

Production of marine chondroitin sulfate of defined molecular weight by enzymatic hydrolysis

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Abstract

Sulfation pattern and molecular weight (Mw) of chondroitin sulfate (CS) seems to influence its bioactivity and related therapeutic properties [1]; hence modification of these characteristics appears attractive to tailor CS to particular applications. Besides characteristic sulfation, CS from marine sources displays higher Mw than terrestrial counterparts [2], making it more amenable to produce CS with a wider range of Mw. In the present work we study the depolymerization of CS from ray, chimaera and shark by enzymatic hydrolysis with hyaluronidase and chondroitinase ABC. Decrease in Mw is followed at four levels of enzyme to substrate ratio by size exclusion chromatography with light scattering detection. Fitting of experimental data to empirical equations allows to establish conditions of reaction to produce CS of defined Mw.