



COATED CAPILLARY ELECTROPHORESIS: AN EMERGING ANALYTICAL TOOL A REVIEW

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ABSTRACT:

For the analysis of complex samples, two-dimensional separations are increasingly applied. Capillary electrophoresis (CE) in principle encompasses an interesting separation dimension as it may provide an orthogonal mechanism and favorable separation efficiency at high speed. One of the major applications of CE relates to the determination of metabolites in various types of biologically relevant samples. Mass spectroscopy (MS) detection plays an important role since many metabolites cannot be optically detected without prior derivatization, and it provides opportunities for the identification of unknowns. To aid in the latter, a chemoinformatics approach for ranking candidate structures of unidentified peaks was developed. The approach uses information about the known metabolites detected in samples containing unidentified peaks and was successfully applied to identify two unknown compounds observed in a CE-MS urinary metabolite profile. When conventional bare fused-silica capillaries are used in CE, resolution and peak widths and shapes may be compromised by adverse interactions of the analytes with the inner capillary surface. Furthermore, adsorption of sample matrix-components, e.g., proteins, may cause uncontrollable changes of the electro-osmotic flow (EOF) and poor migration-time reproducibility. In order to avoid unwanted adsorptions, coating of the capillary wall is a common strategy which remains the subject of research.

KEYWORDS: Analytical technique, capillary electrophoresis, derivatisation, coated capillary, ES-MS.

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Indian Research Journal of Pharmacy and Science; 19(2018)1764;
Journal Home Page: <https://www.irjps.in>