

Addressing the Issues of Matrix Resolution and Measurement in Bioanalytical Assays

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In quantitative bioanalysis the analytical technique of choice is LC/MS/MS due to the high sensitivity and selectivity that it affords. Quantitative bioanalytical methods development is complicated by matrix interferences which can alter the response of the analyte.

Matrix effects, resulting from co-eluting matrix components that compete for charge in the ionisation process, manifest themselves as suppression or occasionally enhancement of the analyte signal. Matrix effects are caused by numerous factors all of which can cause significant errors in the accuracy and precision of a bioanalytical assay, Phospholipids, Subject differences, Impurities, Degradation Products, Co-eluting metabolites

Monitoring the presence and impact of matrix effects can complicate and prolong the development of a robust, sensitive assay.

In this poster we evaluate the use sub 2µm particle LC on the matrix effects observed. We will also demonstrate how the background matrix interference can be monitored in a single run analytical using a mass spectrometer equipped with a novel fast switching quadrupole MS. We will also demonstrate how the matrix effects can be determined and quantified by an integrated matrix calculator tool. We will show how the use of these tools can significantly shorten the time taken to develop a sensitive, robust bioanalytical LC/MS/MS assay.