SULFATED POLYSACCHARIDES FROM BROWN ALGAE AS ALTERNATIVE SOURCE OF ANTIADHESIVE AGENTS

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Since 1990, our group has been involved on studies of structural features and biological activities of fucans from brown algae. These polysaccharides constitute interesting models to study the requirements necessary to display certain pharmacological actions. The results have shown unequivocally the presence of three main fucans (called fucan A, B and C) in several algal species from Dictyotales and Fucales orders. Fucans A containing mainly sulfated fucose and gluronic acid whereas fucans B and C are composed manly by neutral sugars and sulfated fucose. The fucan B from the alga *Spatoglossum schröederi* fucan B was tested as possible inhibitor of cell-matrix interactions and antiproliferative compound using wild type Chinese Hamster Ovary cell (CHO-K1) and the mutant type deficient in xylosiltransferase (CHO-745). Fucan B has shown a dose-dependent antiadhesive effect, reaching saturation at around 400mg/mL when fibronectin was used as substrate. Besides, our data showed that this fucan inhibits CHO-cells growth on plastic plates in a time- and dose-dependent manner, in a reversible and non-toxic fashion. It was observed an antiproliferative activity of the fucan when the FN was used as substrate. This result was obtained with both cell types that grew on the plastic coated with matrix proteins and it was dose-dependent. In addition fucan B induced apoptosis in CHO cells by probably interfering with the association of $\alpha_5\beta_1$ integrin and fibronectin. Moreover, fucan B has shown a high antimetastatic activity on fibronectin when the CHO cells were submitted to migratory test. This fucan was biotinylated and used as a probe to identify their action sites. Biotinylated fucans were detected in the extracellular matrix (ECM) environment by confocal microscopy and flow cytometric analysis, but not at the cell surface. The data on heterofucan have shown that the compounds do not necessarily have to interact with cell surface to have an effect. Overall, our results indicate that fucan B have a promising field to search for new antiadhesive and antimetastatic drug.