

Mycotoxins detection

Application note Ref : AN 063

Mycotoxins are some of the most toxic compounds found within the food industries. They are liable to occur in a variety of foodstuffs (cereals, dried fruit, spices, coffee, nuts, ...). As mycotoxins are extremely toxic, regulatory and industry guideline limits are set at very low levels (about ppb). In this application note, UPLC coupled with a LIF detection provides high speed analysis with an unrivalled sensitivity.

Figure 1 shows the chromatogram we obtained with standards at 10 ppb (10µg/L)

⇒ **High speed method : 5 minutes for a run and only 3 minutes to see Aflatoxins M2, G2, B2 and ochratoxin A.**

⇒ **Limit of detection :**

Aflatoxin M2 : 0,188 ppb (5,67.10⁻¹⁰ mol/L)

Aflatoxin G2 : 0,176 ppb (5,32.10⁻¹⁰ mol/L)

Aflatoxin B2 : 0,254 ppb (8,08.10⁻¹⁰ mol/L)

Ochratoxin A : 0,294 ppb (7,28.10⁻¹⁰ mol/L)

(LOD calculated for a S/N ratio of 3)

⇒ **Sample injection of 10 µl**

Figure 2 shows the detection of Ochratoxin A in a cereal extract

Figure 3 shows the repeatability obtained with 9 successive runs of standards solution

Samples:

Standards : Aflatoxin M2, G2, B2 and Ochratoxin A at 10 ppb (=10 µg/L)

Cereal extract : rye extract with unknown concentration of mycotoxins

Instruments:

Waters® ACQUITY Ultra Performance LC™ System

Picometrics ZETALIF™ Evolution detector.
Laser: 325 nm, 15 mW

Methods:

Flowrate: 100 µl/min

T= 45°C

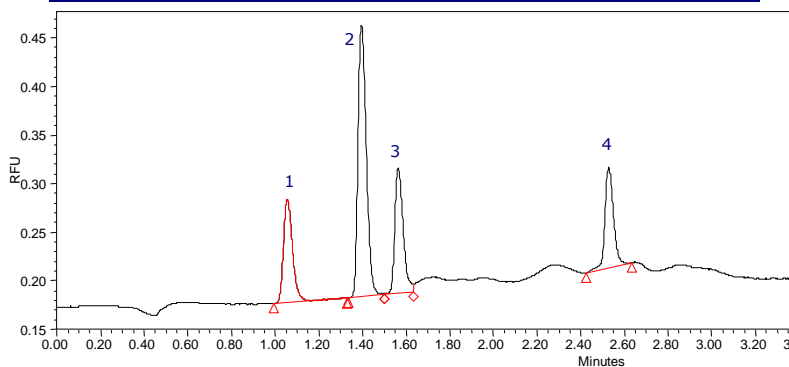
Column: Acquity UPLC BEH C18 1.7µm 1.0x50mm

Phases : A : purified water with acetic acid at 1%

B : Acetonitrile

For complete experimental details, please contact Picometrics

Figure 1 : Separation of standards of Aflatoxins and Ochratoxin



1-Aflatoxin M2 ; 2-Aflatoxin G2 ; 3-Aflatoxin B2 ; 4-Ochratoxin A

Figure 2 : Cereal extract analysis

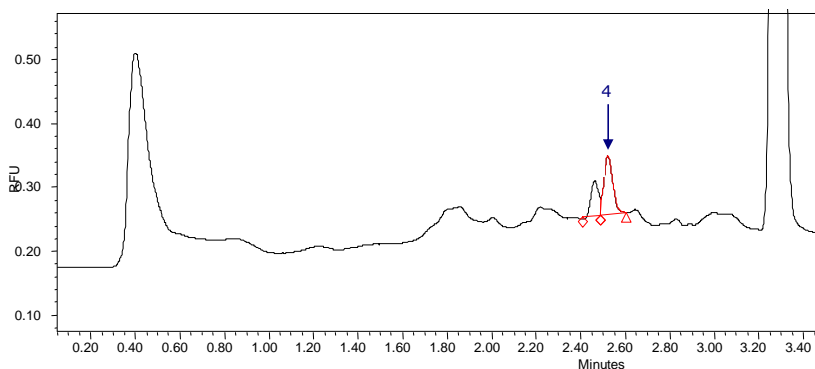
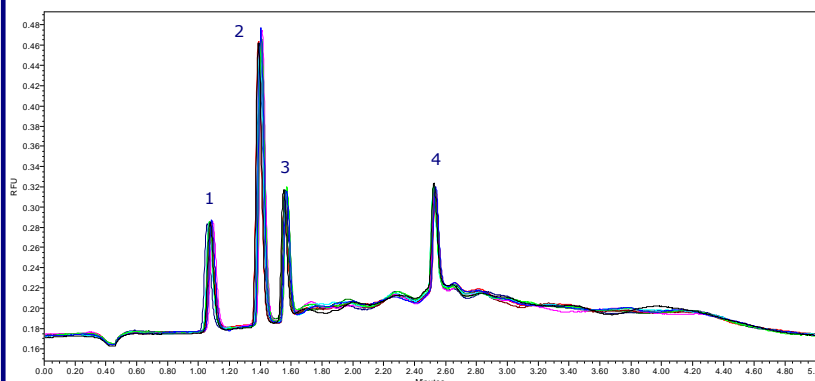


Figure 3 : Repeatability : 9 standards runs



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