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Track: Medicinal Plants

EVALUVATION OF *IN VITRO* ANTIUROLITHITIC ACTIVITY OF SELECTED PLANTS ON EXPERIMENTALLY PREPARED CALCIUM OXALATE STONES

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Background: Urolithiasis or formation of stones in anywhere of urinary system is wide spread disease in urinary tract and becoming a major health problem in the world with high recurrence. Majority of the kidney stones are calcium oxalate stones. The prevention and management of disease by using allopathic medicinal system is difficult and also it causes high expenditure for treatment. Patients have been using medicinal plants which have less complications for preventing and curing diseases for thousand years, including kidney stone disease. *Annona muricata* and *Cucumis melo* plants are used as medicines in ayurvedic medicinal system to treat the kidney stone disease.

Objectives: To evaluate *in vitro* antiurolithiatic activity of methanolic leaf extracts of *Annona muricata* and methanolic seed extracts of *Cucumis melo* on experimentally prepared calcium oxalate stones.

Methodology: The study was carried out as a laboratory based complete randomization design (CRD) experimental study. Study was conducted in laboratories of department of chemistry and department of pharmacology. Methanolic extracts of leaves of *Annona muricata* and seeds of *Cucumis melo* were obtained using soxhlet apparatus. Calcium oxalate stones and semipermeable membranes (act as dissolution sac) were prepared. Antiurolithiatic activity of selected plants were evaluated by titrimetric method for obtaining dissolved calcium percentage dividing to four groups so called negative control, positive control (cystone), methanolic extracts of leaves of *Annona muricata* and seeds of *Cucumis melo*. Positive control and extracts were used with four different 10, 20, 30 and 40mg concentrations.

Results: Dissolution percentage for the methanolic extracts of *Annona muricata* leaves on experimentally prepared calcium oxalate at 10, 20, 30 and 40mg concentration were 60.10 (+/- 1.70), 60.53 (+/- 1.50), 60.96 (+/- 2.10) and 60.74 % respectively. There was no significant correlation between dissolution percentage and concentration ($r = 0.151$, $p = 0.480$). That of methanol extract of *Cucumis melo* on experimentally prepared calcium oxalate at 10, 20, 30 and 40mg concentration were 61.17 (+/- 2.09), 61.81 (+/- 2.05), 61.60 (+/- 2.80) and 61.81 (+/- 2.34) % respectively. No statistically significant correlation was observed between dissolution percentage and concentration on applying pearson correlation ($r = 0.151$, $p = 0.480$). Dissolution percentages for the standard drug (cystone) in given concentrations were found to be 60.10 (+/- 2.85), 66.08 (+/- 2.89), 74.82 (+/- 3.10) and 77.38 (+/- 3.68) % respectively. There was a strong correlation between dissolution percentage and concentration on applying pearson correlation ($r = 0.906$, $p = 0.000$) for standard drug. This results revealed that, even though standard drug exhibits better dissolution activity, methanolic extracts of leaves of Annona muricata and seeds of Cucumis melo have shown significant antiurolithiatic activity.

Conclusion: The methanolic leaf extract of *Annona muricata* and methanolic seed extract of *Cucumis melo* exhibit antiurolithiatic activity on experimentally prepared calcium oxalate stones. Standard drug cystone exhibited the greatest antiurolithiatic activity among groups. Correlation between dissolution percentage and concentration were statistically not significant in methanolic extract of *Annona muricata* leaf and *Cucumis melo* seeds. In future, invivo studies with controls have to be initiated to confirm the in vivo activity of these plant extracts for better treatment via nature.

Keywords: Antiurolithiatic, evaluation, calcium oxalates, *Annona muricata*, *Cucumis melo*, methanolic extracts.

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