

Bioactive properties of sulfated polysaccharide of edible seaweed *Gracilaria birdiae*

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INTRODUCTION: The red seaweed of the genus *Gracilaria* synthesize bioactive sulfated polysaccharide (PS). But many of these PS have not yet been properly assessed, such as the PS synthesized by edible seaweed *Gracilaria birdiae* (GalGB). Previous studies have shown that sulphated galactans of this seaweed has anti-inflammatory effect. **OBJECTIVE:** Evaluate bioactive properties of sulfated polysaccharide of edible seaweed *Gracilaria birdiae*. **MATERIALS AND METHODS:** The aqueous extract were obtained after delipidation and proteolysis of seaweed *G. birdae*. It was characterized by agarose gel electrophoresis (AGE) and chemical analysis. In addition, it was evaluated scavenging hydroxyl radical (SHR) and superoxide (SSR), ferrous and cooper chelating activity (FCA and CCA respectively), anticoagulant activity (aPTT assay), antiproliferative activity and cytotoxicity by MTT and inhibition assay crystallization of salts of calcium oxalate *in vitro*. **RESULTS AND DISCUSSION:** GalGB has presented anticoagulant activity in the aPTT test. GalGB showed no toxicity to normal cells (3T3), but inhibited the survival of cells of adenocarcinoma of cervix of uterus (HeLa) and human pancreatic carcinoma (PANC-1) in approximately 80% (1.5 mg/mL). GalGB was not able to kidnap the radical (OH[•]) nor the superoxide radical (O₂^{•-}). However, it has presented donor activity of electrons in two different tests and presented chelating activity for iron (70% to 1.0 mg/mL) and copper (70% to 0.5 mg/mL). The presence of GalGB promotes greater formation of crystals calcium oxalate dihydrate of small size, which is the least aggressive, because GalGB is able to interact with the crystal and stabilize this form. In addition, GalGB (2.0 mg/mL) was not cytotoxic to human kidney cells (HEK-293). **CONCLUSION:** The data obtained led us to propose that GalGB has a great bioactive activities and great potential for the treatment of urolithiasis.

Keywords: bioactive compounds; sulfated galactan; urolithiasis