

Study of radiolabelling of hyaluronic acid by oxidative iodination

Diploma paper

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In the frame of this work the literature describing characteristics and possible applications of hyaluronic acid and methods of radiolabelling of compounds with a view to the radioiodination was read up. In experimental part of the task two methods of oxidative iodination of hyaluronic acid modified by tyramine with the lowest degree of modification (HA - TM - 1) was examined. Chloramine method, used as first one, turned out ineligible as due to presence of oxidative agent in the phase with hyaluronic acid a partial degradation of the sequence occurred. Another method of iodination with the use of iodogen is heterogenous reaction, oxidative agent is present as an insoluble deposit on the walls of the reaction vial. This method of radiolabelling was more moderate to hyaluronic acid. The reaction was interrupted by applying the reaction system on the column with Sephadex G - 50 wherby the labelled compound was separated from the aggressive reactive environment. It turned out that this way of refinement of the labelled product does not eliminate the rests of the radioactive iodide. Therefore the labelled hyaluronic acid was washed through a filter with silver chloride coagulation. For assessment of radiochemical cleanness and stableness of the labelled product a gel permeation chromatography an automatic Shimadzu HPLC unit was used. The results of the stableness study in environment of a pH neutral acetate buffer at 4 .C show that the labelled structure is relatively stable. Such a labelled product could enable examination of metabolism of hyaluronic acid oral use. Additionally it could be used for identification of hyaluronan binding proteins that are of an important role by pathological processes in organism.