Abstract

The aim of this thesis was the development of the method for the determination of eight monosaccharides commonly found in glycoproteins by capillary electrophoresis. Namely, it was determination of glucose, galactose mannose, *N*-acetylglucosamine, *N*-acetylgalactosamine, fucose, *N*-acetylneuraminic acid and xylose. Total length of silica capillary with inner diameter of 10 μm was 50.0 cm and effective length was 35.0 cm. Background electrolyte was compound of sodium hydroxide of 50 mmol/l concentration, disodium phosphate of 22.5 mmol/l concentration and cetyltrimethylamoniumbromide of 0.2 mmol/l concentration. Samples were injected hydrodynamically with pressure of 5 kPa for 70 s, driving voltage was –30 kV and the pressure of 270 kPa was applied to the outlet vial during the separation; capacitively coupled contactless conductivity detector was used to detect the analytes. The limits of detection were between 5 and 7 mg/l and the limits of quantification were between 16 and 22 mg/l. Repeatability of peak areas and migration times related to 4-(2-hydroxyethyl)-1-piperazinethanesulfonic acid as an internal standard showed values of relative standard deviation lower than 4 %. Conditions for hydrolysis of oligosaccharides to monosaccharides were determined as 4M hydrochloric acid and 100 °C, hydrolysis was no longer than 10 minutes. By re-measuring several calibrations points it was determined that 0,4M hydrochloric acid in sample injected to system does not affect separation.

Key words

Capillary electrophoresis, monosaccharides, glycopeptides