Extreme case of designer drug abuse

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The identification of new designer drugs presents the largest problem in the clinical and forensic toxicology examinations as reference materials are not available, their metabolism is less known and their versatility is unlimited. The medical condition of a drug user is frequently critical, requiring intensive care with the possibility of long-term adverse reactions.

Examinations:

Ethanol (serum) :
   enzymatic Roche, Integra
Ethanol, GHB (serum) : GC
Semiquant. tests (urine) :
   THC, BZO: FPIA Abbott Axsym
Tox screen (urine) :
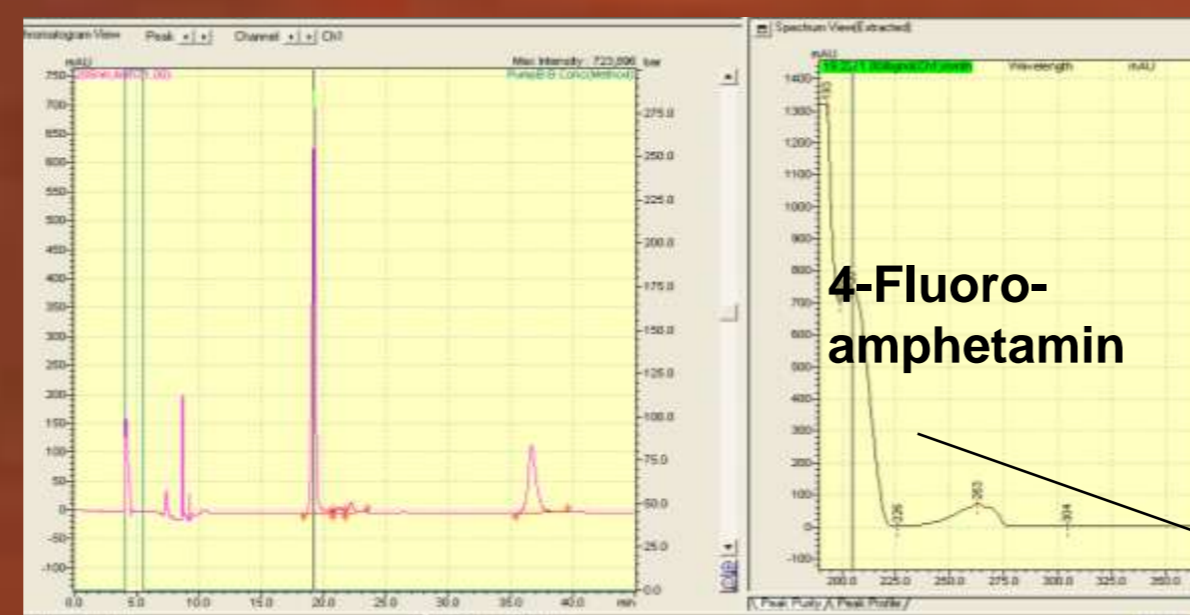   HPLC-DAD, Shimadzu TOX.I.S.
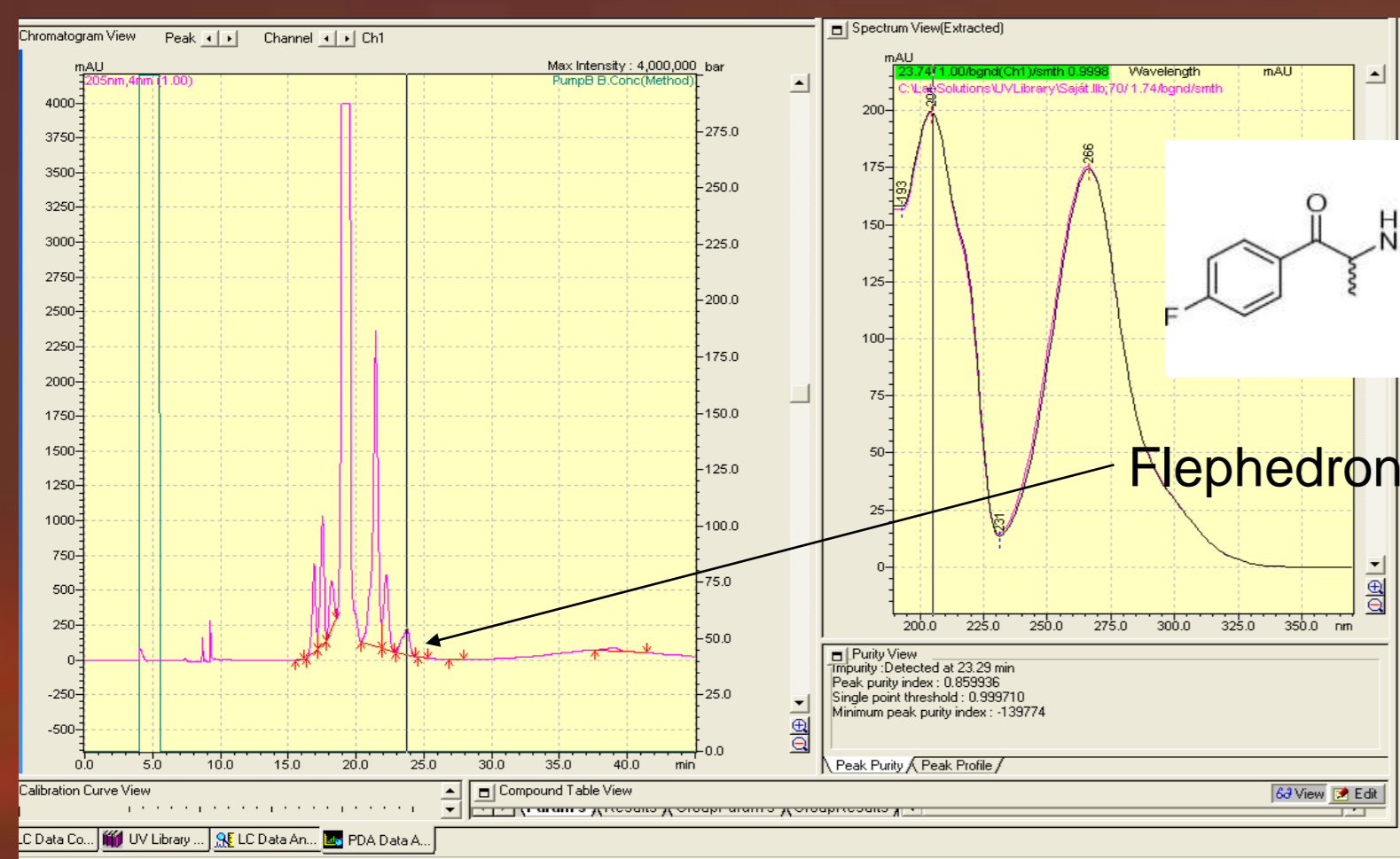
Clinical case:

26 years old male
Chronic recreational drug user
Arrived by ambulance car to the Emergency Department
Unable to communicate
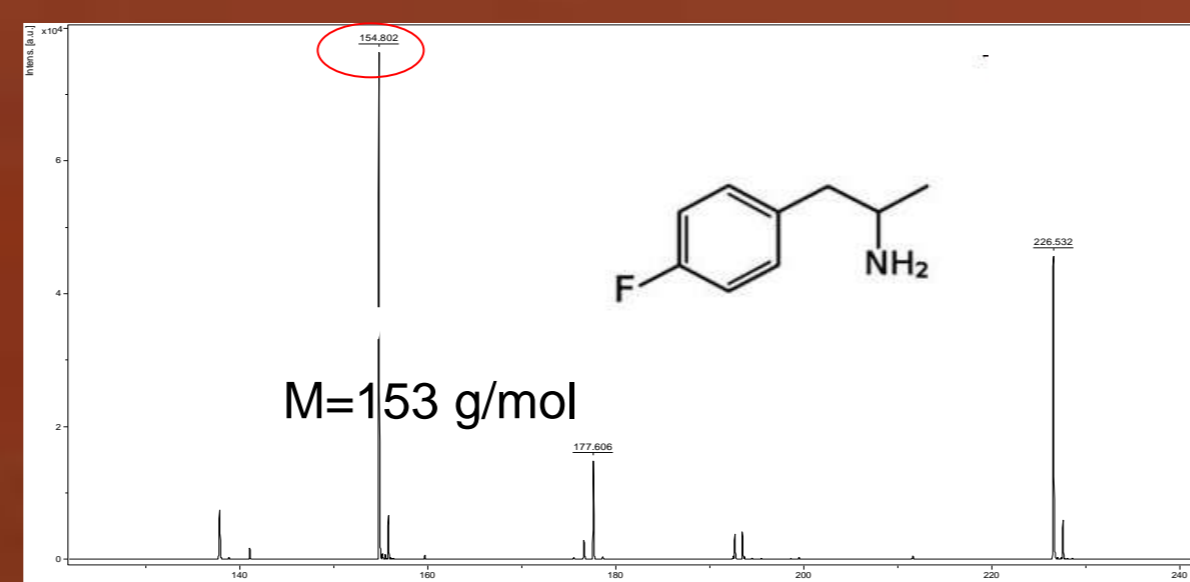*Anamnesis:* GHB, Etil-methcathinone?

Symptoms:
• Dizziness
• Sweating
• Limb shivering
• Tachycardia

Flephedrone

Native urine

Shimadzu Prominence TOX.I.S.
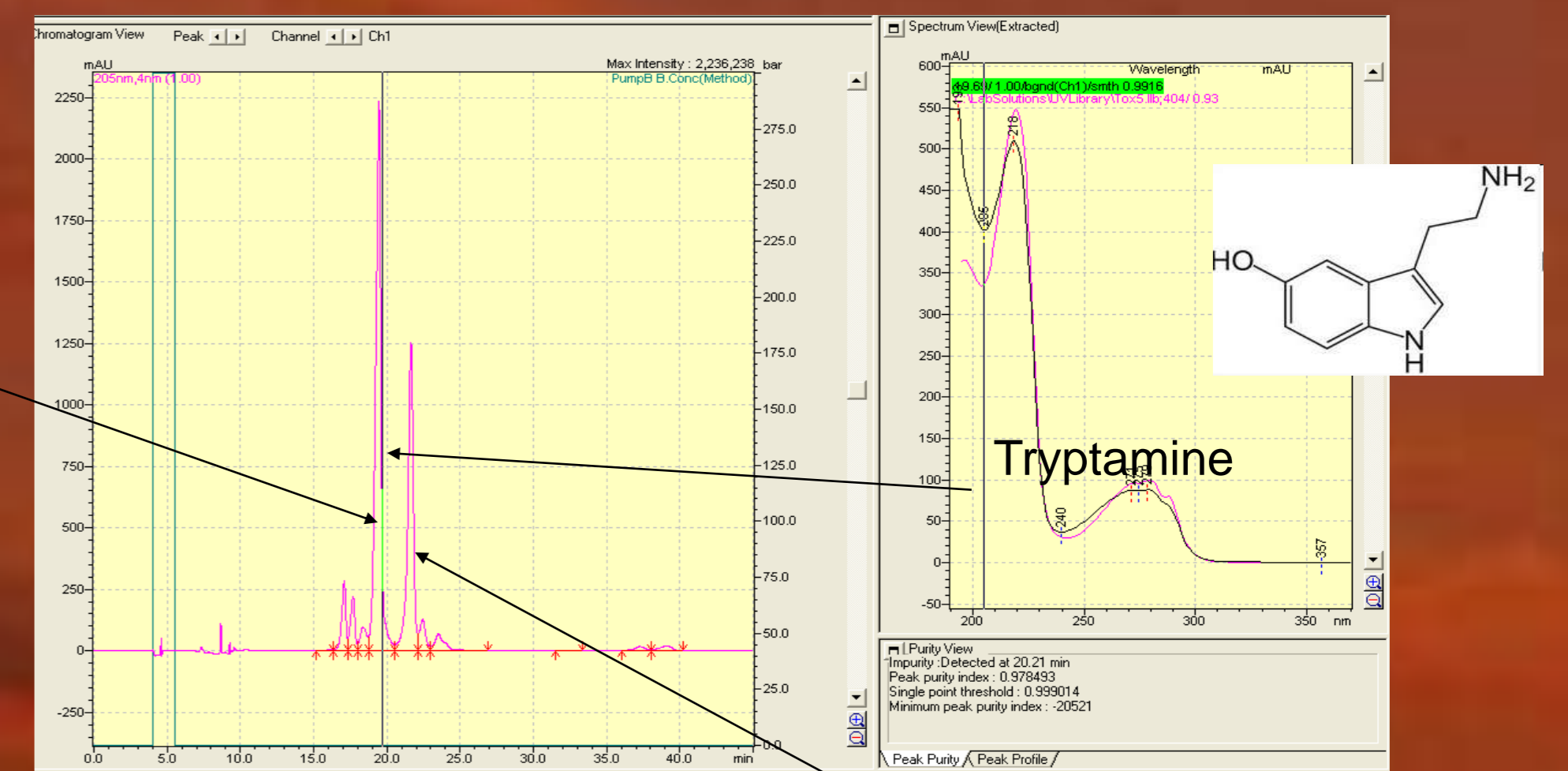
Bruker MALDI-TOF

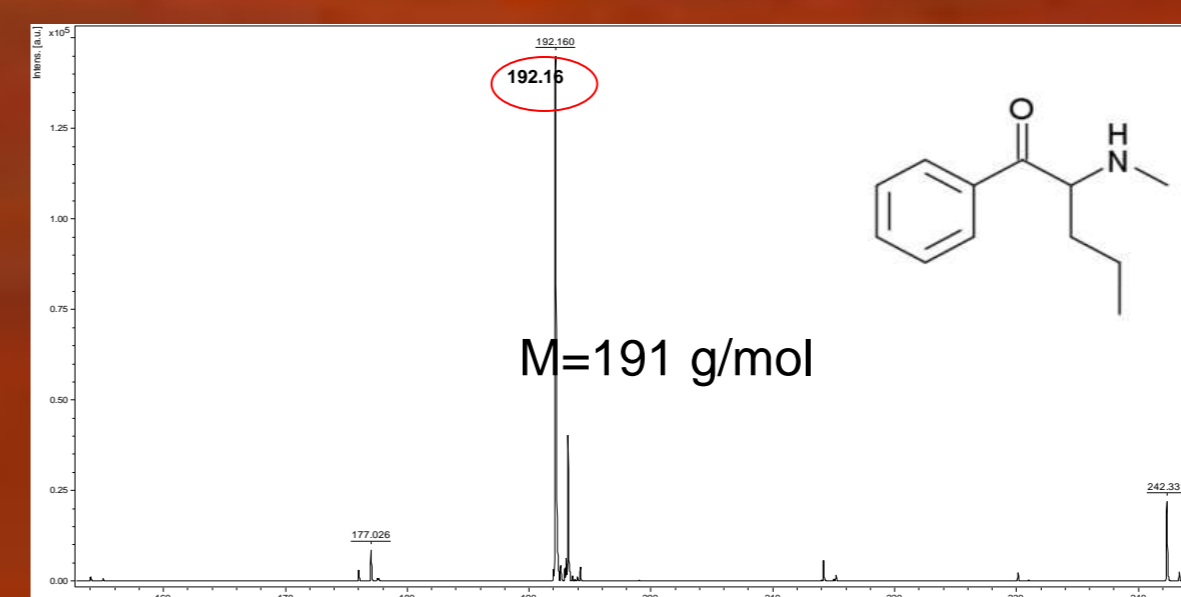4-Fluoro-amphetamin
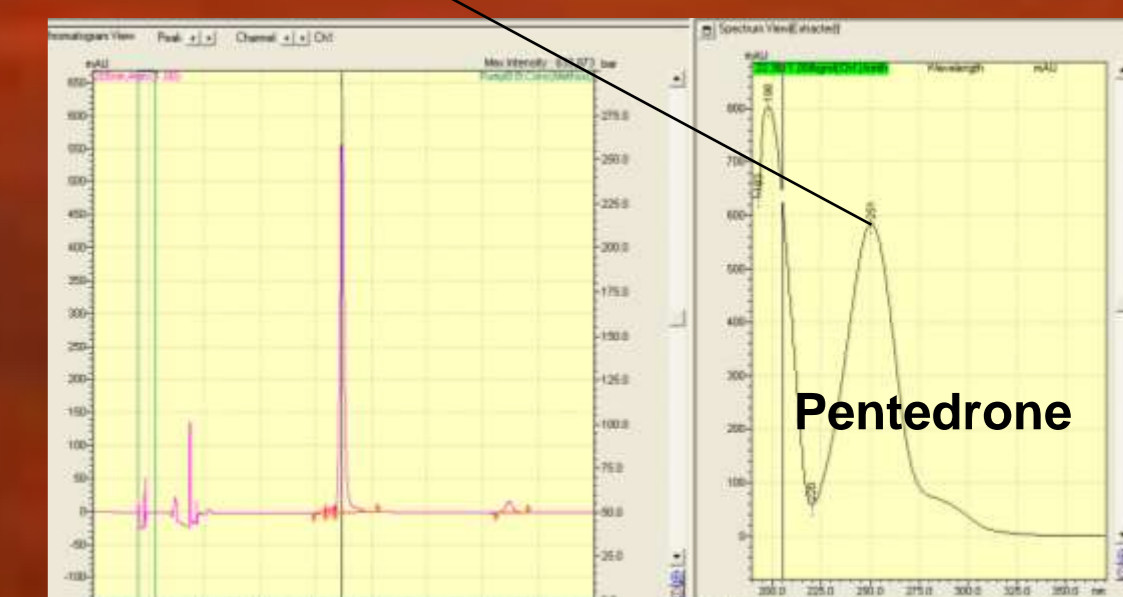
M=153 g/mol

„Reference" 4-fluoro-amphetamine

Tryptamine

10* diluted urine

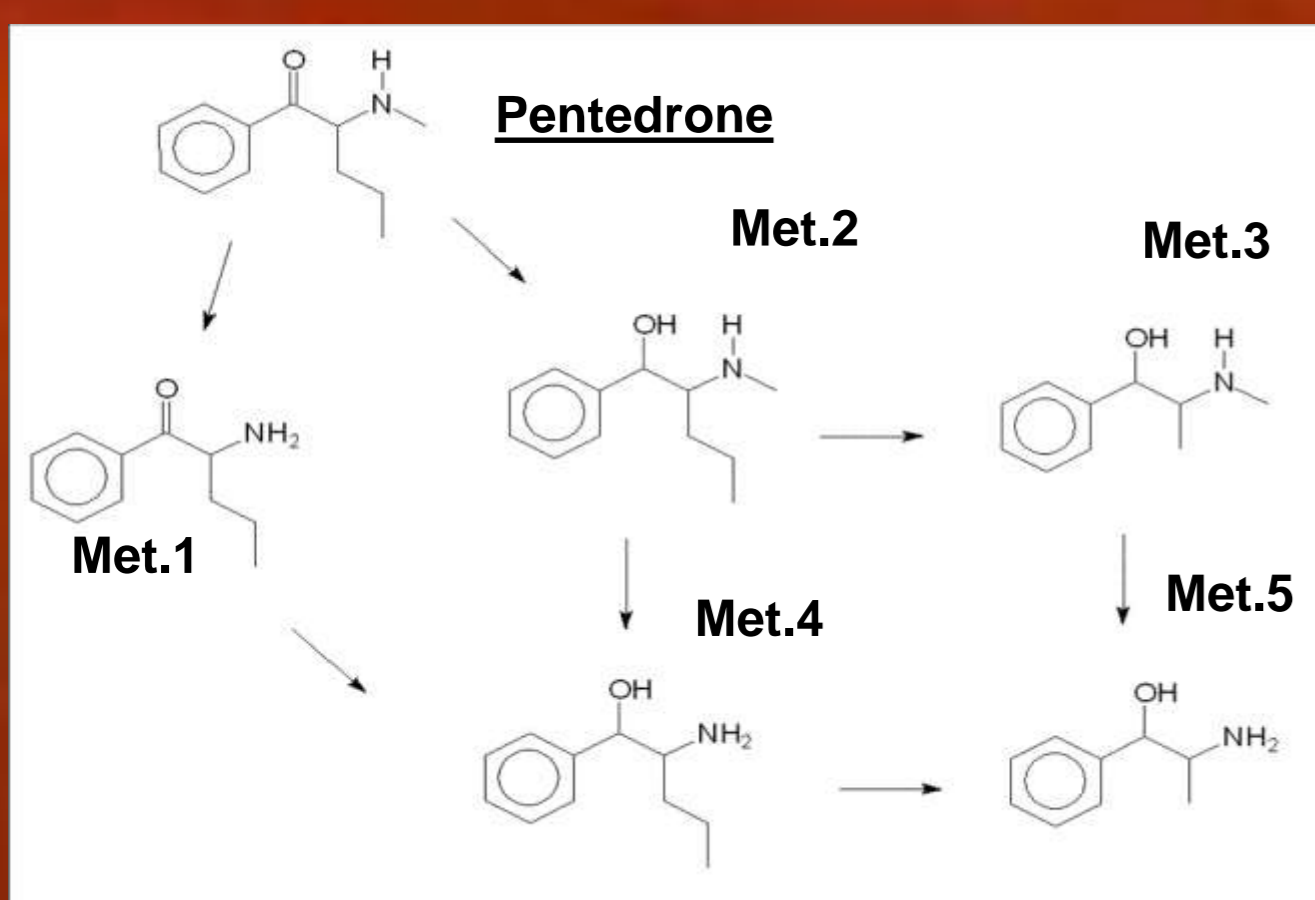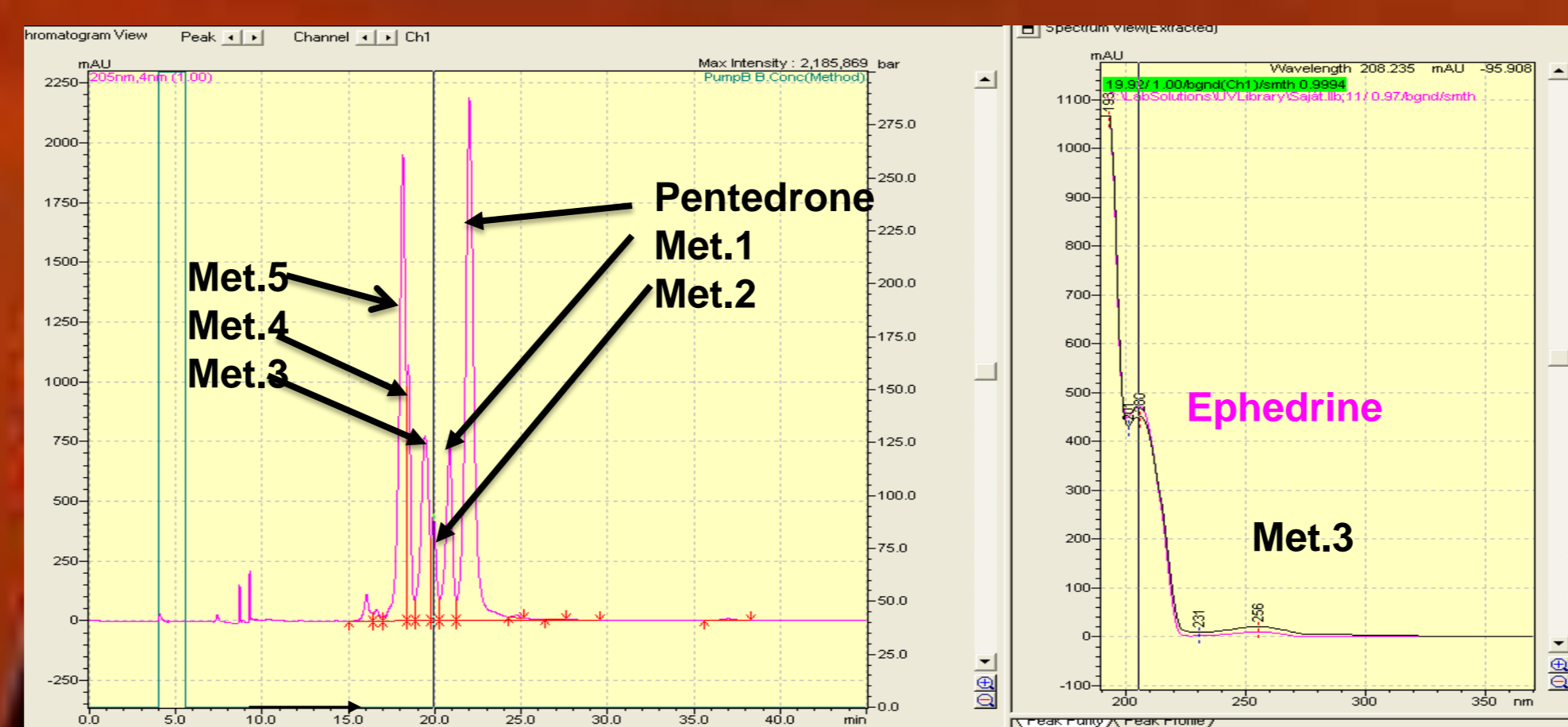„Reference" materials were qualitatively validated by MS: MALDI TOF

M=191 g/mol

Pentedrone

„Reference" Pentedrone

Pentedrone

Met.1
Met.2
Met.3
Met.4
Met.5

Pentedrone and its possible metabolits

Pentedrone
Met.1
Met.2
Met.5
Met.4
Met.3

Ephedrine

Met.3

Chromatogram of a pentedrone user's urine
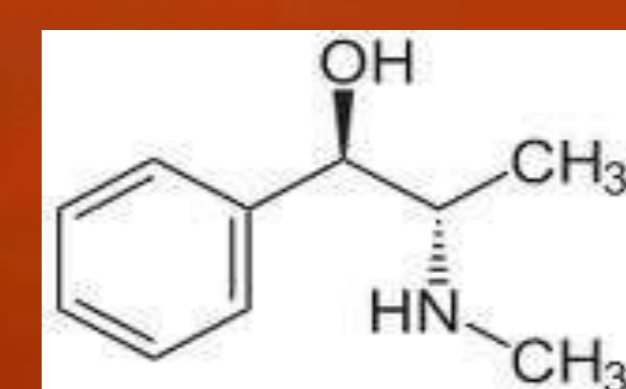
Ephedrine
RRT: 0,553

≈

Met.3
RRT: 0,538

Result:

4-Fluoro-Amfetamin
Tryptamine   *very large quantity*
Pentedrone
Flephedrone   *medium quantity*

From the relative quantity pentedron metabolits:
   recent drug consuption is possible.

EtOH: none
GHB: **+**
THC: 30ng/ml
Benzodiazepine: 94ng/ml

In conclusion, consumers of various designer drugs might be viewed as the participants of a "pharmaceutical study", who voluntarily „accept" to take part in a dangerous and uncontrolled "experiment" and "help" us to discover new drugs, metabolic routes and adverse effects.