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Title of diploma thesis: Side degradation products of hyaluronan

ABSTRACT

The presented diploma thesis deals with the side degradation products of hyaluronan generated during alkaline hydrolysis.

Theoretical part includes basic information about hyaluronic acid (HA). The first part deals with the history, structure, chemical and biological properties of HA, including possible ways of degradation of HA. The importance and application of HA are mentioned in the conclusion. The second part describes the instrumental methods, used for separation and purification of HA or HA fragments, and possibilities of identification.

Experimental part deals with the alkali hydrolysis (peeling reaction), following separation and identification of the resulting fragments of HA. At first, it was necessary to optimize the reaction conditions of peeling reaction for the highest yields of degradation products. Then tetramer HA was degraded in 0,1M sodium hydroxide at laboratory temperature. Gel permeation chromatography was used for the separation of high molecular weight fragments. The individual degradation products were separated on reverse HPLC phase C12. There was isolated 8 fractions, but only 4 fractions were obtained in sufficient quantities for MS, NMR analysis and elementary cytotoxicity assays.

All acquired data were measured during actual research in company Contipro Pharma, a.s., Dolní Dobrouč, Czech Republic.