



DETERMINAÇÃO DE SUBSTÂNCIAS CONTAMINANTES DE DROGAS DE ABUSO POR LC-MS-MS EM AMOSTRAS DE INTERESSE FORENSE

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INTRODUÇÃO

MATERIAIS E MÉTODOS

CASOS REAIS

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ÍNDICE



INTRODUÇÃO

- **O que são substâncias contaminantes de drogas de abuso?**

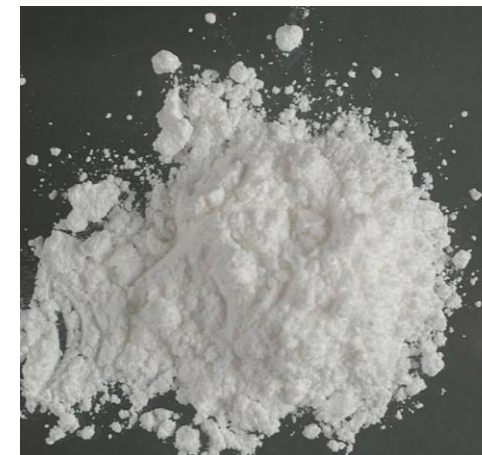
"Cutting agents" – adicionados para adulterar e/ou diluir as drogas

- **Quais são as drogas de abuso que mais são contaminadas?**

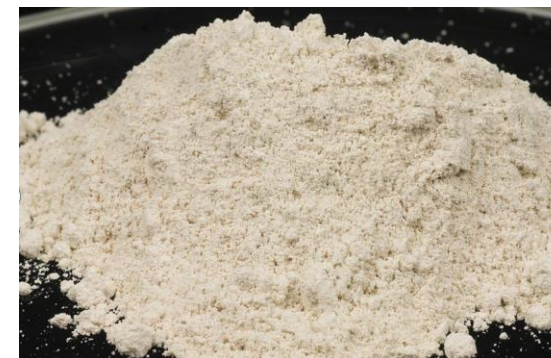
Principalmente a cocaína e heroína

- **Quais são os seus contaminantes mais frequentes?**

Fenacetina, Paracetamol (Acetaminofeno), Fentanil



<https://www.dea.gov/galleries/drug-images/cocaine>



<https://www.dea.gov/galleries/drug-images/heroin>



MATERIAIS E MÉTODOS

- Validação do Método



LOD

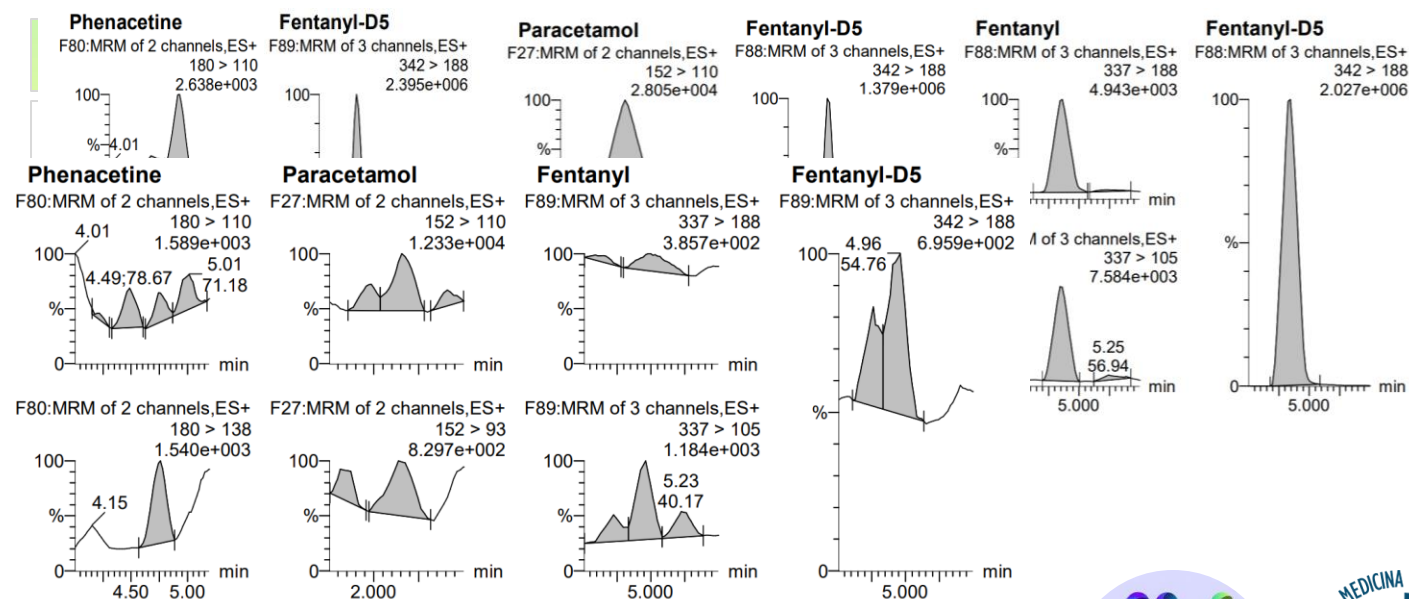
Fenacetina: 3 ng/mL
Paracetamol: 5 ng/mL
Fentanil: 0.5 ng/mL

Carryover

Não se verificou a ocorrência de *carryover*

Stab

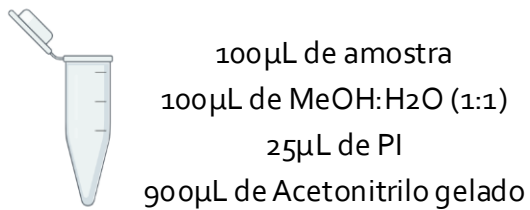
As amostras processadas
mantiveram-se estáveis até 8 dias no
carrossel



MATERIAIS E MÉTODOS

- Técnica de Extração

Precipitação proteica



Centrifugação



Centrifugação
durante 10 min a 5°C

Sobrenadante



Remoção de fosfolípidos



Passagem do
sobrenadante pelo
cartucho Captiva® para
tubo de vidro



Secagem dos extratos



Sob corrente de azoto de
2,5 mL/min, a 40°C
durante 30 min



Reconstituição dos extratos secos com Metanol



+ 60µL de MeOH



MATERIAIS E MÉTODOS

- Condições Analíticas

Equipamento: Waters Acquity™ Ultra Performance LC system

Coluna: Acquity UHPLC® HSS T3 (100 mm x 2.1 mm; 1.8 µm)

Temperatura da Coluna: 45°C

Fases Móveis: Formato de Amónio 2mM (Ácido Fórmico 0.1%) em Metanol (A) e Formato de Amónio 2mM (Ácido Fórmico 0.1%) em Água (B)

Fluxo: 0.4 mL/min

Volume de Injeção: 2 µL

Tempo Total de Análise: 14 min

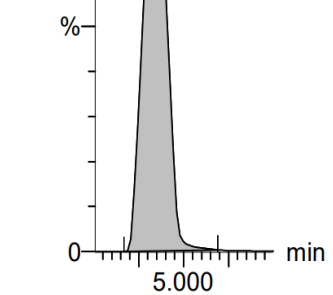
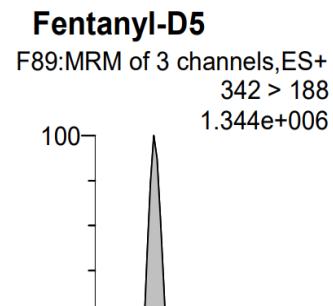
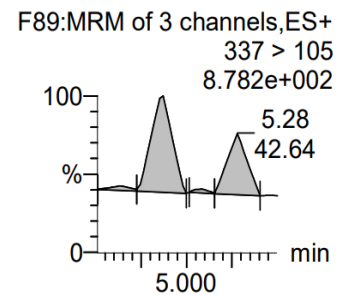
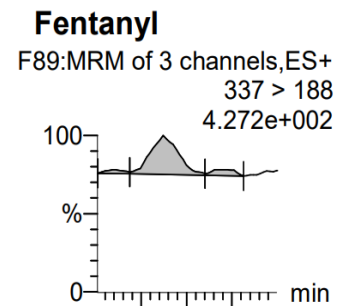
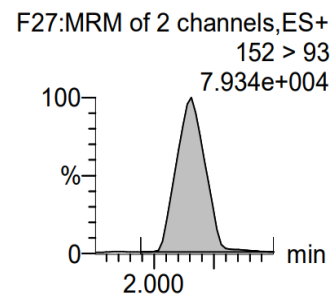
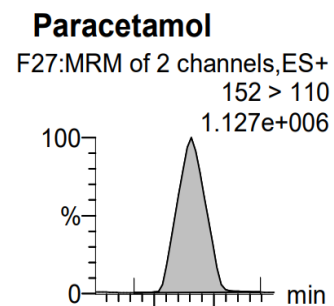
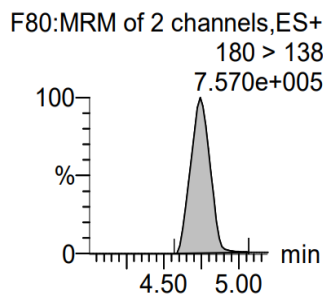
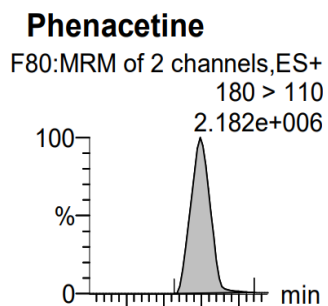
Analitos	Q1 (m/z)	Q3 (m/z)	Q3 (m/z)	RT (min)
Fenacetina	180	110	138	4.74
Paracetamol	152	110	93	2.15
Fentanil	337	105	188	4.84
Fentanil-D5	342	188	-	4.84



CASOS REAIS

- **Caso 1**

- Cocaína +
- Fenacetina +
- Paracetamol +



- Outras substâncias: Hidroclorotiazida

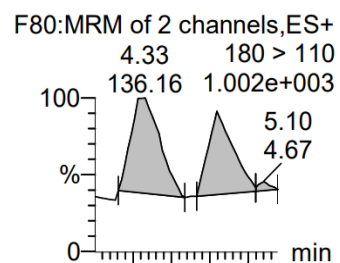


CASOS REAIS

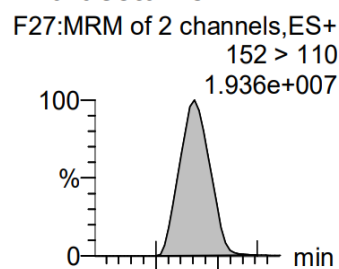
- **Caso 2**

- Fentanil +
- Paracetamol +

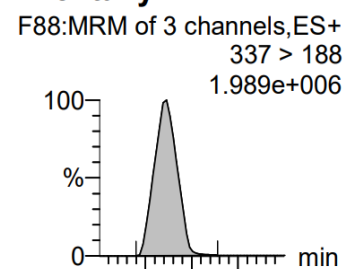
Phenacetine



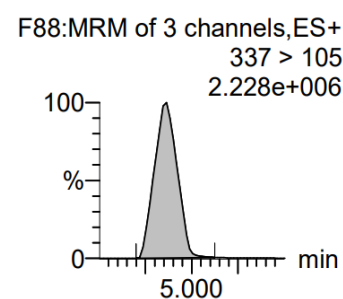
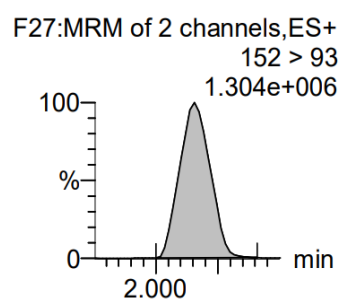
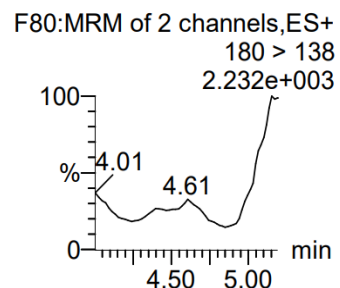
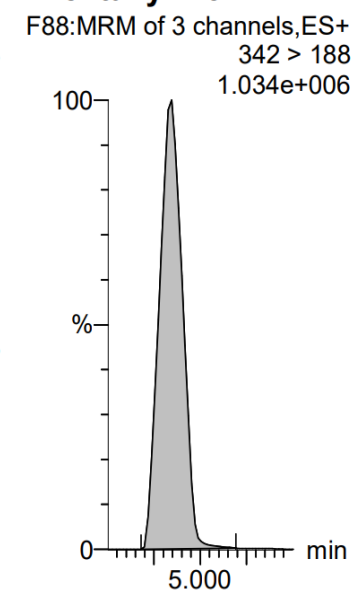
Paracetamol



Fentanyl



Fentanyl-D5



- Outras substâncias: Duloxetina; Levetiracetam; Lidocaína; Mirtazapina; Naloxona; Pregabalina; Quetiapina.



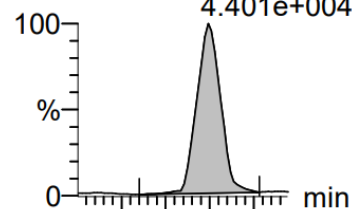
CASOS REAIS

• Caso 3

- Cocaína +
- Fenacetina +
- Cafeína +

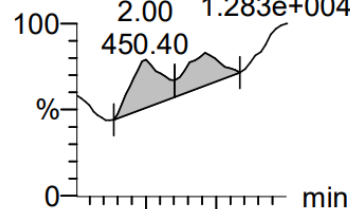
Phenacetine

F80:MRM of 2 channels,ES+
180 > 110
4.401e+004



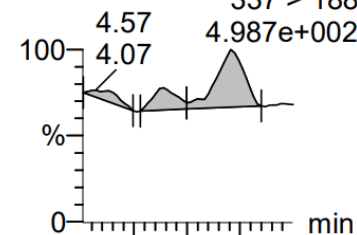
Paracetamol

F27:MRM of 2 channels,ES+
152 > 110
2.00 450.40 1.283e+004

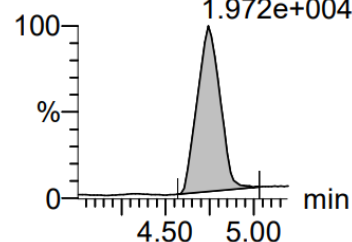


Fentanyl

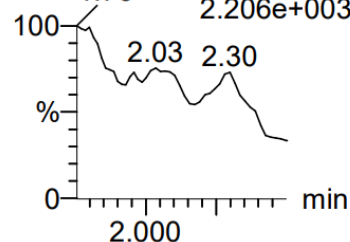
F89:MRM of 3 channels,ES+
337 > 188
4.57 4.07 4.987e+002



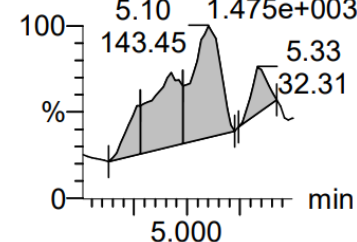
F80:MRM of 2 channels,ES+
180 > 138
1.972e+004



F27:MRM of 2 channels,ES+
152 > 93
1.76 2.03 2.30 2.206e+003



F89:MRM of 3 channels,ES+
337 > 105
5.10 143.45 1.475e+003 5.33 32.31



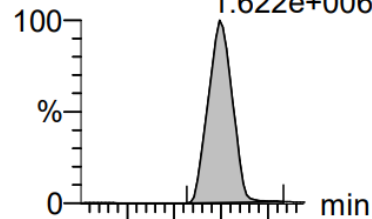
CASOS REAIS

- **Caso 4**

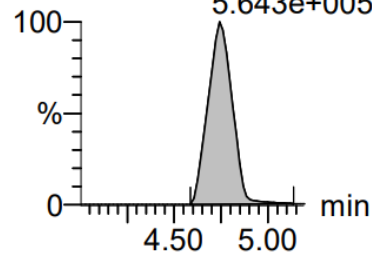
- Cocaína +
- Fenacetina +
- Paracetamol +
- Papaverina +
- Noscipina +
- Cafeína +

Phenacetine

F80:MRM of 2 channels,ES+
180 > 110
1.622e+006

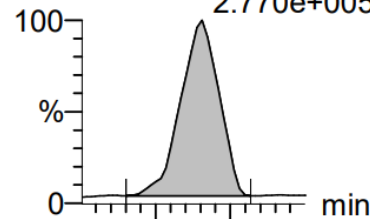


F80:MRM of 2 channels,ES+
180 > 138
5.643e+005

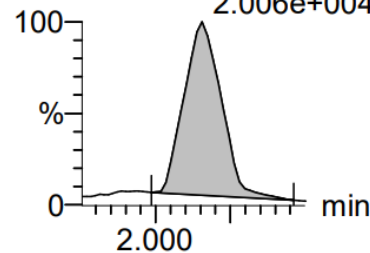


Paracetamol

F27:MRM of 2 channels,ES+
152 > 110
2.770e+005

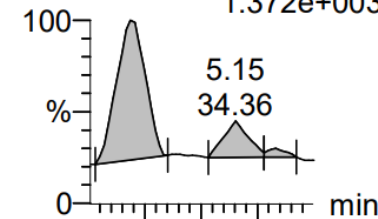


F27:MRM of 2 channels,ES+
152 > 93
2.006e+004

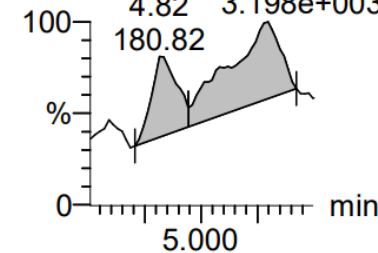


Fentanyl

F89:MRM of 3 channels,ES+
337 > 188
1.372e+003



F89:MRM of 3 channels,ES+
337 > 105
3.198e+003



CONCLUSÕES

- O método revelou-se rápido e eficiente.
- O método foi aplicado com sucesso a amostras reais.





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Obrigado pela atenção!





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