K7 Evaluation of Inter-Instrument Transferability of LC/MS/MS Methods

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After attending this presentation, attendees will have learned the advantages and limitations of direct transfer of LC/MS/MS methods across instruments and across labs and the considerations for successful transfer of methods.

This presentation will impact the forensic community by investigating data quality when using a method from one lab and directly transferring the method to another lab. Direct transfer of methods decreases the amount of time required to implement an analytical assay in a laboratory.

The objective of this paper is to develop an LC/MS/MS method in one lab and directly transfer that method to other labs which have the same make/model of LC/MS/MS system without further optimization. Data are analyzed and variations are compared across instruments and labs.

An LC/MS/MS method was developed to detect and quantify several different drug compounds across various drug classes. After method development, the method was directly transferred to 4 different laboratories with the same model of LC/MS/MS instrument; no additional tuning or optimization of the system was performed. The inter-instrument data was analyzed and the consistency of the data evaluated. Sensitivity, ruggedness, and reproducibility were all compared.

Data analysis showed that direct transfer of an LC/MS/MS method between different instruments was possible. When sensitivity of the method was evaluated, all systems were within about 3x of each other. The biggest variable was retention time of the analytes, as it is necessary to consider several factors, such as tubing length, mobile phase consistency, and column-to-column reproducibility.

This study showed that it is feasible to develop methods and directly transfer these methods between laboratories to other instruments of the same model. No significant variations in sensitivity or other aspects of data quality were observed. The ability to transfer methods without individual optimization of each instrument can save substantial time in method set-up and implementation.

LC/MS/MS, Method Development, Toxicology

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