Forensic toxicology

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Toxicology comprises a variety of disciplines, including analytical chemistry, biochemistry, epidemiology, pathology, physiology and statistics. Forensic toxicology covers those disciplines of forensic science concerned with toxic substances. The main fields of forensic toxicology are chemical warfare agents, designer drugs, drug metabolism, drugs of abuse, doping control, postmortem toxicology, toxicokinetics of poisons, and analytical methods for toxic substances. A forensic toxicologist must interpret analytical data on toxic chemicals and poisons, using this as the basis for accurately judging the toxicokinetic implications of such substances.

This issue contains papers on forensic toxicology presented at the 50th Annual Meeting of The International Association of Forensic Toxicologists (TIAFT2012), which was held at the Act City Congress Center and the Okura Act City Hotel Hamamatsu, Hamamatsu, Shizuoka Prefecture, Japan, on June 3–8, 2012. This, the second TIAFT meeting organized in Japan, was held in conjunction with the 31st annual meeting of the Japanese Association of Forensic Toxicology and the 96th annual meeting of the Japanese Society of Legal Medicine. Chairperson Dr Osamu Suzuki, the board of directors of Hamamatsu Medical University, and the organizing committee provided excellent scientific and social programs and the meeting was highly successful, with 450 delegates from 47

countries. The subtitle of the meeting was “To protect society from drug abuse and chemical terrorism”. The meeting comprised a keynote speech, a symposium on chemical warfare terrorism, and 96 oral and 225 poster presentations covering all fields of forensic toxicology: doping control, case reports, alcohol, drugs and driving, hair analysis, various matrices, pretreatments and MS screening, various MS techniques, drugs of abuse, new designer drugs, postmortem toxicology, and drug metabolism. A young scientists’ meeting, vendor seminars, and a workshop were also held.

In forensic toxicology, analytical results are always crucial to investigation of crimes or accidents and, moreover, sometimes provide conclusive proof for criminal trials. Once samples (e.g. drugs, poisons, victims’ body fluids, and so on) are given to forensic toxicologists, it is expected that the analytical results from the samples will be promptly fed back to the crime investigation section. For fast and precise analysis of toxic substances, the development of new methods with high selectivity, sensitivity, rapidity, and robustness is required. Studies on the absorption, distribution, metabolism, and excretion of these drugs are also important, both as the scientific basis for detecting them in forensic samples and for better understanding of their toxicokinetics.

Recently many new designer drugs, for example synthetic cannabinoids, have emerged one after another on illicit drug markets, and their abuse has spread all over the world. The emergence of new drugs and the legal restrictions on them are growing social problems for the field of forensic toxicology. Studies analyzing new drugs and their metabolites are essential to protect our society from drug abuse.

This paper collection includes five articles with analytical focus; less analytically focused papers have been published elsewhere. We thank all of the authors for their interesting contributions, the referees for their critical comments, and the Editorial Office and the Editors of Analytical and Bio-analytical Chemistry for their generous cooperation.

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