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论文

GC/MS法检测头发中6-单乙酰吗啡和吗啡

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摘要:

建立了用GC/MS-SIM技术,检测人头发中毒品海洛因的主要代谢产物6-单乙酰吗啡和吗啡的方法。取头发样品50～100mg洗净后剪碎,以乙基吗啡为内标,酸水解后用混合溶剂氯仿—异丙醇—庚烷(50∶17∶33)提取。提取物经MSTFA衍生化,采用GC/MS-SIM定性定量分析。6-单乙酰吗啡和吗啡在浓度1～100ng·mg^{-1}范围内相关系数分别为0.9996和0.9997,方法回收率达50%以上,日内及日间误差分别低于8%和10%,最低检测限为0.5ng·mg^{-1}。应用此法分析12例吸毒嫌疑人的头发样品,检出阳性结果8例。此法简单、准确、灵敏度高,适用于实际工作需要,可为当前政法部门打击贩毒、吸毒提供确凿的证据。

关键词: 毛发分析 6-单乙酰吗啡 吗啡 海洛因 气-质联用法

DETECTION OF HEROIN METABOLITES: 6-MONOACETYLMOR PHINE AND MORPHINE IN HUMAN HAIR BY GC/MS

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Abstract:

This paper presents a method to detect the main metabolites of heroin: 6-monoacetylmorphine (6-MAM) and morphine (MOR) in human hair using GC/MS-SIM. The hair specimens were washed with special solvents and cut into about 0.5 mm pieces. Ethylmorphine was added as internal standard and HCl solution for hydrolysis. After hydrolysis, 6-MAM and MOR were extracted by a mixture of solvents (chloroform—isopropyl alcohol—heptane 50∶17∶33). The residue of the extract was derivatized with *N*-methyl-*N*-trimethylsilyl trifluoroacetamide(MSTFA), then the trimethylsilyl(TMS) derivatives were qualitatively and quantitatively analyzed using GC/MS-SIM. The correlation coefficients for 6-MAM and MOR were 0.9996 and 0.9997, respectively. The recoveries of both 6-MAM and MOR were over 50%. The RSD of within day and between-day was less than 8% and 10%, respectively. The lower limit of detection of both 6-MAM and MOR was 0.5 ng·mg^{-1}. Hair samples of 12 drug abusers were analyzed using this method, 8 of them gave positive results. This method is simple, accurate and sensitive. It is very suitable for routine case work.

Keywords: 6-Monoacetylmorphine Morphine Heroin Gas chromatography-mass spectrometry Hair analysis

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