

DETERMINATION OF GALANIN FAMILY PEPTIDES IN LC-MS METHOD USING FUSED-CORE TECHNOLOGY

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Nowadays, peptides are increasingly used as specific biomarkers of some diseases or as therapeutic agents. Quick and reliable evaluation of biomarkers may save valuable time on the disease. Analytical techniques commonly used were adapted to peptides determination. Indeed, the complexity of peptides in term of structure and their tendency to the adsorption require special attention when developing the method. Due to recent advances in materials (sub-2 μm particles, fused-core technology), reversed-phase liquid chromatography (LC) and mass spectrometry (MS) detection is particularly well suited for this kind of applications.

In comparison to classical silica particles, fused-core particles are not fully porous. They are made of a silica core and a homogenous porous shell. The analyte time diffusing into and out of the pores is reduced, which decreases band broadening and increases peak efficiency. Due to lower column backpressure, fused-core columns are compatible with any LC system.

Galanin family peptides were selected as interest peptides biomarkers. Galanin, galanin like peptide and alarin are neuropeptides involved at different levels in the regulation of inflammatory processes. A LC-MS method was developed to separate and quantify these peptides. Our LC system was first adapted to the fused - core technology: the replacement of the conventional needle seat capillary by a lower needle seat capillary volume, the use of tubing of 0.005 inch and zero volume finger-tight fittings, ... Then, chromatographic performances of various fused – core columns (C_{18} , C_{18} XB and PFP; 100 mm x 2.1mm; 2.6 μm) were compared to a fully porous particles column (C_{18} ; 100 mm X 2.1 mm; 3 μm). Among the different fused - core stationary phases, the C_{18} fused-core column was selected as the most suited column for our peptide biomarkers determination. Moreover, particular attention was paid to prevent peptides adsorption all over the analytical system.