

## **SONIC SPRAY IONISATION: MECHANISM AND APPLICATION TO THE LC/MS DETERMINATION OF PARAMETHOXYAMPHETAMINE, XTC AND AMPHETAMINE IN BIOLOGICAL SAMPLES**

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Sonic spray ionisation (SSI) is a relatively new interface between liquid chromatography and mass spectrometry. Compared to other Atmospheric Pressure Ionisation (API) techniques, it possesses some particular advantages. Ionisation can occur without applying heat to the capillary or without the use of a voltage on the capillary tip. Instead a very high (sonic) gas flow is used to enhance ionisation, allowing thermally labile compounds to be analysed without degradation.

This presentation will highlight the working mechanism of the API techniques. Special attention will be given to the differences between SSI and more commonly used interfaces like electrospray (ESI) and atmospheric pressure chemical ionisation (APCI).

In addition, SSI was applied to the determination of paramethoxyamphetamine (PMA), MDMA (ecstasy), MDA and amphetamine in blood, urine and postmortem tissues. PMA is an amphetamine-like designer drug and has recently been responsible for some lethal intoxications in Belgium. Sample preparation was a simple and robust liquid/liquid extraction procedure with hexane/ethylacetate (7/3, v/v). A phenyl type column (100 x 2.1 mm ID), eluted in a gradient mode, was used for separation. The mobile phase consisted of water to which 0.001% formic acid was added (solvent A) and methanol (solvent B). Detection was performed on a M-8000 ion-trap based mass spectrometer, by isolation and fragmentation of the protonated molecules  $[M + H]^+$ . Fragments were then used for quantification. The method was validated, within-day and total reproducibility did not exceed 17%, recoveries ranged from 83.2 to 107.2% while detection limits ranged from 2.5 to 10 ng/ml. These results prove that SSI is a useful alternative to common interfaces, even when dealing with complex biological matrices.