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Evaluation of the Diuretic Activity of 80% Methanol Extract and Solvent Fractions of *Rumex nepalensis* (Polygonacea) Leaves in Mice

Introduction:

Rumex nepalensis (Polygonacea) has long been used to treat a variety of conditions, including urinary retention and as a diuretic. The purpose of this study was to assess the diuretic activity of the 80% methanol extract and solvent fractions of *R. nepalensis* leaves since this claim had not been verified scientifically.

Objective:

To evaluate the diuretic activity of 80% methanol extract and solvent fractions of *Rumex nepalensis* (polygonacea) leaves in mice

Methodology:

The coarsely powdered leaves of *Rumex nepalensis* was extracted by a cold maceration technique using 80% methanol. To obtain the n-hexane, ethyl acetate, and residual aqueous fractions, a portion of the extract was fractionated depending on the polarity index of solvents. To investigate the diuretic activity of the plant, mice were divided into fifteen groups. The negative control groups received either distilled water or 2% tween 80, the positive control group received furosemide (10 mg/kg), and the test groups were administered the 80% methanol extract or solvent fractions at the doses of 100, 200, and 400 mg/kg by the oral route. The urine volume, urine pH, and urine electrolytes were determined and compared with the positive and negative control groups.

Results:

The 80% methanol extract, ethyl acetate, and the residual aqueous fractions induced significant diuresis from the second hour to the end of the fifth hour period at the doses of 200 mg/kg and 400 mg/kg ($P < 0.001$) compared to the negative controls. Mice administered with the 80% methanol extract, ethyl acetate, and the residual aqueous fractions displayed significant ($P < 0.001$) excretion of sodium, potassium and chloride ions compared to the negative controls. Significant change was also noted in the pH of urine samples of the extract administered group as compared to the negative control. The phytochemical determination of the plant revealed the presence of alkaloids, anthraquinones, flavonoids, glycosides, phenolic compounds, saponins, tannins, and triterpenoids.

Conclusion:

The 80% methanol extract, ethyl acetate, and the residual aqueous fractions displayed a significant diuretic activity, and confirmed the traditional use of *R. nepalensis*.

Keywords: Diuretic activity, Kaliures, Natriuresis and *Rumex nepalensis*