvedic medicinal practices. Kidney stone formation is an unbearable disease which can be found everywhere in the world. Even in Sri Lanka the patients suffering from urolithiasis are gradually increasing. An in-vitro experimental model was prepared to evaluate the anti-urolithiatic activity of methanolic extract of *Andrographispaniculata* plant on pure calcium oxalate crystals. To estimate the anti-urolithiatic activity of *Andrographispaniculata* plant extract, the dissolution percentage of pure calcium oxalate crystals by the plant extract was calculated and was compared with that of a standard cystonepolyherbal drug. The methanolic extract of *Andrographispaniculata* was prepared by soxhlet extraction and ethanolic and aqueous extractions were prepared by soaking the powder materials for 24 hours. The titrimetric method was used to evaluate the anti-urolithiatic activity at four different concentrations such as 100 mg/L, 200 mg/L, 300 mg/L, and 400 mg/L. Laboratory experiments were carried out on the above extract to identify the presence of constituent organic molecules such as alkaloids, tannin, phytosterols, terpenoids, etc. Dissolution percentage of the calcium oxalate crystals by the *Andrographispaniculata* plant at above concentrations were found as 71.4 (± 0.490) %, 74.6 (± 0.283) %, 86.3 (± 0.838) %, and 90.4 (± 0.490) % respectively. 59.6 (± 0.432) %, 64.2 (± 0.163) %, 74.8 (± 0.283) %, and 78.3 (± 0.249) % of calcium oxalate crystals were dissolved by the standard drug at the same concentration gradient. Qualitative analysis of ethanolic and aqueous extracts of *Andrographispaniculata* showed the presence of saponin, Tannin, and Terpenoids. This preliminary research revealed the enhanced dissolution ability of calcium oxalate crystals by *Andrographispaniculata* plant extract. Further in-vitro and clinical studies are required to estimate the anti-urolithiatic activity of *Andrographispaniculata*. Subsequently, the separation of active compounds in *Andrographispaniculata* plant extract can lead to the discovery of new drugs in the future.

Keywords: Anti-urolithiatic, Methanolic, in-vitro, *Andrographis paniculata*