

## **CHROMATOGRAPHIC APPROACHES IN FORENSIC TOXICOLOGICAL ANALYSIS**

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Chromatography plays a fundamental role in forensic toxicology, serving as a powerful analytical tool for identifying and quantifying toxic substances in biological samples. Indeed, it is the science of separation, and it is used to isolate components from complex mixtures.

Gas and liquid chromatography instruments coupled with mass spectrometry equip forensic laboratories nowadays, and enable accurately identifying and quantifying drugs and metabolites in several biological specimens, from the most common blood and urine to the unconventional oral fluid and hair samples.

These techniques allow the efficient separation of the compounds of interest from endogenous interferences (e.g. proteins, lipids) and their detection. For most substances of toxicological interest, this detection is performed by mass spectrometry, as only this highly selective and sensitive technology is capable of unequivocally identifying the substances present in a sample, allowing obtaining forensically valid and sound results.

In this talk, practical routine cases will be presented and discussed.