INTRODUCTION

The poster illustrates a real-world application with time-of-flight mass spectrometry (TOFMS) for the crime laboratory. The routine confiscation of illegal drugs mandates accurate identification. The process, including data processing by automated software algorithms, which can be implemented in a crime laboratory, is illustrated. The experimental GC-TOFMS setup is described, showing how data is obtained and processed. The analysis of the drug samples is explained, followed by the results and discussion, which establishes the efficacy of the method for drug identification.

OBJECTIVES

The objectives of this research are to:

1. Develop GC-TOFMS methods that are accurate and robust, which can be commercialized.
2. Develop a method using GC-TOFMS for the rapid and reliable identification of drugs.
3. Develop a method that enables the utilization of time-of-flight mass spectrometry to ensure the data quality needed to support the crime laboratory.

EXPERIMENTAL

The experimental setup for GC-TOFMS analysis includes:

- Sample preparation
- Injection and separation
- Mass spectrometry
- Data acquisition and processing
- Identification and quantification

CONFISCATED DRUGS IDENTIFICATION

The GC-TOFMS system is used to identify the drugs. The chromatograms are obtained and analyzed for the presence of various compounds. The method includes the identification of specific markers for each drug class, such as Ecstasy, Methamphetamine, l-Codeine, Diacetylmorphine, and others. The extracted ion chromatograms (EICs) are used to confirm the presence of these drugs.

CONCLUSIONS

The presented experimental results demonstrate the capability of gas chromatography time-of-flight mass spectrometry (GC-TOFMS) to identify a wide range of drugs. The method provides accurate and robust identification, which can be commercialized. The results show the potential of the method for rapid and reliable drug identification in a crime laboratory.

TRUE SIGNAL DECONVOLUTION

Figure 4 shows the extracted ion chromatograms of unique masses for 7 individual peaks. The signal-to-noise ratio is calculated for the extracted ion chromatogram. The method provides accurate and robust identification, which can be commercialized. The results show the potential of the method for rapid and reliable drug identification in a crime laboratory.