

Influence of polysaccharide fractions of edible red seaweed *G. birdiae* on formation and morphology of calcium oxalate (CaOx) crystals and evaluation of its viability on MDCK renal cells submitted to H₂O₂ and CaOx damage.

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INTRODUCTION: The urolithiasis disease affects approximately 10% of the world's population and is strongly associated calcium oxalate crystals. Until now, there is not an efficient compound that can be used to prevent this disease. However, some sulfated polysaccharides (SP) from brown seaweeds exhibited an ability to inhibit the formation of calcium oxalate crystals and change their morphology in vitro. SP of red seaweed *Gracilaria birdiae* have important biological activities, but they were not been evaluated on CaOx crystals formation and morphology. **OBJECTIVES.** Evaluate the effect of different fractions of sulfated polysaccharides (PS) of the edible red seaweed *Gracilaria birdiae* on morphology of oxalate calcium crystals (CaOx) and verify the protective effect of these fractions in kidney cells. **MATERIALS AND METHODS:** The SP were extracted by delipidation, NaOH, sonication and proteolytic digestion, followed by ethanol precipitation. After, the SP extract (150mg) was fractionated by DEAE column and characterized by agarose gel (AGE) electrophoresis. CaOx crystallization was performed in vitro to verify their formation and morphology. The influences on renal MDCK cell metabolism were analyzed by MTT reduction on cells submitted to H₂O₂ and CaOx damaged in the presence of polysaccharides. **RESULTS AND DISCUSSION:** Four SP fractions (F0.25, F0.5, F0.75 e F1.0) from DEAE. AGE showed the presence of on kind of SP. F0.25 had a strong inhibitory effect on crystal nucleation (83.55%) and aggregation (85.71%). F0.25 and F0.75 decreased number of monohydrated CaOx crystal in 82.4% and 85.5%, respectively. The fluorescence microscopy showed SP distributed throughout the crystal structure. The cells pretreated with the F-0.5 fraction and submitted to H₂O₂ and CaOx damage, showed an optimal viability (80%). **CONCLUSIONS:** This study shows that some SP fractions from *G. birdiae* promotes reduction of crystal number, nucleation, aggregation of CaOx crystals and protective response for damage with H₂O₂ and CaOx.

Keywords: Red Seaweed, bioprospection, Kidney Stone.

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