

APPLICATION OF LC/MS/MS TO THE ANALYSIS OF BENZODIAZEPINES IN BLOOD

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Liquid Chromatography Mass Spectrometry is a powerful technique for detection and quantification of various drugs of forensic and medical importance. This paper concentrates on benzodiazepines which are among the most commonly prescribed group of drugs. Clinically, they are used as anxiolytics (anti-anxiety), sedatives/hypnotics, anticonvulsants and muscle relaxants. Benzodiazepines are of interest to forensic toxicologists for a number of reasons. Although rarely considered to be the cause of death, benzodiazepines and their metabolites are frequently found in combination with other drugs in drug related fatalities. Some of the benzodiazepines are abused and can be a factor in impaired driving, sexual assault and other crimes.

The recent introduction of more potent benzodiazepine analogues and their resultant lower blood concentrations has made their analysis more complex. Consequently, there is a need for a method with the ability to identify these drugs and their metabolites at low concentrations.

An Agilent LC/MSD Trap was used to study the range of benzodiazepines available in Australia. Both ESI and APCI ionisation techniques combined with MS and MS/MS were investigated. An assessment of the different approaches will be presented.

Results on the optimum methodology for both the LC and MS will be presented as will the application of the optimised method to the analysis of blood samples from real cases.
