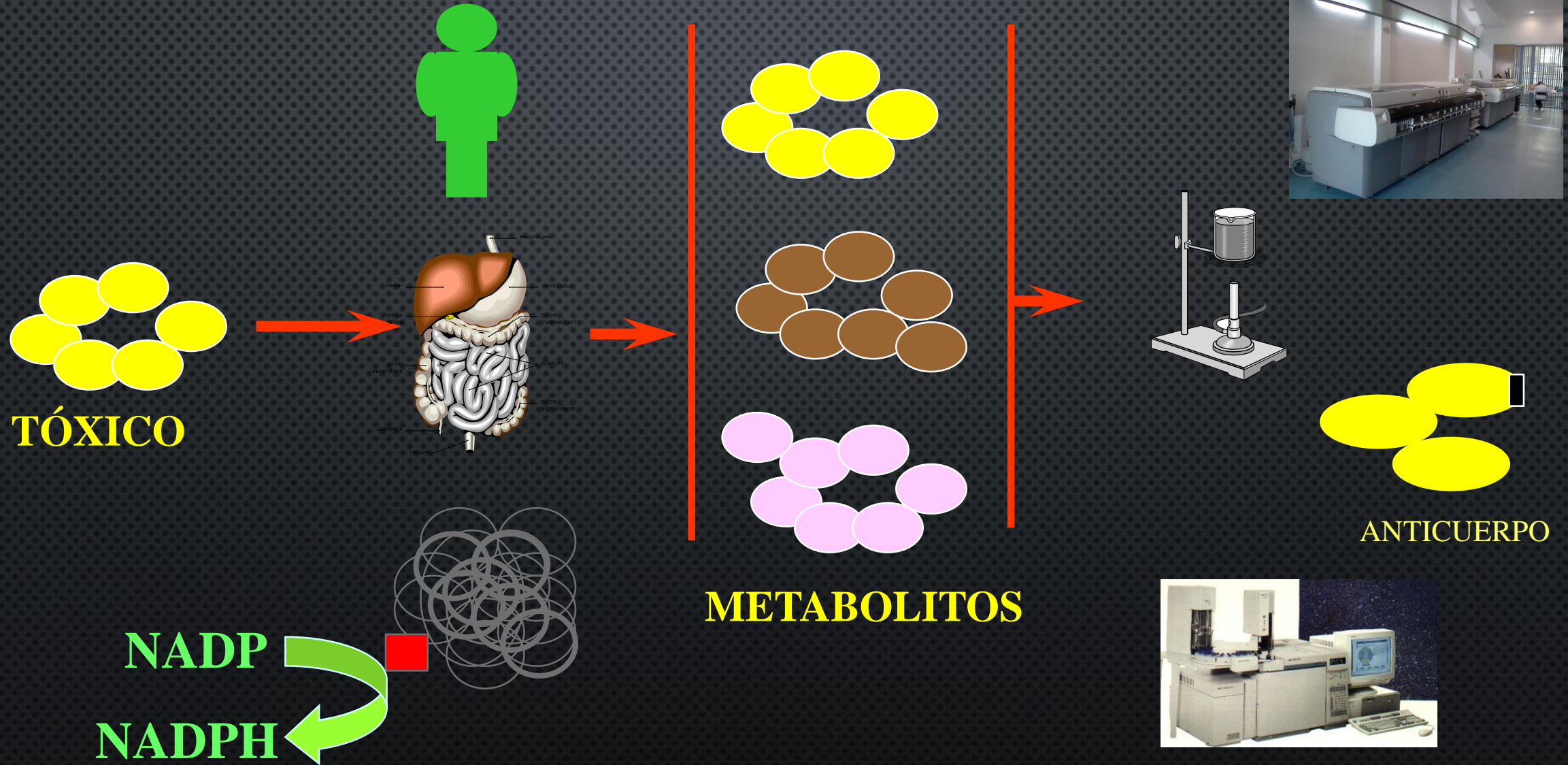


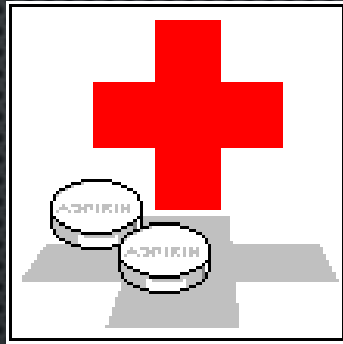
PRUEBA CONFIRMATORIA CROMATOGRAFIA DE GASES MASAS

DR.EN C. ELIAS MIRANDA GONZÁLEZ

EN EL ORGANISMO LAS DROGAS SE BIOTRANSFORMAN A METABOLITOS



METODOLOGIA...



NATURALEZA DEL ANALITO

ENDOGENA

EXOGENA O XENOBIOTICA

TAMAÑO

PM = 7 - 100,000

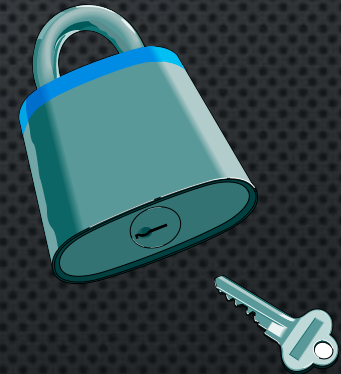
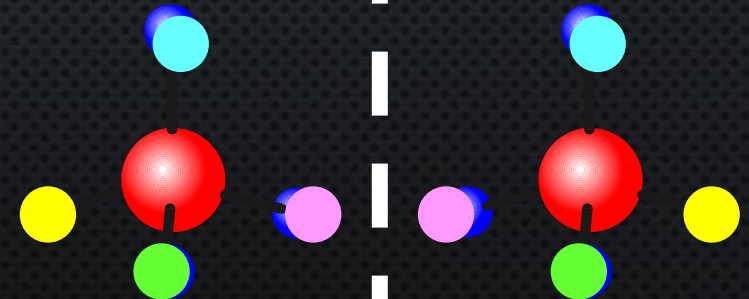
100 - 1000

REACTIVIDAD



FORMA

QUIRALIDAD

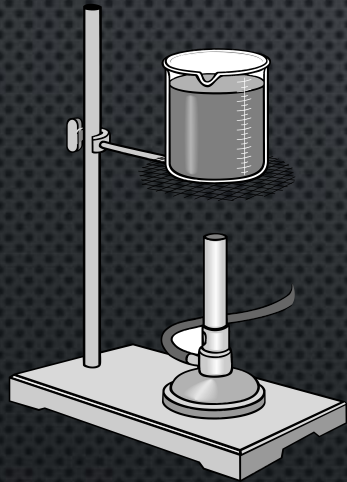


METODOLOGIA...

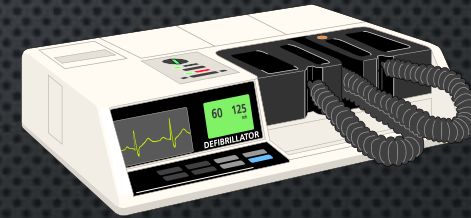
INMUNOQUIMICA

VOLUMETRIA

CROMATOGRAFIA



E. INFRARROJA



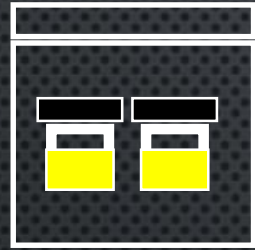
GRAVIMETRIA

ESPECTROMETRIA DE MASAS

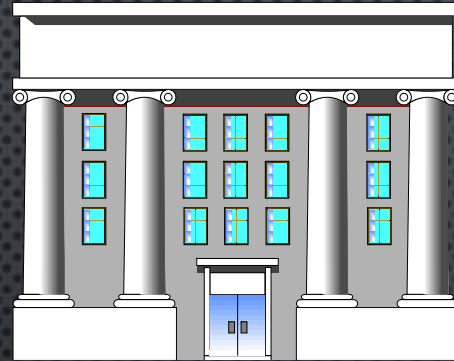
FOTOMETRIA

RESONANCIA MAGNETICA NUCLEAR

LABORATORIO...



BOLSA



**PRUEBA DE PRESELECCION
O PRESUNTIVA**



**PRESUNTAS
POSITIVAS**



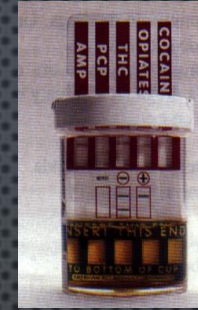
PRUEBA CONFIRMATORIA

**CROMATOGRAFIA DE GASES
ESPECTROMETRIA DE MASAS**

NEGATIVAS

ESQUEMA ACTUAL...

□ *PRESUNTIVA DE CAMPO*

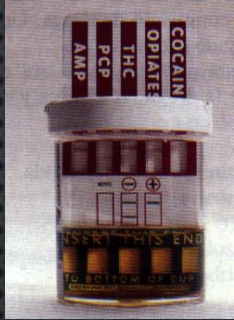


□ *ESTUDIO SEMICUANTITATIVO*



□ *CONFIRMACION GASES-MASAS*





PRESUNTIVA PLACA



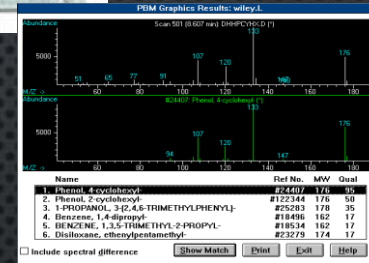
60 - 95 %

PRESUNTIVA AUTOMATIZADA



75 - 99 %

GC-MS



Biblio

10 - 99 %

Estandar

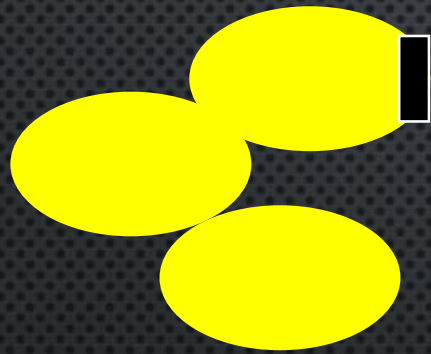
> 99 %

**EXAMEN PRELIMINAR
PRESUNTIVO
TAMIZAJE
"SCREENING"**

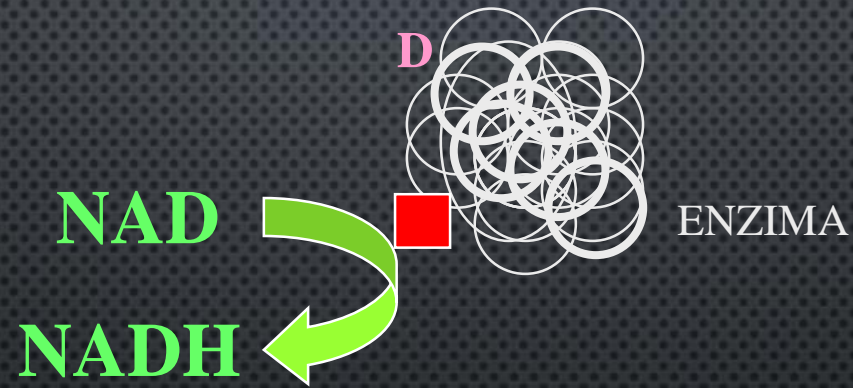
ANALISIS PRELIMINAR...

EMIT

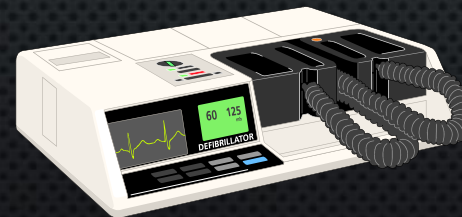
TECNICA DE INMUNOENSAYO ENZIMATICO MULTIPLICADO



ANTICUERPO



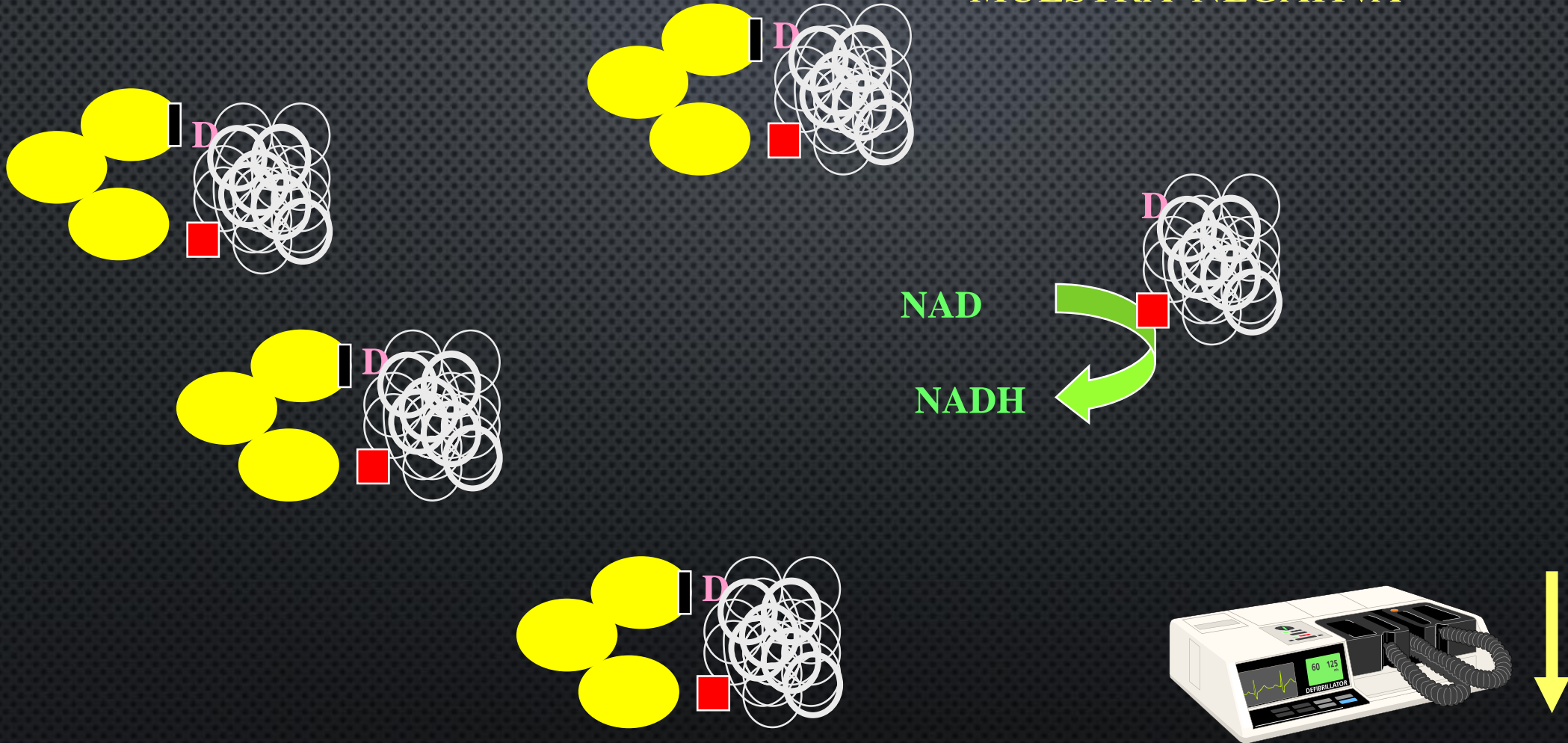
NADH



ABSORBE
340 NM

ANALISIS PRELIMINAR...

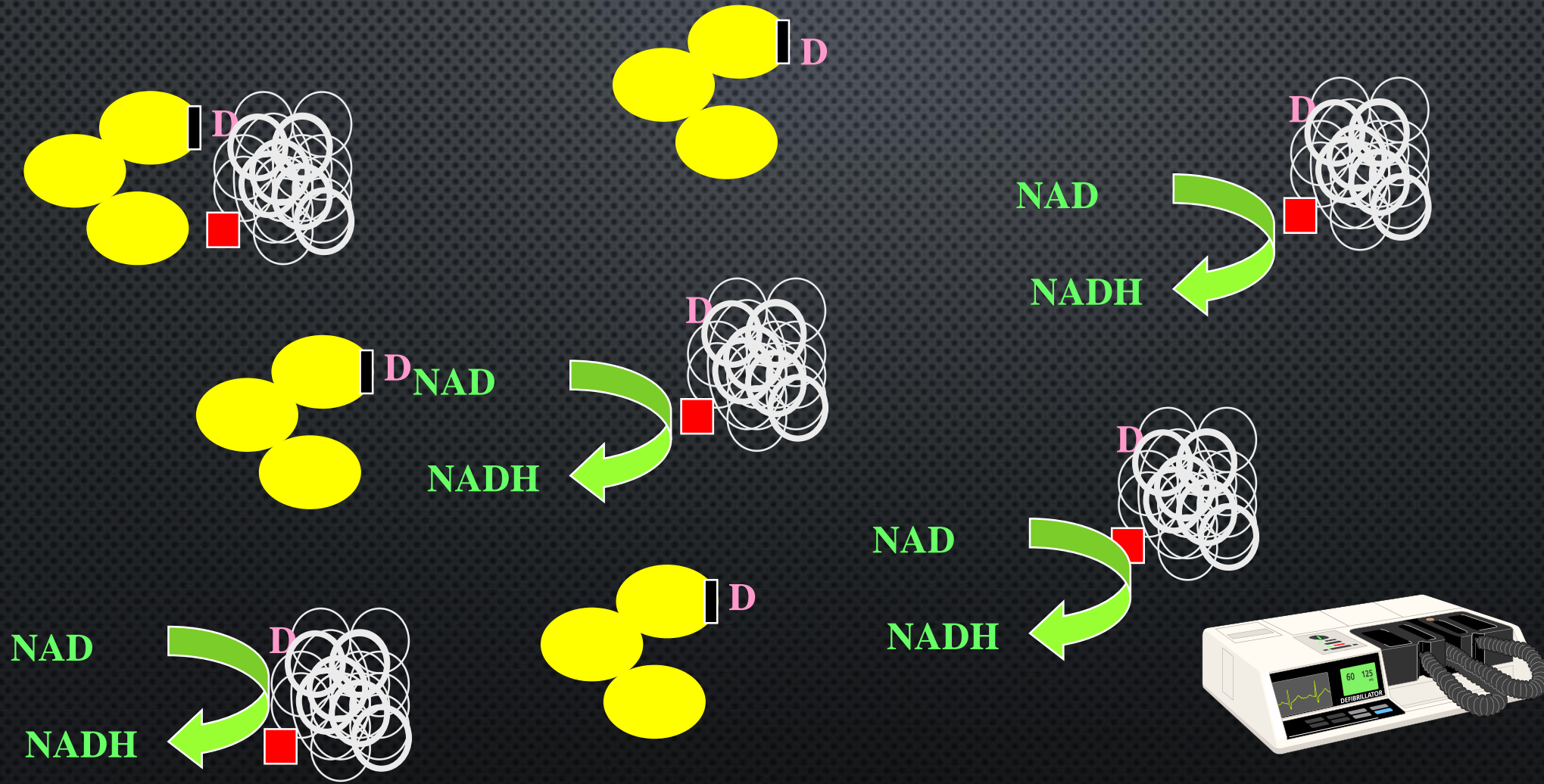
MUESTRA NEGATIVA



ANALISIS PRELIMINAR...

MUESTRA POSITIVA

EMIT



EXAMEN
CONFIRMATORIO

SISTEMA ACOPLADO...

INYECTOR
AUTOMATIZADO

CROMATOGRAFIA DE GASES

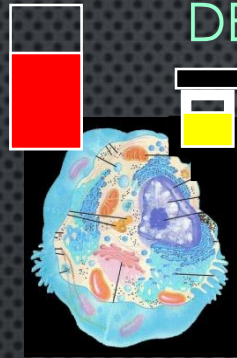
ESPECTROMETRIA
DE MASAS



COMPUTADORA

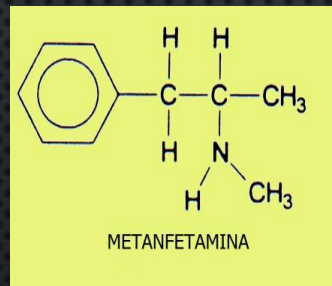
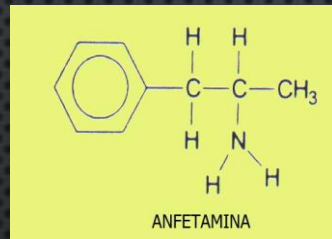
DETECCION DE ANFETAMINAS...

OBJETIVO **3**



PRETRATAMIENTO

EXTRACCIÓN
LÍQUIDO-LÍQUIDO



pKa = 9



DISOLVENTES
ACUOSOS

DISOLVENTES
ORGANICOS

CG-EM

CUANTIFICACIÓN

IDENTIFICACIÓN

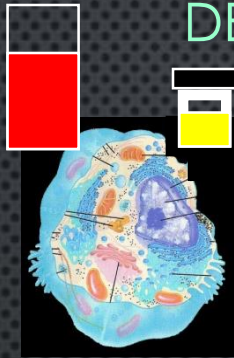
DERIVACIÓN
QUIMICA



DETECCION DE ANFETAMINAS...

OBJETIVO

3



→ **PRETRATAMIENTO** →

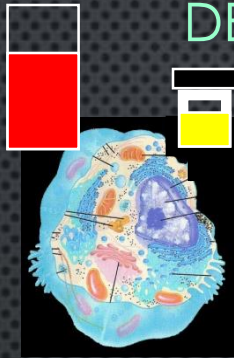
EXTRACCIÓN
LÍQUIDO-LÍQUIDO



DETECCION DE ANFETAMINAS...

OBJETIVO

3



PRETRATAMIENTO

EXTRACCIÓN
LÍQUIDO-LÍQUIDO

DERIVACIÓN
QUIMICA





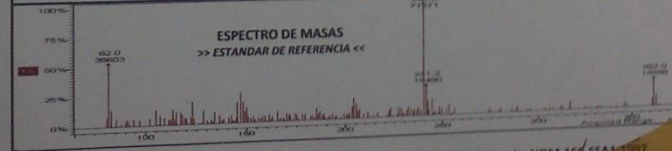
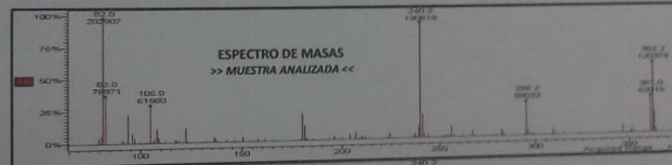
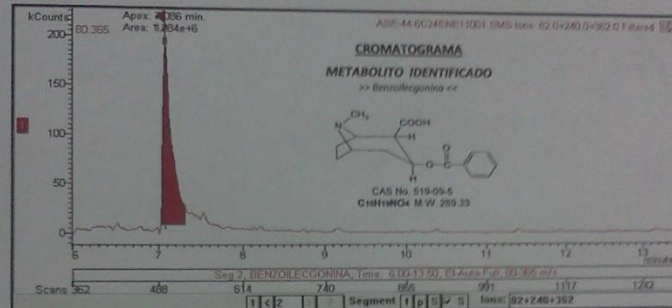
TECNOLOGÍA Y SERVICIO PARA SU SALUD

FECHA DE EXPEDICIÓN: 26-ENERO-2011
Pág. 2 de 2

REPORTE CROMATOGRÁFICO Y ESPECTRO DE MASAS



Donador: DE LA VEGA HERRERA RICARDO FELIPE RFC: VEHR820412 Folio: ASE-44-6C2AEHE11 Fecha de Análisis: 25-Ene-2011
 Resultado: Positivo (+) A: Metabolito de Cocaína "BENZOLECAGONINA" Tiempo de Retención: 7.086 min.
 Concentración: 679.308 ng/mL Iones: 82+240+362 Código de Procedimiento: PAR-TOX-007
 Equipo: Cromatógrafo de Gases /CP-3800/ Espectrómetro de Masas / Saturn 2200/ Operador: QFB, Jair Suárez Hdz.



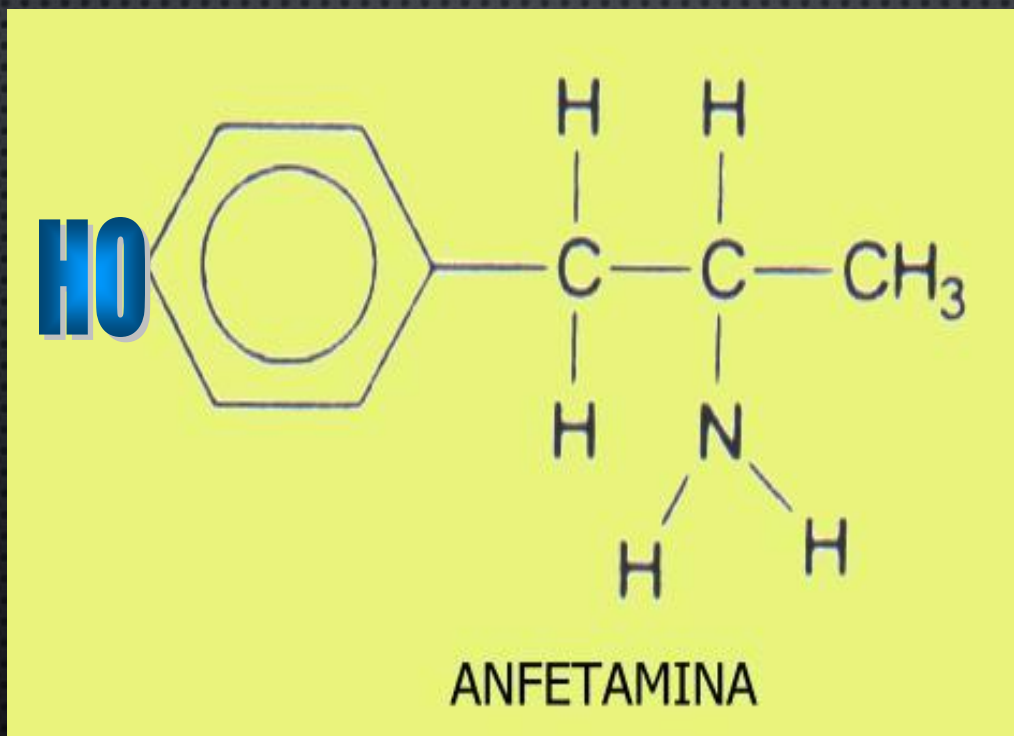
Responsable del laboratorio ante SSA
 M. en C. ELIAS MIRANDA GONZALEZ
 Cédula Profesional: 2760253
 Jefe del Laboratorio de Toxicología
 QFB, JAIR SUÁREZ HERNÁNDEZ
 Cédula Profesional: 444608

En concordancia con la NOM-166-SSA1-1997
 Firma a continuación:

TÉCNICA DE ESTÁNDARES INTERNOS

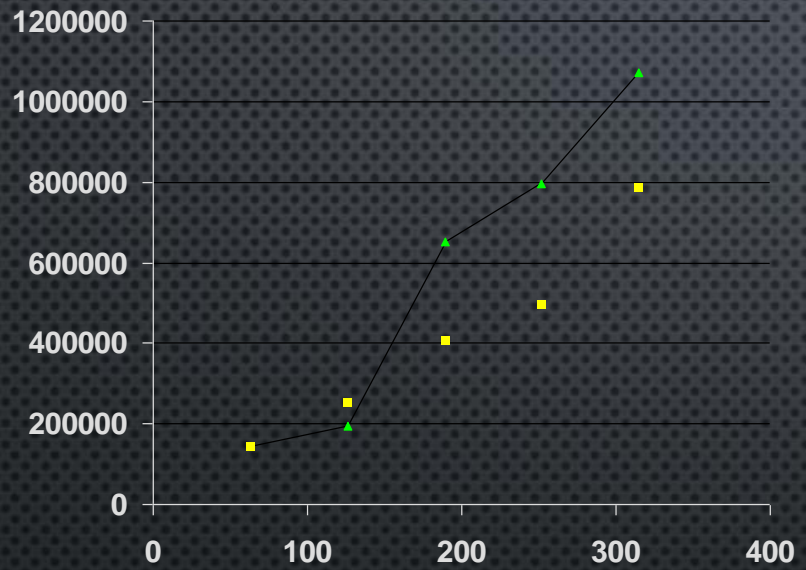
EST. INTERNO

SUSTANCIA QUIMICA CON PROPIEDADES
SIMILARES AL ANALITO

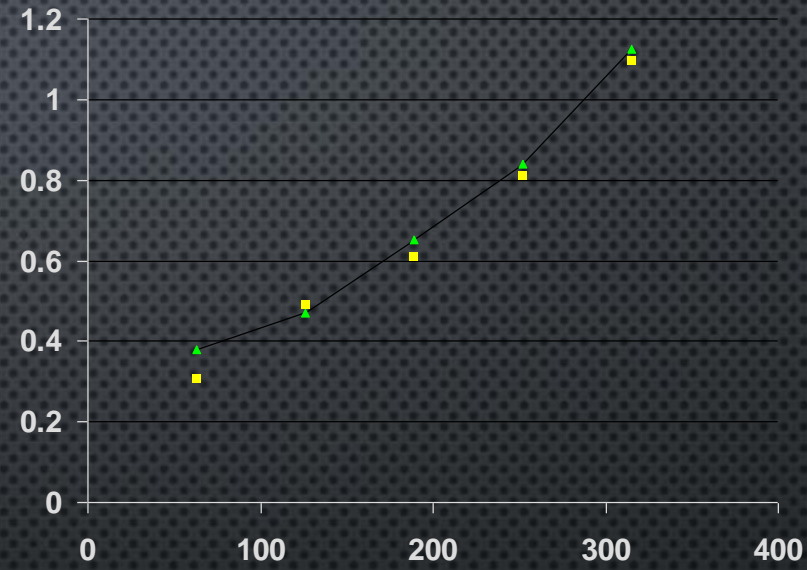


EST. INTERNO

EST. EXTERNO



EST. INTERNO



CONC. NG/ML

CONC. NG/ML

COEF. CORRELACION

1

2

3

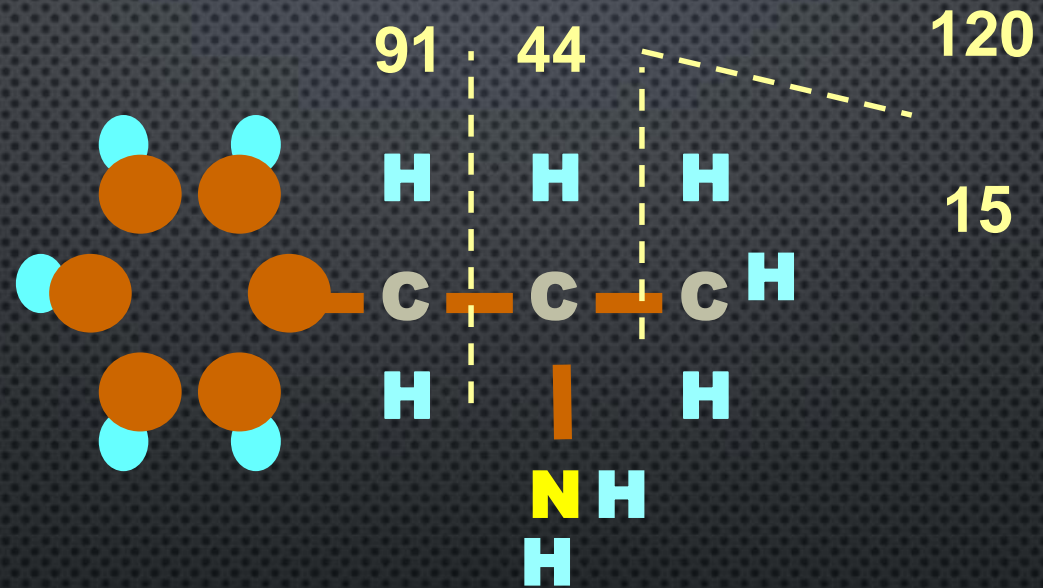
SIN EST. INT

0.9211 0.9199 0.8833

0.9845 0.9875 0.9913 CON EST. INT

ANFETAMINA...

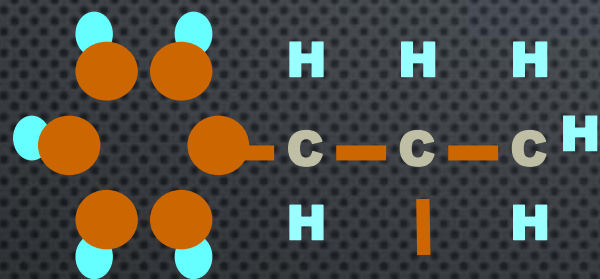
P.M. = 135



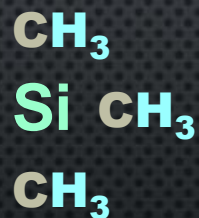
IONES

135, 120, 91, 44, 58

DERIVADO SILANIZADO...

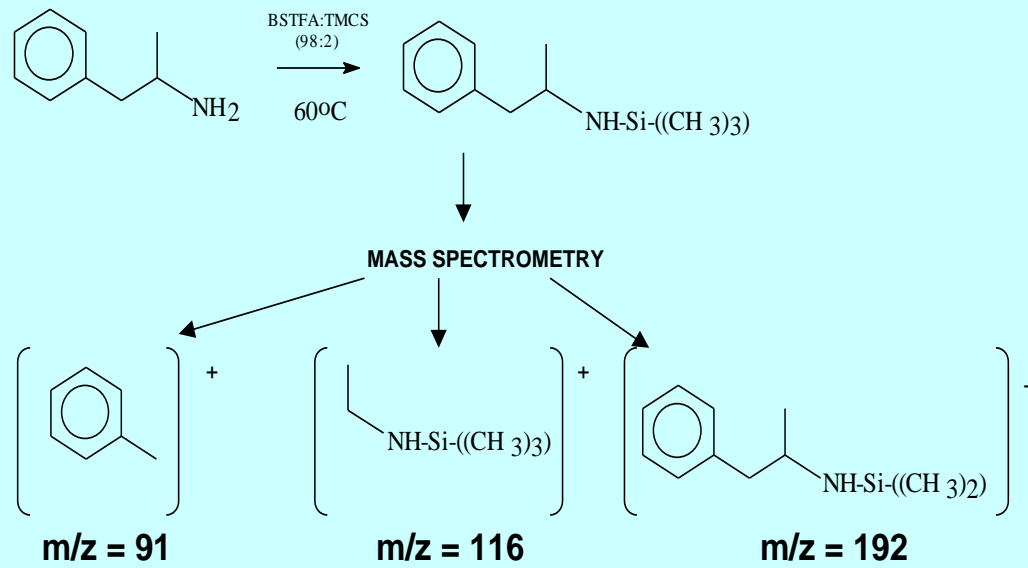


P.M. = 207

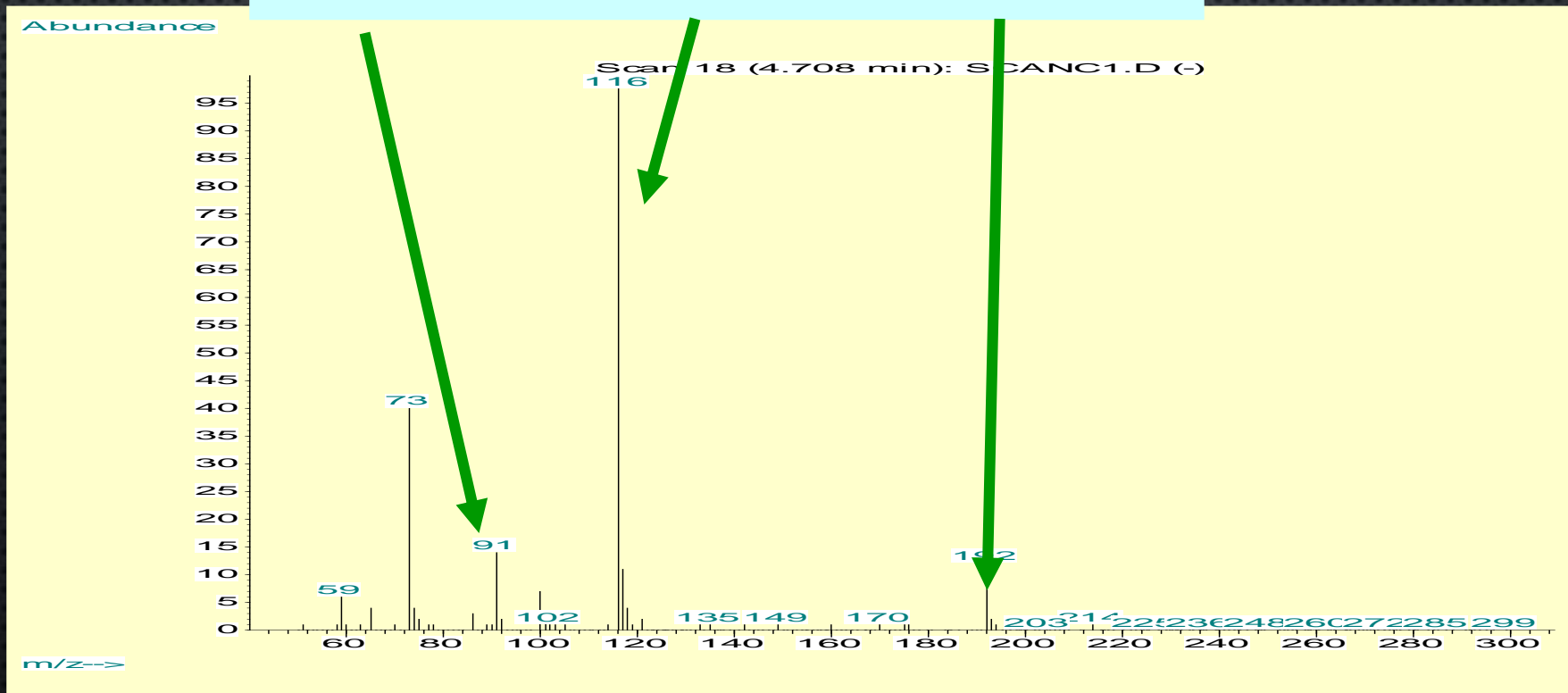


IONES

207, 192, 116, 91

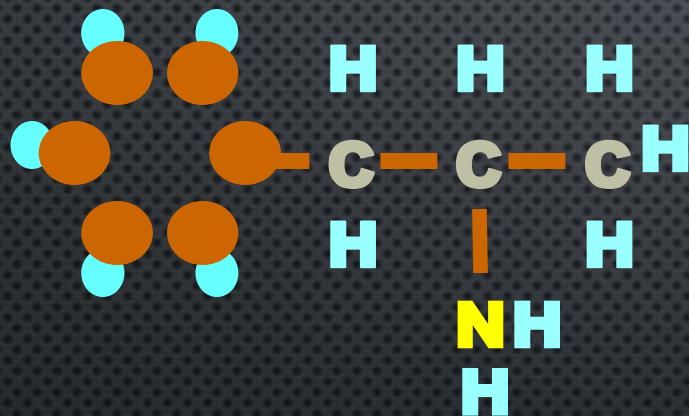


ESPECTRO DE MASAS



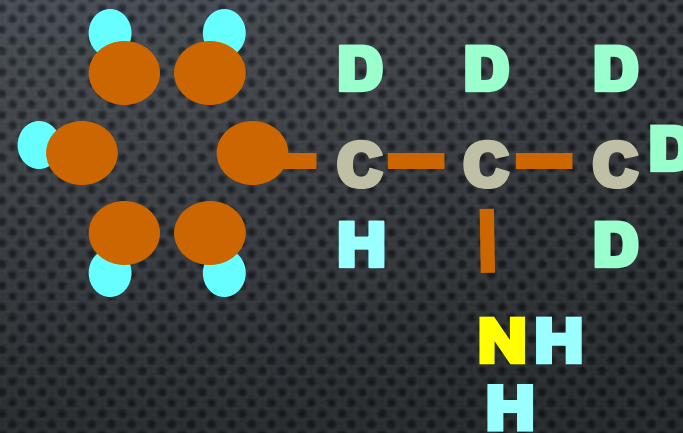
EST. INTERNO

DEUTERIADOS...



ANFETAMINA

P.M. = 135

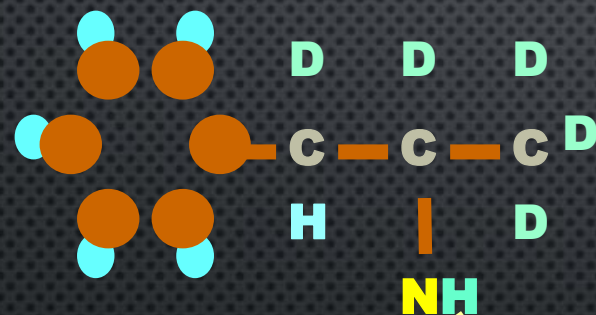


METANFETAMINA- D5

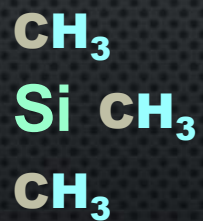
P.M. = 140

DERIVADO SILANIZADO...

ANFETAMINA DEUTERIADA



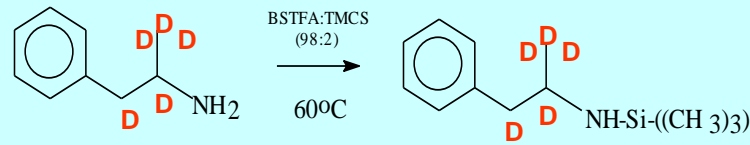
P.M. = 212



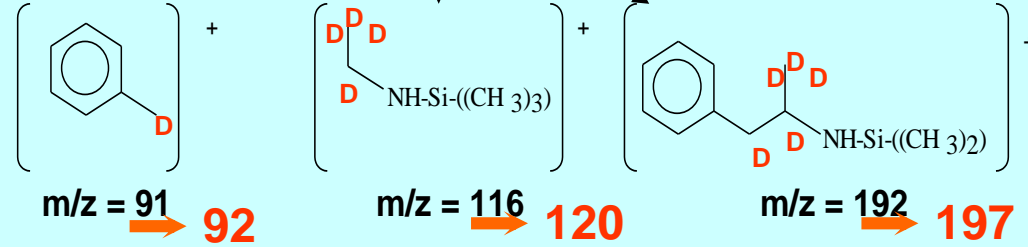
IONES

212, 197, 120, 92

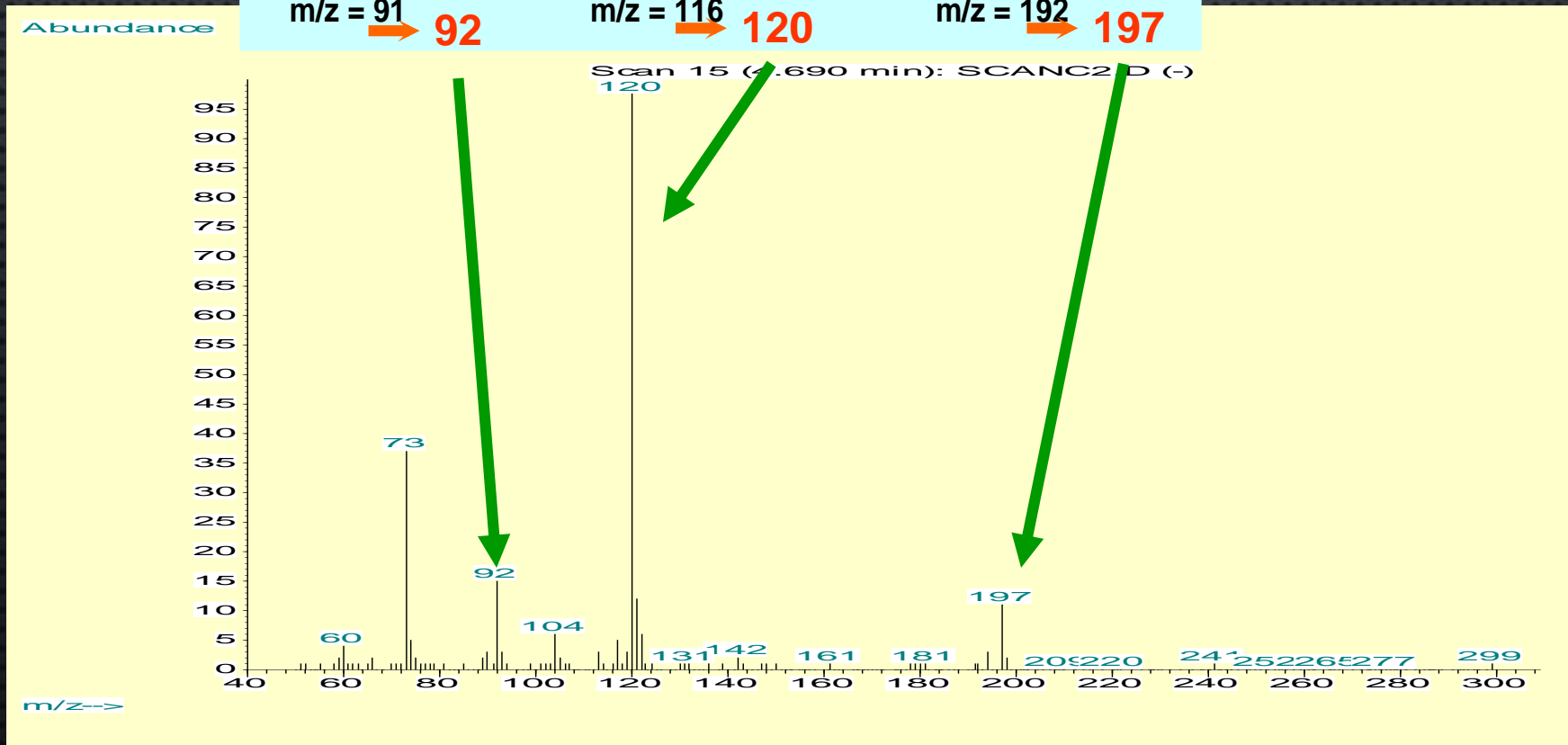
ANFETAMINA-D5



MASS SPECTROMETRY

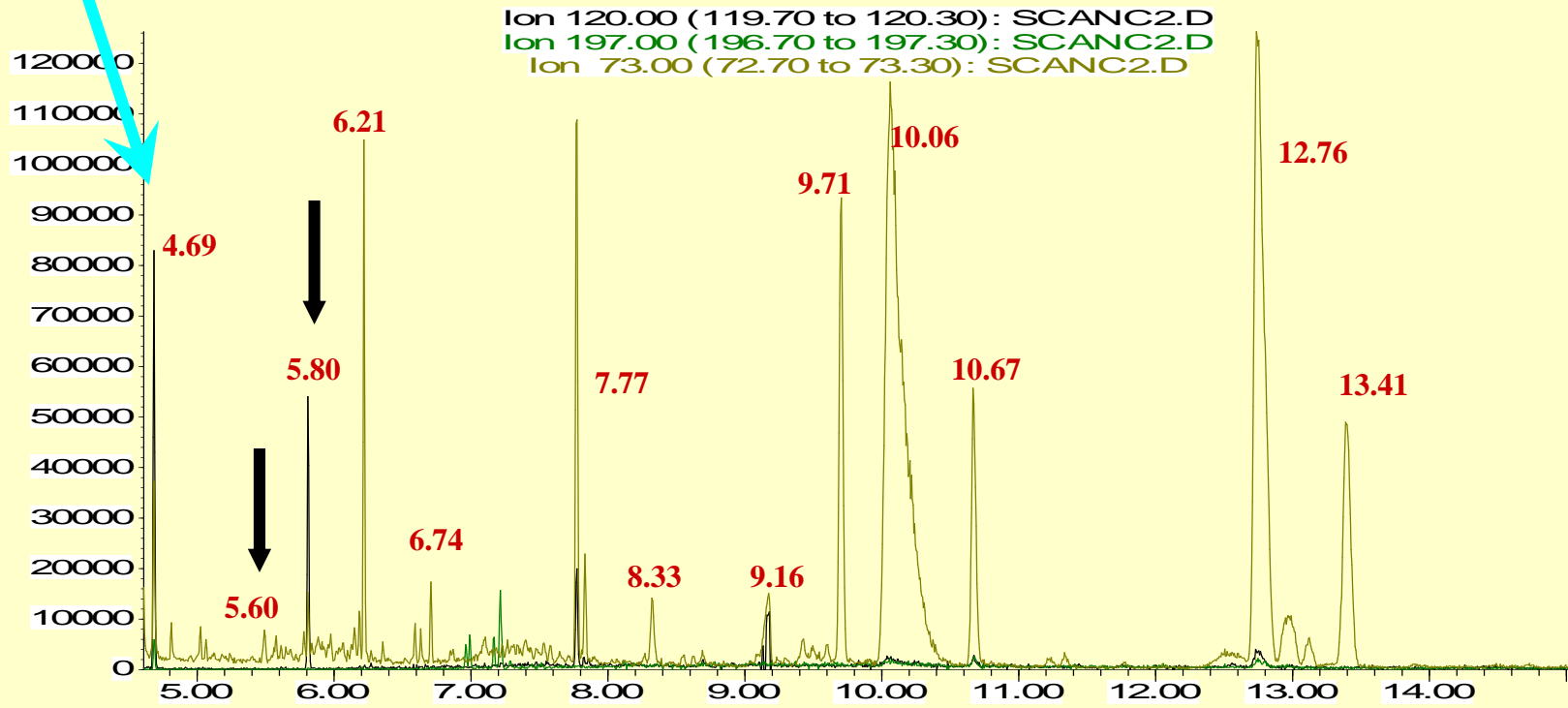


ESPECTRO DE MASAS



ANF-D5

Abundance



Time-->

**"LOS CONOCIMIENTOS TEÓRICOS ORIENTAN
LA REALIDAD PRACTICA DECIDE"**



g



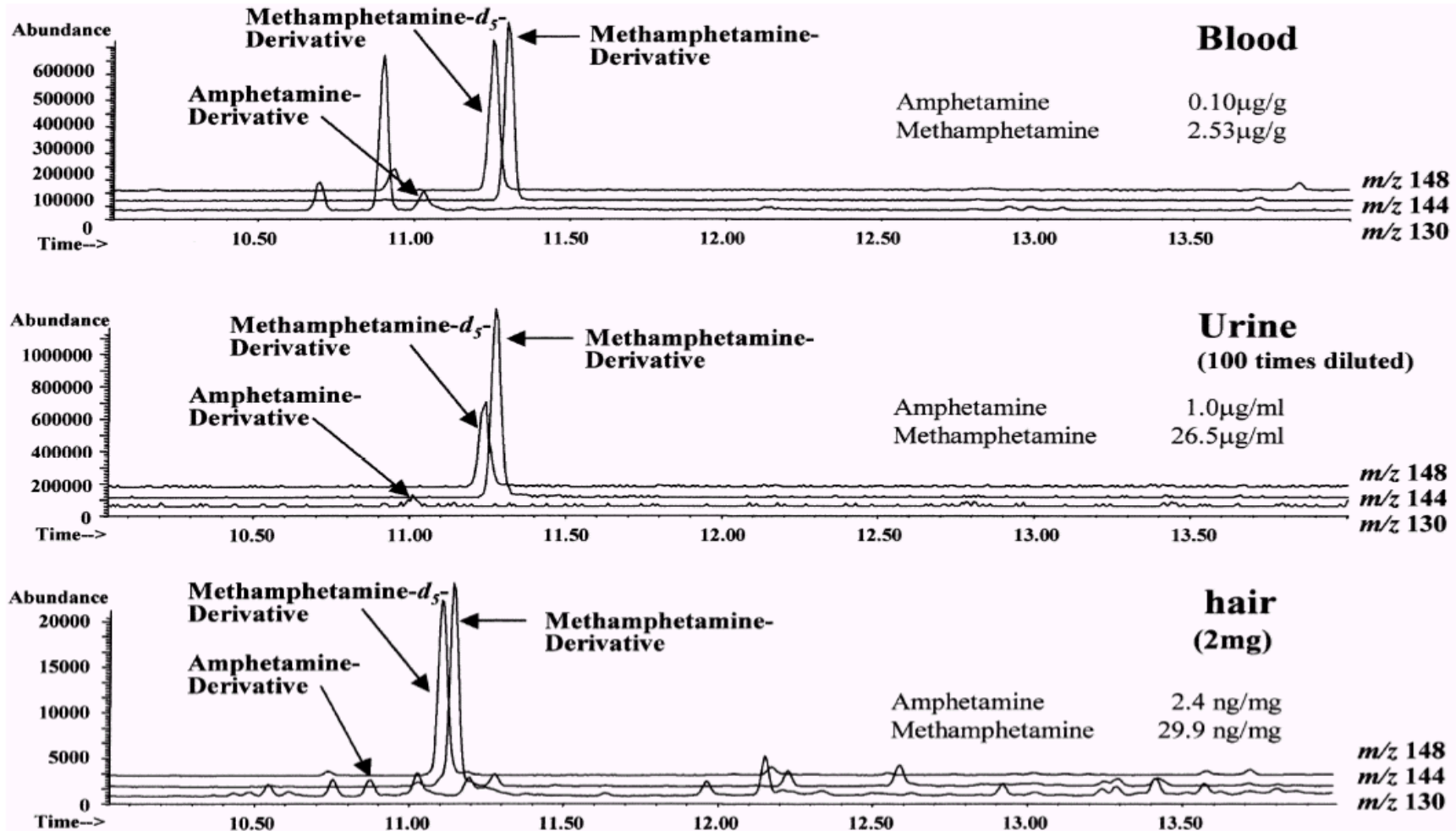
mg



µg



ng



SANGRE



ORINA



PELO

Fig. 4. SIM chromatograms of the derivatives extracted from blood, urine and hair of a medico-legal case.

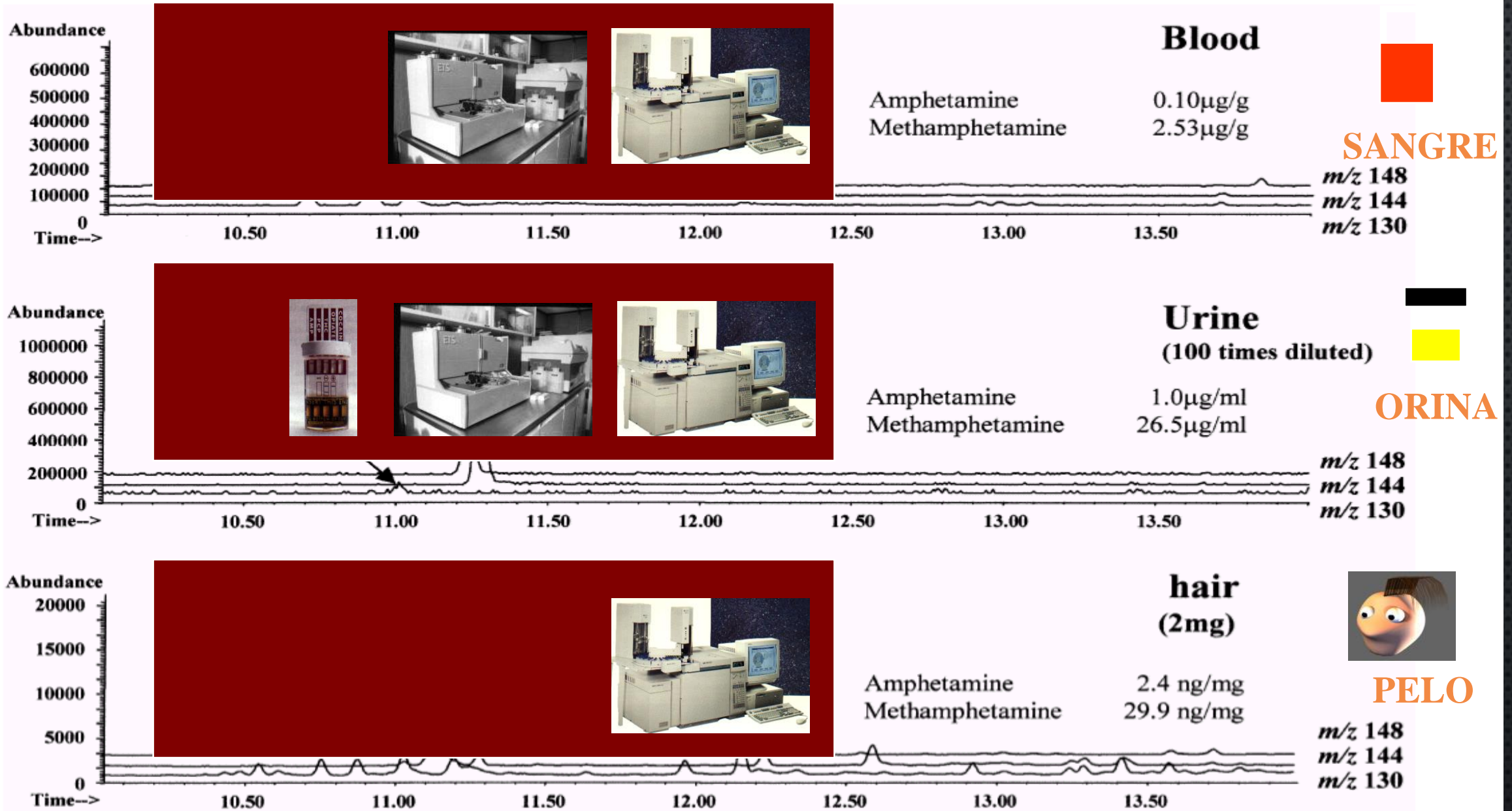


Fig. 4. SIM chromatograms of the derivatives extracted from blood, urine and hair of a medico-legal case.



SANGRE



SALIVA



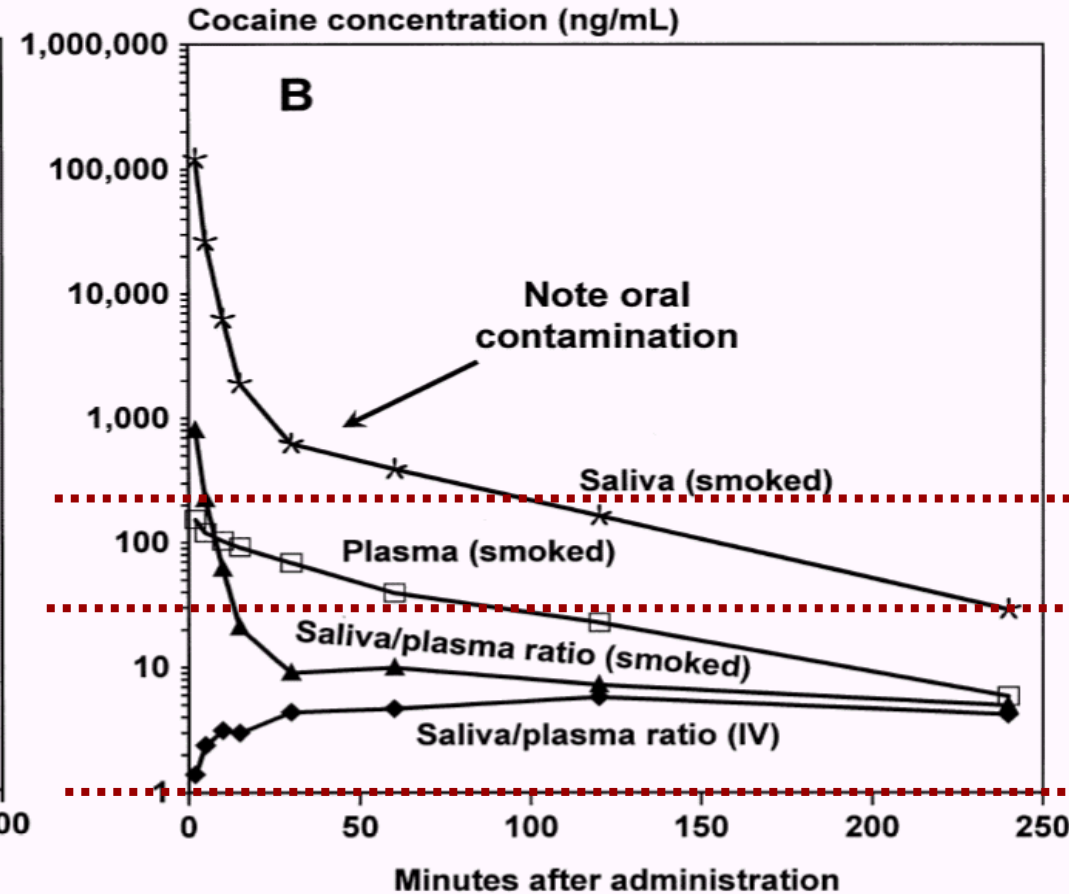
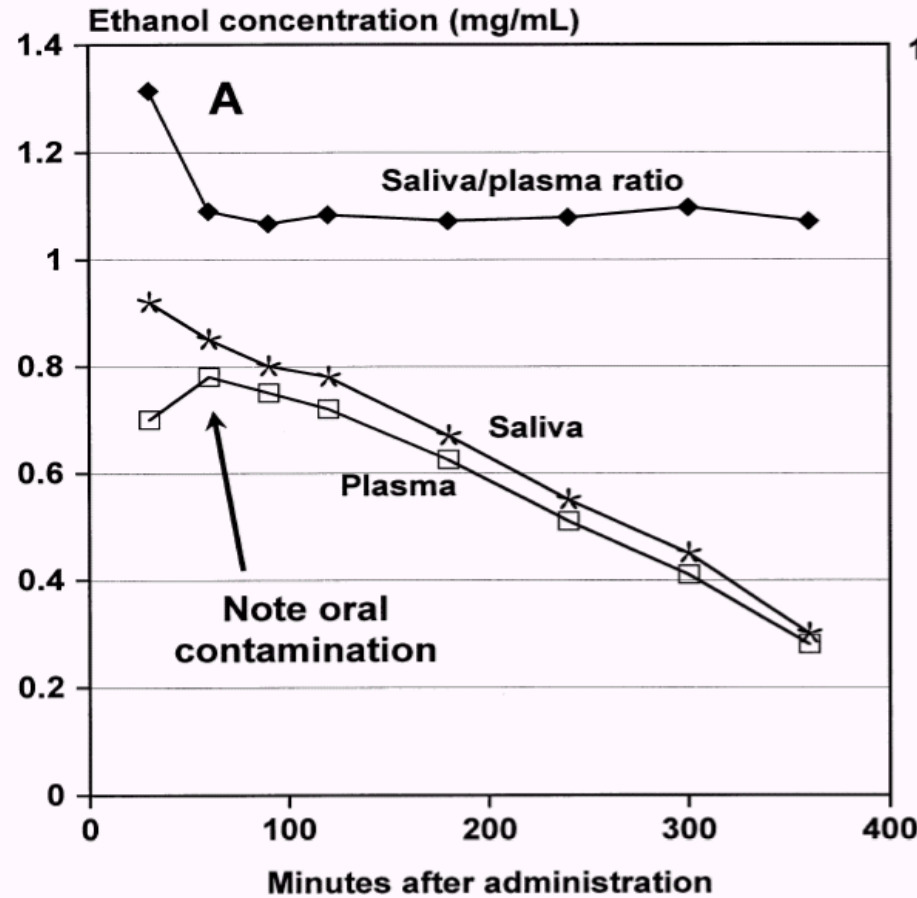
ng/ml 300



100



1



300

100

1

Fig. 2. (A) Concentrations of ethanol in saliva and plasma. From Jones [54]. (B) Concentrations of cocaine in saliva and plasma after smoking of 43 mg and ratio of plasma–saliva after intravenous administration of 40 mg of cocaine. Average of seven individuals. From Jenkins et al. [55].

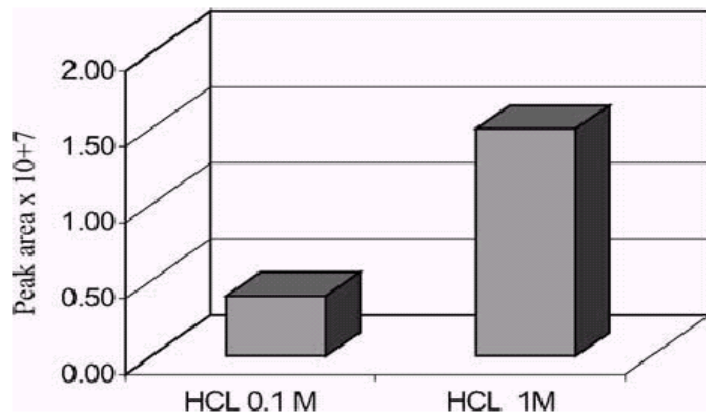


Fig. 1. Effect of 0.1 and 1 M HCl concentration for real hair sample extraction and HS-SPME on the GC-MS abundance of the cocaine.

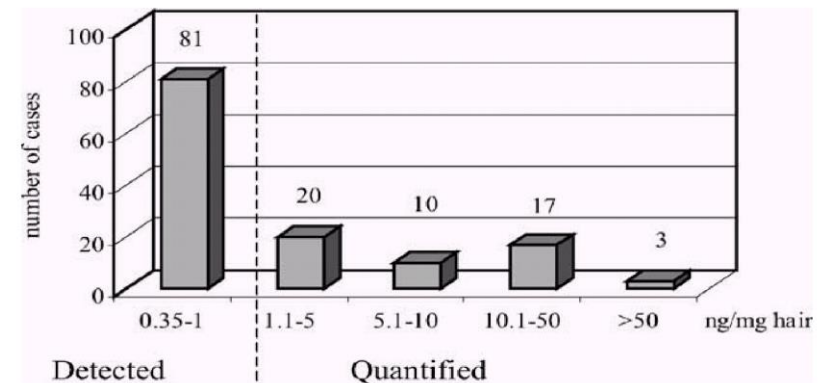


Fig. 3. Distribution of 131 hair samples, either quantified for cocaine (\geq LOQ) or in which cocaine was detected (\geq LOD). The number of subjects in each group is reported. Concentrations are not uniformly grouped due to the wide range of values considered.

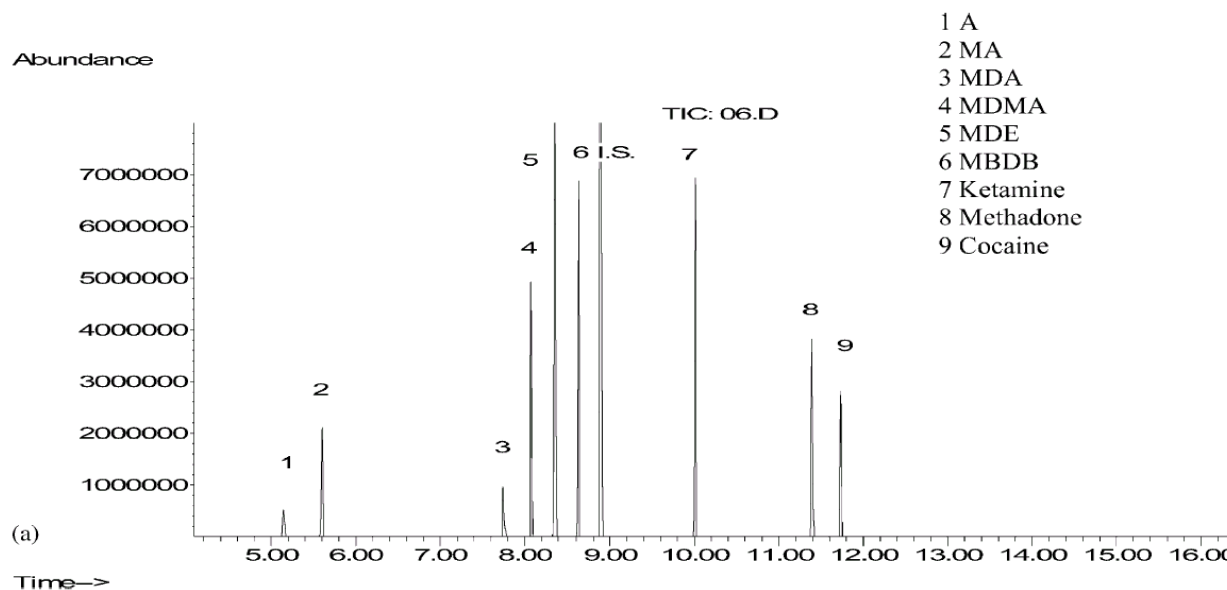


Fig. 2. (a) HS-SPME-GC-MS-SIM chromatogram of a 20 mg hair sample spiked with 4 ng/mg A, MA, MDA, MDMA, MDE, MBDB, ketamine, methadone, cocaine and 10 ng/mg MDPA as IS. For SIM measurement, masses given in Table 1 were used. (b) HS-SPME-GC-MS total ion chromatogram and relative mass spectrum of a blank hair sample and of a hair sample positive for MDMA (8.23 ng/mg) and cocaine (4.51 ng/mg).



PELO



PELO

Table 5
Amphetamine-type stimulant consumed and results of hair for study volunteers

Vol.	Consumed substance	Declared consumption last 30 days	Analyte found in the proximal 1 cm hair (ng/mg)				
			MDMA	MDA	MA	AP	MDEA
002	Ecstasy, methamphetamine	2 tablets	3.68	N.D.	N.D.	N.D.	N.D.
003	Ecstasy, methamphetamine	2 tablets, 500 mg	3.08	0.15	N.D.	N.D.	N.D.
007	Ecstasy, methamphetamine	2 tablets, 250 mg	3.14	0.16	N.D.	N.D.	N.D.
011	Ecstasy, methamphetamine	4 tablets	6.13	N.D.	N.D.	N.D.	N.D.
015	Ecstasy, methamphetamine	12 tablets, 1000 mg	12.60	9.00	2.18	N.D.	N.D.
016	Ecstasy, methamphetamine	1 tablet	2.35	0.10	N.D.	N.D.	N.D.
018	Ecstasy, methamphetamine	3 tablets	4.34	0.25	N.D.	N.D.	N.D.
020	Ecstasy, methamphetamine	2 tablets	1.20	N.D.	N.D.	N.D.	N.D.
023	Ecstasy, methamphetamine	1.5 tablets	1.70	N.D.	N.D.	N.D.	N.D.
037	Ecstasy, methamphetamine	2.5 tablets	6.98	0.59	N.D.	N.D.	N.D.
038	Ecstasy, methamphetamine	3 tablets, 150 mg	2.98	2.02	0.54	N.D.	N.D.
040	Ecstasy, methamphetamine	–	N.D.	N.D.	1.04	0.74	N.D.
051	Ecstasy, methamphetamine	4 tablets, 750 mg	4.15	2.10	0.57	N.D.	N.D.
075	Ecstasy, methamphetamine	0.75 tablets, 250 mg	4.53	0.63	0.22	N.D.	0.70
103	Ecstasy, methamphetamine	3 tablets, 150 mg	4.68	0.30	N.D.	N.D.	N.D.

*N.D.: not detected.



PELO

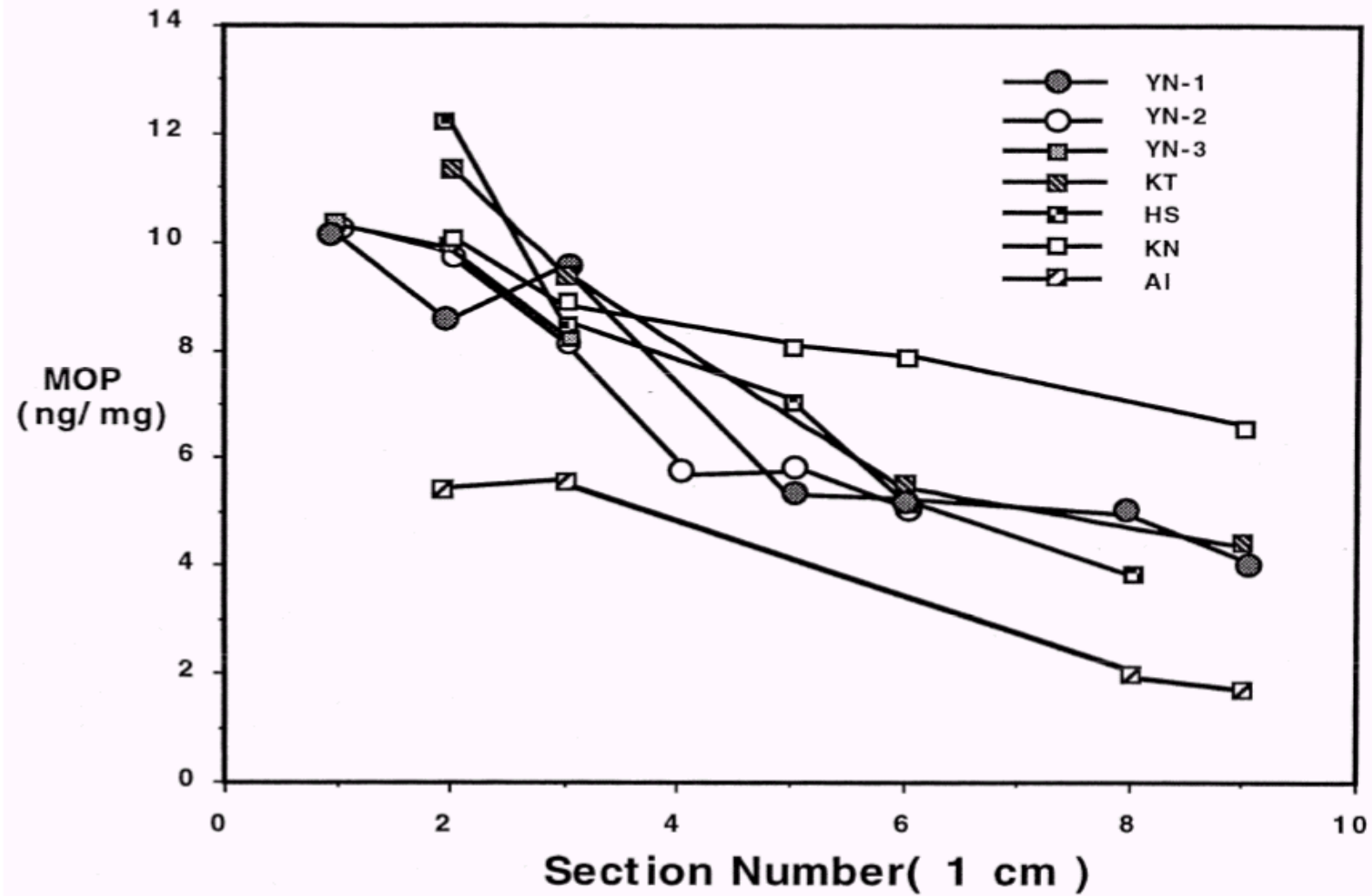
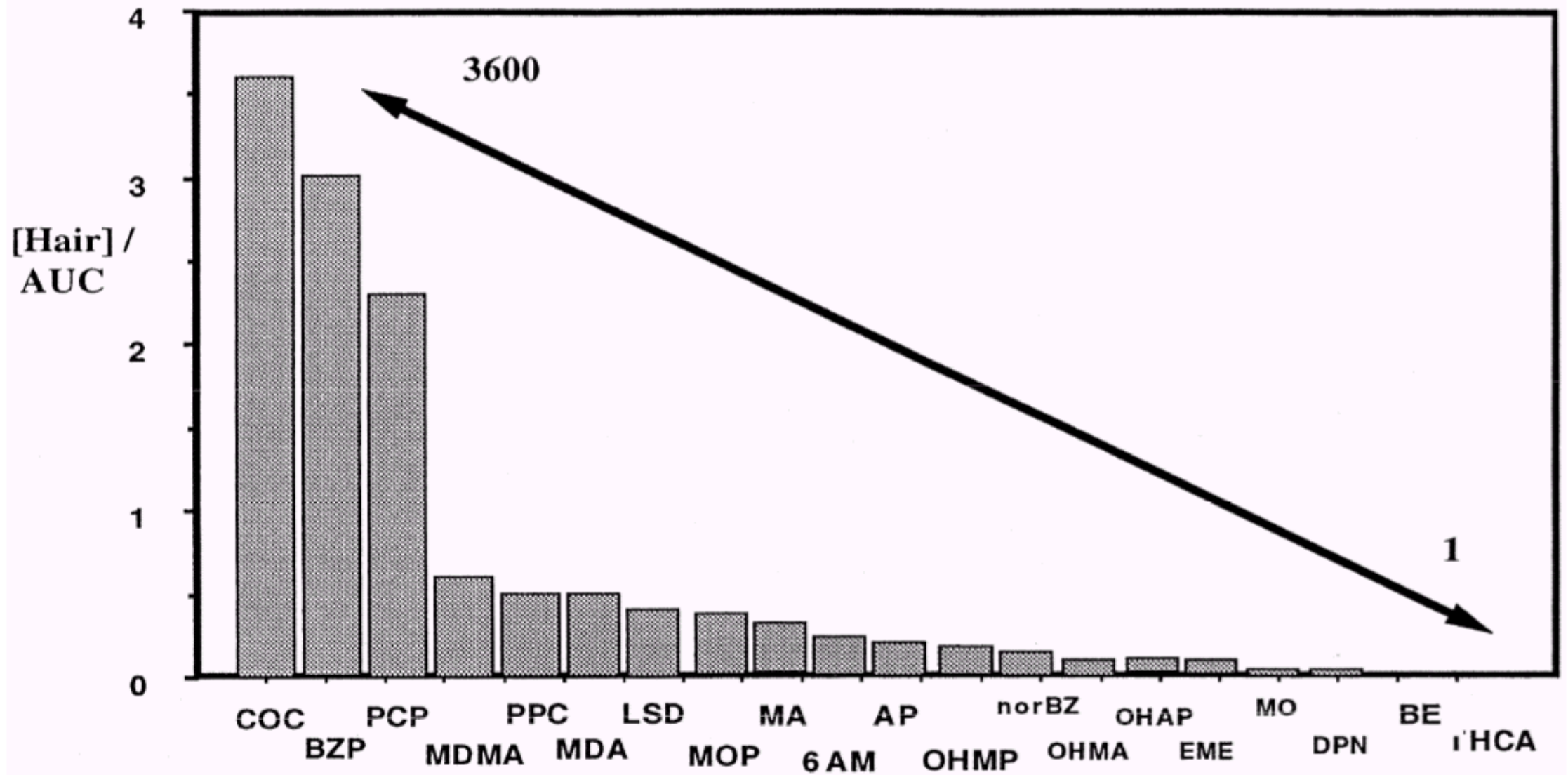


Fig. 4. Decay of the concentration of methoxyphenamine in the living hair over 5 months. All subjects took the same oral dosage of MOP (50 mg \times 7). Only bands entirely in one (1-cm) section were selected; drug bands divide into two sections were omitted. (Reproduced with permission of the authors of Ref. [77].)



Journal of Chromatography B, 733 (1999) 161–180

Human Experiment

Subjects ;
Man, Woman (25 ~ 52 y)

Drug used;
Methoxyphenamine

Dose;
50 mg x 7 for 7 days,
oral

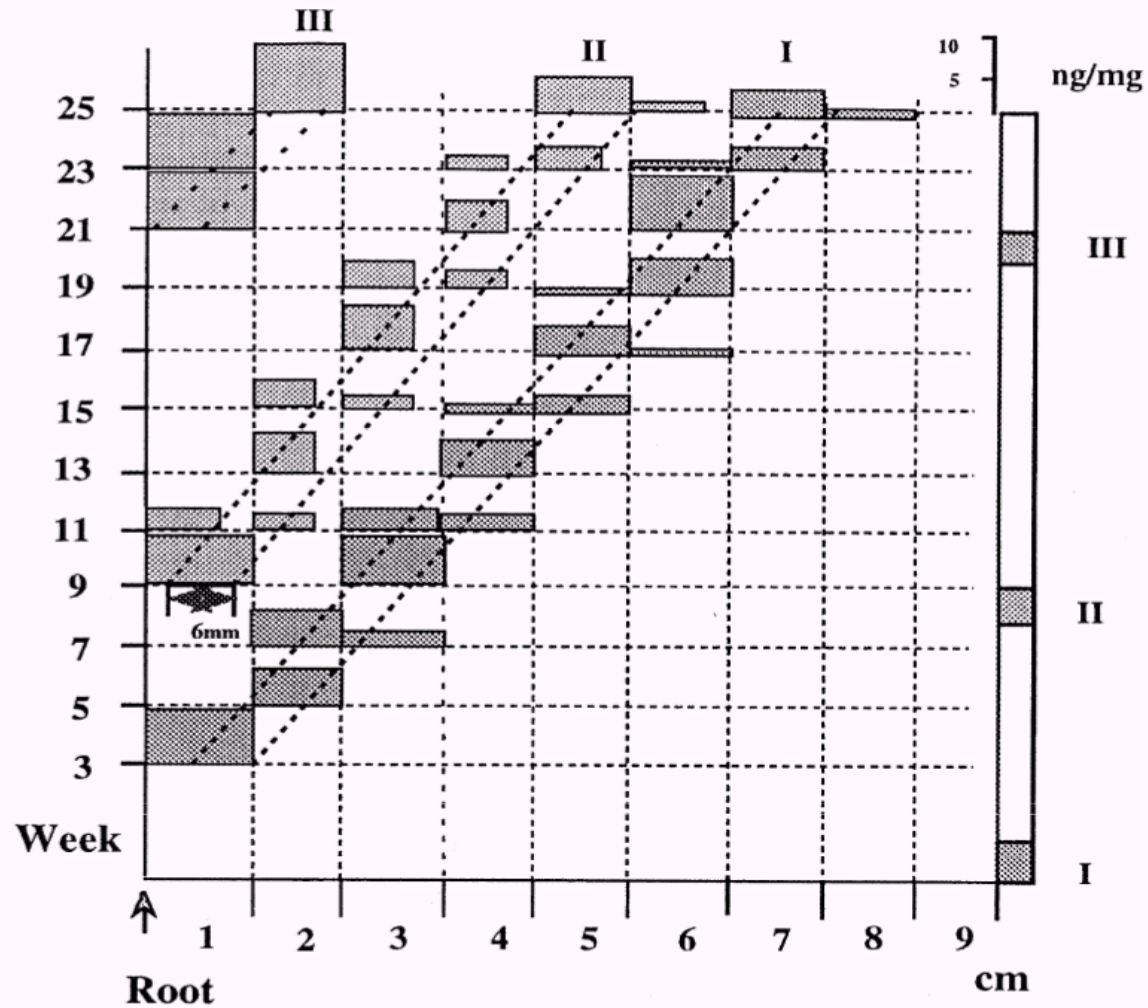


Fig. 6. Movement of each drug-band at every 2 weeks over 6 months. A volunteer subject orally took 50 mg of MOP once a day for 7 days on week 1, 8, 20. About 50 hairs were pulled out on a first day of every two weeks from week 4 to week 25. Each drug band was extrapolated according to the sections in which drugs were detected. (Reproduced with permission of the authors of Ref. [79].)



PELO

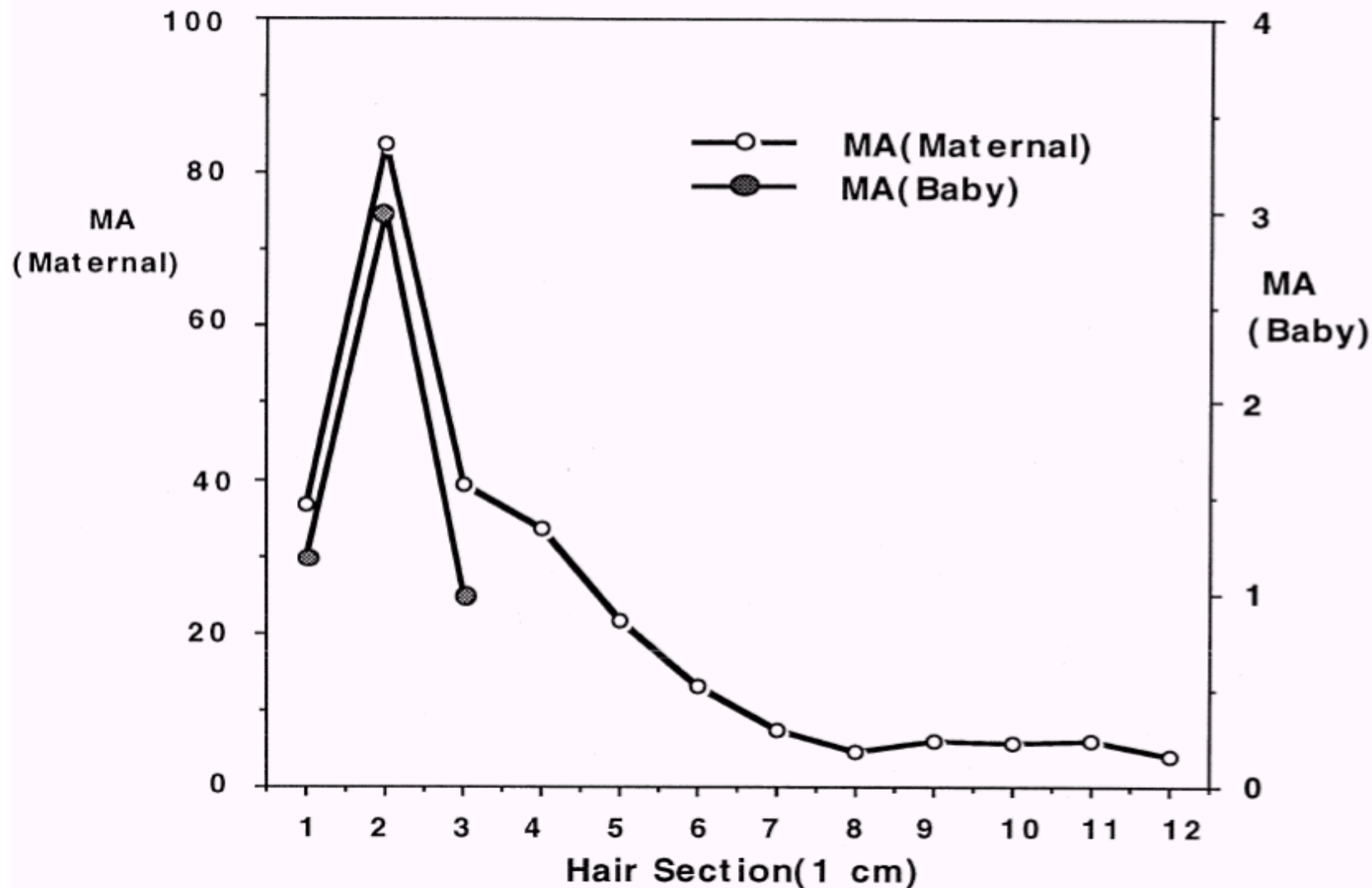


Fig. 7. The MA concentrations in each segment (1-cm) of maternal hair (12 cm) and neonatal hair (3 cm). The hair samples were collected at childbirth. (Reproduced with permission of the authors of Ref. [159].)

PRUEBA CONFIRMATORIA CROMATOGRAFIA DE GASES MASAS

DR.EN C. ELIAS MIRANDA GONZÁLEZ

Buscar zoom.us

Miercoles 31-jul-19 8 pm ID 370-030-08

Domingo 4-Ago-19 6 pm ID 767-880-851

CDMX JULIO 2017