

CURRENT TRENDS IN MASS SPECTROMETRY AND CHROMATOGRAPHY

September 25-26, 2017 Atlanta, USA

Matrix and LC-MS: Is it invariably a source of problems or can we get relevant information evaluating its composition in individual samples?

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Each analyst working on biological samples is trying hard to minimize the matrix effect and the perception is that matrix is just a source of problems without any idea that positive information can be gathered. Indifferently these samples are prepared by liquid-liquid extraction, protein precipitation or SPE, an important fraction of biological components typical of the sample will be present in the final extracts with a composition largely influenced by the purification method employed. Despite all best efforts the amounts are generally not negligible and intense ions can be easily recorded providing information on composition and quantitation of different components; the availability of mass spectrometers with very high scanning speed like ion traps and TOF, permits to include such type of analyses, also within a quantitative analysis looking for specific analytes, without compromising analytical accuracy and sensitivity. Keeping in mind this idea we have incorporated different type of scan, MS or MS/MS modes, looking for matrix composition, while analyzing plasma samples of PK studies and evaluating the added values that can be obtained in this way. Very interesting results have been obtained like pharmacodynamics data (i.e., lipids composition or hormone levels). An evaluation of matrix composition can also help to pinpoint unexpected quantitative analytical results like in case of inadequate phase separation during extraction or mismatch between individual samples. Result of some of these experiments will be presented. We strongly believe that we have a lot to learn from individual sample matrix analyses compensating the frustration coming from matrix effects.

Biography

Luigi Silvestro was graduated in Medicine in Turin, Italy in 1984 and specialized in Pharmacology in 1988. Since 1989 he is applying HPLC-MS in quantitation of bioanalytical samples as well as identification of drug metabolites. In 1996, he has co-founded 3S-Pharmacological Consultation & Research GmbH, a consultation company and CRO, in Germany and is still actively involved in the development of innovative analytical methods. He has contributed to more than 60 articles in international scientific journals.

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