

# Analysis of Saccharides Derivatized by Labels with Positive Charges

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The analysis of oligosaccharides and especially the analysis of glycans play a significant role in current bioanalytical chemistry. Due to the complex structure of the glycan samples the analysis usually requires an efficient separation technique. Capillary electrophoresis with mass spectrometry detection represents an emerging powerful tool for this task. Labeling of oligosaccharides by 2-aminoethyltrimethylammonium chloride (AETMA) with a permanent positive charge allows highly efficient separation in capillary electrophoresis as well as highly sensitive detection by ESI/MS in the positive ion mode [1]. Moreover, an attachment of a small molecule with the high number of positive charges should provide fast migration in the capillary zone electrophoresis.

We have studied various promising derivatizing agents such as AETMA, amino acids and peptides as alternative labels for saccharide analysis. The AETMA-labeled saccharides with a permanent positive charge migrate as cations in capillary electrophoresis and thus it allows to use transient isotachopheresis for their preconcentration [2]. Due to this approach the saccharides from glycoproteins occurring in low concentrations can be analyzed and identified. The hexahistidine (HisTag) label allows further shortening of the analysis time by capillary zone electrophoresis thanks to the high number of positive charges in the HisTag molecules. The analysis requires two or three times shorter separation time in comparison to analysis of oligosaccharides tagged by AETMA or single amino acids.

[1] Unterrieser I, Mischnick P. *Carbohydrate Research* 2011, 346, 68-75.

[2] Partyka J, Foret F. *Journal of Chromatography A* 2012, 1267, 116-120.