



### **K46 Validation of a Method for the Determination of Opiates and Methadone in Hair**

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After attending this presentation, attendees will have an insight into the methodology used to develop and validate a forensic toxicology method for hair analysis of opiates and methadone to IEC/ISO 17025:2005 standards within an accredited laboratory.

This presentation will impact the forensic community by providing laboratories considering obtaining accreditation with an insight into the methodology required for method validation.

The purpose of this study was to develop and validate a procedure for the determination of morphine, 6-acetylmorphine, codeine, dihydrocodeine, methadone, and EDDP in hair. Deuterated internal standard mixture and 0.1M HCl were added to 20 mg of specimen, control or spiked blank hair and sonicated for 1 h. The analytes were then extracted by solid-phase and derivatized with BSTFA + 1% TMS prior to GC-MS-SIM analysis. The limits of quantitation were <100 pg/mg for all drugs and the limits of detection <50 pg/mg. The intra-day and inter-day precisions of the assay were determined at 500 ng/mg and 2000 ng/mg and were <10% for all drugs.

An evaluation of the suitability of internal and external control samples was carried out throughout the validation process. Internal and external controls consisted of either spiked blank hair samples or pooled positive hair samples. The validation process found the controls to be effective and laboratory methodology was amended for their inclusion in all subsequent batch analyses. The validation data demonstrate that the method for the analysis of opiates and methadone in hair is sufficiently reproducible, robust and sensitive to carry out routine analysis within an IEC/ISO 17025 accredited laboratory.

**Hair Analysis, Opioids, ISO 17025**