Immunological Screening of Opiates and Confirmation by GC-MS of Human Hair, Blood and Urine Samples

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A method is described for determination of opiates in human hair, urine and blood samples. It involves two sequential steps: a screening by a simple cloned enzyme donor immunoassay (CEDIA) methodology to detect opiates, followed by confirmation of opiates in positive samples by gas chromatography coupled to mass spectrometry (GC–MS).

Blood and urine samples were directly analyzed according to CEDIA procedure. After washing of hair samples with water for 5 minutes and acetone for 1 minutes, hair specimens were cut into small pieces and 50 mg samples were incubated in 2 ml of phosphate buffer (pH:7.6), 240 minutes at 40°C. 200µl aliquots were analyzed according to the CEDIA procedure. Another 50 mg hair samples were added 2 ml of phosphate buffer (pH:7.6) and 150µl β-glucuronidase/aryl sulfatase. Solution was incubated for 2 hours at 40°C for GC-MS analysis.

Confirmation involved solid-phase extraction of blood, urine samples and hair extract, derivatization with MSTFA+1%TCMS and detection of morphine, codeine, 6-acetylmorphine by GC-MS.

Screening methods provide rapid and inexpensive pre-test procedures to detect drugs in hair, blood and urine matrices. For forensic purposes screening therefore represents an ideal complement to routinely applied GC–MS procedures [1-3].

References