Possibilities and pitfalls for the use of DBS in forensic toxicology

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Dried blood microsampling is increasingly being recognized as a potentially interesting strategy in therapeutic drug monitoring and (forensic) toxicology. In toxicology, DBS sampling has been performed from birth until autopsy, aiming at the assessment of therapeutic drugs, drugs of abuse, environmental contaminants, toxins, as well as (trace) elements, with applications situated in fields as diverse as toxicokinetics, epidemiology, doping control and environmental and forensic toxicology. Implementing dried blood microsamples in an analytical workflow offers several advantages, such as simplification of the sample collection, transport, storage and processing. Furthermore, it enables collection of representative samples by non-medically trained persons in remote areas. However, the implementation of a DBS approach also brings along several challenges, amongst which the need for sensitivity and even more extensive method validation. Using the determination of the direct alcohol marker phosphatidylethanol 16:0/18:1 (PEth) as a case example, this presentation will focus on key points of attention when setting up dried blood-based methods in the context of dried blood spot (DBS) sampling in the field of (forensic) toxicology.