

PRODUCTION OF SULFATED AND NEUTRAL REDUCING OLIGOSACCHARIDES CONTAINING 3,6-ANHYDRO-GALACTOSE FROM SEAWEED POLYMERS.

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Red seaweed galactans have important biologic properties, such as antiviral, antitumoral and anticoagulant activity. Oligosaccharides produced from galactans may result in new bioactive low-molecular-mass molecules with important application. The aim of this work was the production of reducing oligosaccharides from galactan biopolymers. Commercial agarose and kappa-carrageenan were submitted to partial acid hydrolysis (TFA 0.1M, 65°C). The oligosaccharide mixtures were purified through gel filtration chromatography, yielding two principal fractions: AA and AB from agarose and KA and KB from kappa-carrageenan. These fractions were analysed by NMR spectroscopy and ESIMS spectrometry and the following reducing oligosaccharides were characterized: agarobiose (AA), agarotetrose (AB), kappa-carrabiose (KA) and kappa-carratetrose (KB). These molecules were used in the development of a HPLC method that allowed us to follow the hydrolytic process of both polymers. For agarose, in 6 h of hydrolysis, 50% of oligosaccharidic products were agarobiose and agarotetrose. Kappa-carrageenan needs more time (close to 12 h) to give the same yield of di- and tetrasaccharides. Partial hydrolysis method and the purification steps used in the present study, have permitted to isolate, in high yield, sulfated and neutral reducing oligosaccharides containing 3,6-anhydro-galactose at the reducing terminal end. The HPLC method proved to be a powerful tool for analysis of hydrolysis curves and showed that kappa-carrageenan has slower hydrolysis rates than agarose, probably due to influence of sulfate groups in the hydrolytic process. In addition, these oligosaccharides are been used for the semi-synthesis of neo-glycosides.

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