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CHEMICAL PROFILE AND EVALUATION OF THE ANTI-INFLAMMATORY AND ANTIUROLITHIC ACTIVITY OF SOLANUM CERNUUM

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Solanum cernuum (Solanaceae), endemic to Brazil, is traditionally used to treat urinary disorders, mainly as a diuretic[1]. Nephrolithiasis, or kidney stone disease, involves the formation of calcium oxalate (CaOx) crystals and is often linked to low fluid intake and poor diet. Its pathogenesis includes inflammatory processes mediated by arachidonic acid and prostaglandin E_2 (PGE_2), associated with hypercalciuria and hyperoxaluria[2]. Considering the reported efficacy of *Solanum* species and the need for multi-target therapies, this study evaluated an infusion of *S. cernuum* for antiurolithiatic activity, anti-inflammatory effects on COX and LOX pathways, and chemical composition by UHPLC-ESI-HRMS. The infusion was prepared with dried leaves in boiling distilled water (1:20, w/v). Antiurolithiatic activity was tested in urine containing CaOx crystals (0.5–1.5 mg/mL), compared to positive controls (sodium citrate and Cystone®) and a negative control[2]. Anti-inflammatory effects were investigated *ex vivo* in human blood, focusing on PGE_2 and leukotriene B_4 (LTB_4). Chemical profiling was performed by UHPLC-ESI-HRMS in positive mode with DIA acquisition, followed by data processing using MZmine 3 and annotation via internal and online databases. The infusion (yield 10.3%) significantly inhibited CaOx crystal formation (86.6% at the highest concentration; IC_{50} = 0.47 mg/mL) and reduced inflammatory mediators by 39.8% (LTB_4) and 74.8% (PGE_2). Nineteen compounds were annotated according to Metabolomics Standards Initiative (MSI)[3] confidence level 2, with flavonoids predominating. These compounds are recognized for pain relief, inflammation modulation, and CaOx crystal dissolution, potentially explaining the observed bioactivity[2,4]. This is the first report of the antiurolithiatic potential of *S. cernuum*, demonstrating its effects on CaOx crystal reduction and inhibition of inflammatory mediators.

Keywords: *Calcium oxalate, PGE2, LTB4, Flavonoids*

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