Production of 3,6-anhydro-L-galactose from red algae using acidic ionic liquids

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3,6-anhydro-L-galactose (L-AHG) is a major component of agarose, naturally occurring in red algae. Current technology in the production of agaro-oligosaccharides (D-galactose and L-AHG) in red algae is acid hydrolysis at high temperatures leading to over-degradation of the released monosugars. In this study, L-AHG was extracted from red algae, Gelidium amansii using acidic ionic liquids (IL). The choice of ionic liquids as well as the reaction conditions (e.g. time, temperature) was optimized for highest L-AHG yield and low byproduct formation. Acidity of the ionic liquids tested were determined using Hammett parameter, H0 and it was found out that slightly acidic ILs gave the highest L-AHG yields. Overall results show the potential of red algae as a renewable resource for the production of valuable chemicals. This work was supported by Priority Research Centers Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (2012-0006693).