



W2. INDIVIDUAL SUSCEPTIBILITY TO XENOBIOTICS, BIOMONITORING AND KINETIC DATA: A HELP FOR FORENSIC MEDICINE

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The quantitative assessment of exposure to chemicals able to induced fatal outcome in humans as well as the time course of exposure is essential information also in forensic medicine. Generally, only the extent of the external exposure is available, although it is recognized that measuring internal exposure is much more relevant for establishing a dose-response relationship. Starting from external exposure, the estimate of the internal one depends on availability of information about the absorption, distribution in the body, metabolism and excretion (ADME) of a chemical, usually referred to as toxicokinetics (TK).

Many of the enzymes and transporters involved in the biokinetics of a chemical are polymorphic, varying among individuals, thus resulting in different individual susceptibility to xenobiotics. The activity of specific enzymes can differ also due to exposure to chemicals since many of them are inducible or can be irreversibly inhibited. As a consequence the effects of a xenobiotic may be highly dependent on both genetic and aquired factors. Biomonitoring studies on humans are very important tools to determine 'internal' exposure, but the TK should be taken into consideration when using biomarkers of exposure, as they reflect also the individual's response and when translating level in blood or urine to an external dose (or vice-versa). In addition, the monitoring strategy should be based on the TK of the chemical: sample collection time-points, sample type (urine, blood or other) analyte to be determined (parent compound or metabolite) and numbers of individuals sampled strictly depend on ADME parameters.