Drug Testing and Analysis

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Special issue – Murders by Drugs

The discovery of murder by drugs and poisoning is an exciting and popular aspect of modern forensic chemistry. Analytical approaches enabling the identification of arsenic as the apparatus of homicide were reported in the early forensic reports of the 17th century.[1] Since these investigations, the chemical repertoire of the executioner's tool kit has been creatively (if cruelly) developed necessitating the utilization of new identification techniques for the chemical detective.

In this special issue, papers discussing forensic chemistry and toxicology through the past to the present have been compiled by worldwide renowned experts.

The path of chemical analytical science in the identification of poisonous compounds through history is illustrated in the opening commentary of this issue. Evidence of the executioner's chemical tool kit being as much a concern for investigation 2000 years ago it is today is marked by the famous proclamation by Marcus Fabius Quintilianus (35–96) that the detection of a poison may be even more complicated than the detection of an enemy.[2]

Early capabilities of forensic chemistry are described in a historical case study reporting on the Bocarmé death, a murder conducted by means of nicotine and discovered by the chemical detective Jean Servais Stas in the mid 19th century. Although considered impossible at the time, the Belgian chemist succeeded in extracting the toxin from tissues derived from the dead body using a series of extraction and concentration steps. The identification of the poison leading to the conviction and execution of the perpetrator.[3]

The use of more recently developed drugs for the purpose of homicide is described in a comprehensive review on the use of insulins and oral antidiabetic, that outline the lethal nature of salutary agents.

Although the diagnostics of insulin poisoning are complex, 66 cases of murder, attempted and suspected murder by means of insulins were recorded during the last century and are discussed from various points of view in this review.[4]

The positive detection of drugs and poisons hinges largely on instrumental options and adequate knowledge of target analytes. This is highlighted in this special issue within an article reporting on mass murder proven in 13 cases using rocuronium. 42 bodies exhumed after the unexplained shortage of the muscle relaxant were determined and putrefied specimens tested for maliciously administered rocuronium using state-of-the-art mass spectrometric approaches.[5]

The successful identification of poison drugs in various fatalities in Austria further stresses the necessity of systematic, sensitive and specific forensic chemistry. Strychnine in chocolate candy, unexplained physostigmine ingestion, malicious application of glibenclamide and clomipramine, or administration of flunitrazepam followed by the instillation of water into the upper respiratory system are reported and proven using modern analytical assays.[6]

Finally, the inventiveness of the chemical executioner and the lethality of minute amounts of the protein toxin ricin are outlined in a review on this deadly ingredient of the castor bean. The most prominent case of which was the so-called umbrella murder, reviewed and discussed in detail in this special issue of *Drug Testing & Analysis*.[7]

Mario Thevis & Paul Trevorrow

References

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[5] D. Thieme, O. Peschel, F. Fischer, M. Graw, *Drug Test. Analysis.* **2009**, *1*, 156.
[6] W. Vycudilik, G. Gmeiner, *Drug Test. Analysis.* **2009**, *1*, 177.
[7] F. Musshoff, B. Madea, *Drug Test. Analysis.* **2009**, *1*, 184.