

EXPECTANCIES OF A TOXICOLOGIST: FROM SUDDEN POISONING TO MIRACULOUS DISCOVERY

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Toxicology always presents surprise or innovation and is therefore highly addictive... That's why we like it so much! In forensic toxicology the research topic is a medico-legal investigation of death, poisoning, and drug use. The analysis can be done on various types of samples, primarily biological (blood and urine). The multidisciplinary context of an investigation and the evidence collected at the crime scene is of paramount importance for a successful outcome. Identification and quantification of an ingested substance is often complicated by the body's natural processes like metabolism. In the context of absolute (safe) driving performance, the question and debate of threshold values for alcohol and drugs is proverbial. Here too, the forensic toxicologist plays an important role as scientific advisor and expert in predicting, interpreting and discussing the (psychoactive) effects of substances like alcohol, cannabis etc, with attorneys, lawyers and politicians. The list of drugs leading to sudden poisoning reportedly associated with sexual assaults (i.e. 'date rape drugs') is long and includes among others flunitrazepam and GHB. As some of these substances are very short-living and also present naturally in a man's body, it may become a worry instead of a blessing for the forensic toxicologist. Forensic examination of drugs in hair samples and the notion of 'designer/smart drugs' represent yet other challenges for the modern toxicologist: a divorce case with a legal judgment on the basis of which children have been assigned to the mother because the father's hair has been shown to contain metabolites of alcohol... ; an illegal amphetamine lab has been seized but no convictions could be made because the drugs identified by the toxicologist are not prohibited...

On the other side of the toxicologists' spectrum, the world of 'toxinology', i.e. the study of toxins derived of/produced by animals, plants and micro-organisms, can be very rewarding. More and more 'drugable toxins' that can be considered as lead compounds for future generation drugs (medication this time, no illicit compounds!), are being found: analgesics from Cone snail venom, antihypertensive compounds from snake venom, an anti diabetes peptide from saliva of the Gila monster, potent and environmentally friendly insecticides from spider, scorpion and sea anemone venom. As such, research in toxinology may lead to miraculous life saving discoveries but, if available for evil minds, may also cause unexpected, sudden and criminal poisonings...