POTENTIAL OF NON-AQUEOUS CAPILLARY ELECTROPHORESIS-MASS SPECTROMETRY IN ANALYSIS OF OXYSTEROLS

Michal Greguš[1,2], Hanne Røberg-Larsen[3], Elsa Lundanes[3], Steven Ray Wilson[3], František Foret[1], Petr Kubáň[1,2]

[1]Bioanalytical Instrumentation, CEITEC MU, Brno, Czech Republic,
gregus@mail.muni.cz
[2]Department of Chemistry, Masaryk University, Brno, Czech Republic
[3]Department of Chemistry, University of Oslo, Norway

Oxidized metabolites of cholesterols, oxysterols (OHC), are important in numerous biological processes and pose multiple roles in the body. A variety of isomers exists, with different biological roles, e.g. 27-hydroxycholesterol (27-OHC) is a selective estrogen receptor modulator. Other isomers are for instance: 24S-OHC, 25-OHC, 7β-OHC, 22R-OHC, etc.). 27-OHC can promote proliferation of estrogen receptor (ER) positive breast cancer by binding to ER and metastasis by binding to liver X receptor. Traditionally, separations of oxysterols are performed by gas chromatography (GC) or liquid chromatography (LC) after derivatization with MS detection. Separation of oxysterols by aqueous CE is difficult mainly because of their low solubility in water and levelling effect of water.

In this study we explore the potential of non-aqueous capillary electrophoresis coupled to mass spectrometry (NACE-MS) for better separation of the oxysterol isomers. The developed method was successfully applied for separation of derivatized oxysterols from excess derivatization reagent, resulted to simplified sample preparation (i.e. no need for SPE extraction before LC-MS analysis) and hence to reduction of total analysis time and sample handling. Separation of 25-hydroxychlesterol/27-hydroxycholesterol in model sample solution is shown.

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