

Electronic supplementary material for

Direct detection of morphine in human urine by surface-ionization mass spectrometry

D. T. Usmanov*, Sh. Dj. Akhunov, U. Khasanov, V.M. Rotshteyn, B. Sh. Kasimov

Institute of Ion-Plasma and Laser Technologies, Durmon Yoli street 33, 100125, Tashkent, Uzbekistan

Correspondence to: Dilshadbek Usmanov ; usmanov@iplt.uz

Experimental condition of GC-MS

Equipment

Analysis was conducted on an Agilent 7890A gas chromatograph (GC) coupled with an Agilent 5975C triple quadrupole mass spectrometer (inert MSD with Triple-Axis Detector, USA).

Gas chromatography conditions

The sample injection volume was 1 μ L and the injection was made at 250°C injector temperature. Carrier gas was Hydrogen introduced at a flow rate of 1.25 mL/min. Hydrogen was produced by using Hydrogen generator (Hydrogen, Peak Scientific Instruments, Scotland, UK). Separation was performed on a HP-5MS capillary column (length: 30 m, internal diameter: 0.25 mm, film thickness: 0.25 μ m, USA). Oven temperature was kept at 100°C for 1 min, followed by a ramp 50°C/min to 250°C, and was finally held constant for 4 min.

Mass Selective Detection

Transfer line temperature was 280°C. Electron impact ionization was performed at 70 eV energy, and at a 250°C ion source temperature. The quadrupole temperature was 150°C. The MS was operated in single ion monitoring mode.

Samples

1 μ l spiked samples were injected manually. No preliminary derivatization and extraction of the spiked samples were performed.

Data Acquisition and Processing

Data were acquired by Agilent Chemstation Software (USA).

Fig.S1. Structure of doublet main fragment ions of morphine: m/z 144 (a) m/z 146 (b).

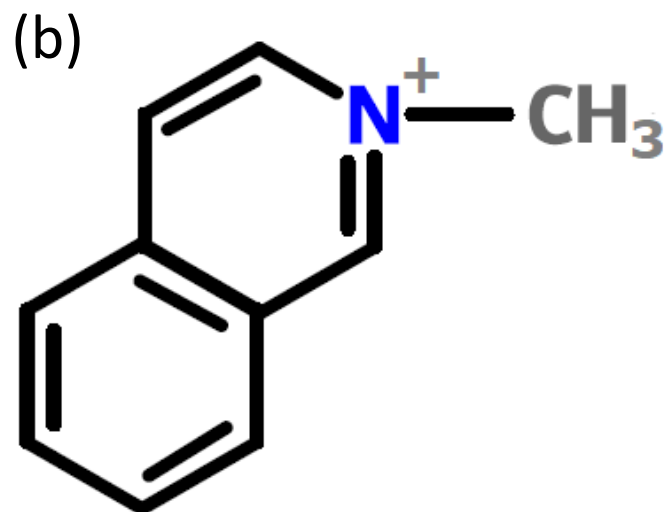
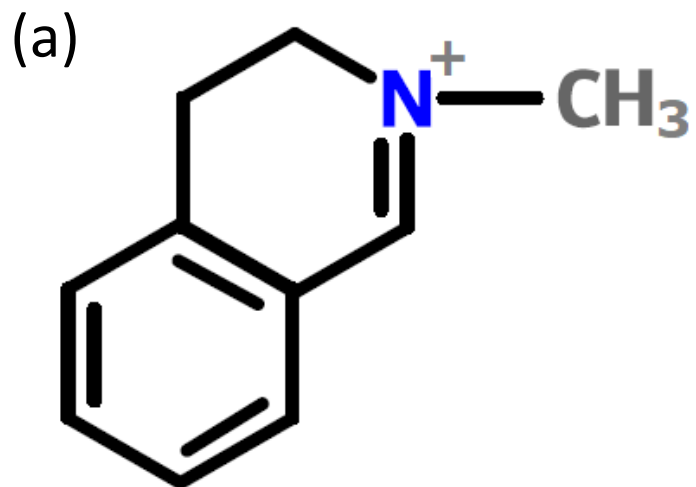


Fig.S2. Chromatogram (a) and mass spectrum of morphine spiked with blank urine (b). Concentration was 50 $\mu\text{g/mL}$.

