

Accepted Manuscript

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PII: S0144-8617(18)30238-8
DOI: <https://doi.org/10.1016/j.carbpol.2018.02.080>
Reference: CARP 13342

To appear in:

Received date: 31-7-2017
Revised date: 24-11-2017
Accepted date: 25-2-2018

Please cite this article as: Bobula, Tomáš., Buffa, Radovan., Hermannová, Martina., Vágnerová, Hana., Dolečková, Iva., & Velebný, Vladimír., The synthesis of a new unsaturated derivative of chondroitin sulfate with increased antioxidant properties. *Carbohydrate Polymers* <https://doi.org/10.1016/j.carbpol.2018.02.080>

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The synthesis of a new unsaturated derivative of chondroitin sulfate with increased antioxidant properties

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Highlights

Efficient and regio-specific modification of CS was developed.

A new unsaturated derivative of CS (Δ CS) was synthesized.

The double bonds increased chemical reactivity of Δ CS towards free-radicals.

Δ CS is a biocompatible material suitable for biomedical and cosmetic applications.

Abstract

Chondroitin sulfate (CS) was regio-specifically modified to an unsaturated derivative (Δ CS) with a double bond in positions 4 and 5 of *N*-acetyl-D-galactosamine. The structure of Δ CS was elucidated in detail by two dimensional nuclear magnetic resonance, ultraviolet spectroscopy and mass spectrometry. The introduction of a nucleophilic $-C=C-$ double bond into a polymer backbone had no influence on biocompatibility of CS, which was demonstrated by MTT live-dead assay and enzymatic degradation *in vitro*. On the other hand the chemical modification

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