# Matrix Effects, a Major Concern During LC-MS/MS Bio-analysis

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In LC-MS/ MS bio-analysis matrix effects influencing the ionization process are a major concern with respect to the quality of the results obtained. Matrix effects and selectivity issues have long been associated with bioanalytical techniques. A number of approaches have been investigated to improve the reproducibility and robustness of LC-MS/ MS methods that are subjected to matrix effect. In general such matrix effects are directly related to an insufficient sample clean-up of the biofluids. Phospholipids are known to cause matrix ionization effects during the analysis of biological samples (i.e. blood, plasma, urine etc.) in LC-MS/ MS. However the high incidence of matrix effects in liquid chromatographic tandem mass spectrometric (LC-MS/ MS) methods help to a greater understanding of the factors which contribute to these effects. There are qualitative and quantitative ways to determine matrix effects. Matrix effect is mainly determined in terms of ion suppression or enhancement. Post column infusion technique is very popular for qualitative analysis of matrix effects. Whereas, for quantitative determination of matrix effects more than one techniques are available, among them determination of matrix factor and calculating the precession and accuracy of quality control samples are widely used. Among many factors, some of the causes of matrix effects are presence of endogenous compounds i.e. different phospholipids, inefficient chromatographic conditions, ionization polarity, ionization source design, ionization technique i.e. ESI/ APCI, presence of exogenous materials, presence of anticoagulants etc plays an important role. So to remove or minimize the matrix effects the above mentioned factors should be optimized.