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### In vivo anti-lithiatic efficacy of bergenin isolated from the rhizome of *Bergenia ligulata*

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The annual incidence of urolithiasis in industrialized regions is considered to be 1,500-2,000 cases per millions with reoccurrence rate of 75% in 20 years. There is no effective management therapy for renal calculi. Allopathic and herbal therapies have their inherent limitations and side-effects. *Bergenia ligulata* has been used since ancient time in many herbal compositions and it is major component of Cystone® (Himalaya, herbal healthcare) for treating kidney stones. The present work has been designed to study the anti-lithiatic potential of *B. ligulata*, isolation of the potent metabolite(s) and its mechanism of action. Commercially available dried rhizomes of *B. ligulata* were powdered and subjected to activity guided fractionation using *in vitro* calcium oxalate crystal growth inhibition assay. Further, rat hyperoxaluric model was used to assess anti-lithiatic ability *in vivo*. The isolated fractions showed anti-calcifying activity *in vitro*. The sequential isolation of the potent fraction led to the purification of the most active molecule. The metabolite was eventually characterized as bergenin employing LC-MS, NMR, FTIR and UV spectroscopy. Bergenin was found to be effective in reducing oxidative stress markers like malondialdehyde (187% in diseased vs. 20% in treated) and elevating reduced glutathione levels (-46% in diseased vs. -15% in treated). It exhibited anti-lithiatic activity as assessed by measuring the activity of lactate dehydrogenase and alkaline phosphatase in serum samples. The creatinine clearance was also normalized with bergenin treatment in rat hyperoxaluric model. The present study provides significant evidence in the effectiveness of bergenin in treating and managing renal calculi.

#### Biography

Surinder Kumar Singla completed his PhD at the age of 27 years from Punjab Agricultural University, Ludhiana. He is Professor of Biochemistry at Panjab University Chandigarh. He has published more than 40 papers in reputed journals. His current area of research is natural products in urolithiasis. He has handled *ad hoc* research project from ICMR and DST in his area of specialization. He has supervised nine PhD students and five PhD students are working under his supervision.

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