Effect of Algal Sulfated Polysaccharides Against Peroxidative Injury In Presence Of Calcium Oxalate Crystals *In Vitro*

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INTRODUCTION. Membrane injury of kidney epithelia mediated by lipid peroxidation reaction facilitates the fixation of Crystals of calcium oxalate (OxCa) and their subsequent growth. Sulfated polysaccharides (SP) have been shown as promissory biomolecules as antioxidant and inhibitors of crystals of oxalate formation. **OBJECTIVE:** Our goal was evaluated whether SP-rich fractions protect renal cells against lipid peroxidation caused by H_2O_2 and calcium oxalate. **MATERIALS AND METHODS:** SP-rich fractions were obtained from seaweed *D. justii* after proteolysis and propanone fractionation. They were characterized by chemical analysis. The renal cells (HEK-293) were exposed to H_2O_2 for 1h, and calcium oxalate for 24h. After, the renal cells (HEK-293) were exposed to different amount of SP-rich fractions for 24h. Next, their viability was determinate by MTT assay and flow cytometry analyses. In addition, SP-rich fractions were conjugate with FITC and used as fluorescent probe in order to identify OxCa morphology by confocal microscopy. **RESULTS AND DISCUSSION**: Four SP-rich fractions were obtained (DJ0,3v/DJ0,4v/DJ0,5v/DJ1,2v). Chemical analyses demonstrated that DJ0,3v and DJ0,4v contain heterofucans composed mainly by glucose, xylose, Glucuronic Acid and Fucose in a molar ratio 1 :0.8:1.2:0.3:0.9 and 1:1.7:1.4:1.2:2.1 respectively. Moreover, DJ0,5v and DJ1,2v are composed of glucose and fucose in the molar proportion 1:0.2 and 1:0.1 respectively. Only DJ0.3 showed cytotoxicity, but in higher concentrations (1 and 2 mg/ml). The viability of HEK-293 cells treated with H_2O_2 and calcium oxalate increased in the presence of SP-rich fractions. DJ-0.4 (0.25 mg/mL) and DJ-0.5 (0.5 mg/mL) were the most potent samples, because they increase HEK viability (30% and 40%, respectively). Confocal analysis showed PS interacts with the crystals during their formation and modify their morphological characteristics. **CONCLUSION:** These results indicated that the heterofucans from *D. justii* have potential as therapeutic agent against renal peroxidative injury in presence of OxCa. However more studies, including in vivo, are needed and are already in progress.

Keywords: heterofucan, biological activities, brown seaweed
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