# Trichothecene Type A & B Analysis in Wheat and Corn Using the QuEChERS Approach*

UCT Part Number:
**ECMSSC50CT-MP** (50 mL centrifuge tube, 4 g anhydrous magnesium sulfate, 1 g NaCl)
**CUMPS2CT** (150 mg anhydrous magnesium sulfate and 50 mg PSA

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An extraction and purification method for the simultaneous LC-MS determination of five mycotoxins is described including three type A, diacetoxyscirpenol (DAS), T-2 toxin and HT-2 toxin, and two type B trichothecenes, deoxynivalenol (DON) and nivalenol (NIV). These mycotoxins are responsible for a wide range of disorders in animals. They have been found to inhibit proteins synthesis and to have immunosuppressive and cytotoxic effects. Health risks associated with human exposure to *Fusarium* toxins are recognized worldwide and depend on concentration in a particular diet. The major dietary sources of trichothecenes are cereal products wheat and corn. The analysis has been optimized using a modified QuEChERS approach.

## Procedure

**1. Sample Preparation**

a) Thoroughly homogenize a sample of grain products using a laboratory mill

b) Weigh 5 g of sample into the 50 ml centrifuge tube

c) Add 10 mL of methanol:acetonitrile (85:15) into 50 mL centrifuge tube

d) Shake to disperse solvent

e) Add the contents of the **ECMSSC50CT-MP** pouch containing 4 g anhydrous magnesium sulfate, 1 g sodium chloride to the centrifuge tube

f) Vortex for 1 minute then centrifuge @ 4,000 rpm for 10 minutes

**2. Sample Clean-up**

a) Transfer a 1 mL aliquot to a 2 mL **CUMPS2CT** tube (150 mg anhydrous magnesium sulfate and 50 mg PSA)

b) Shake for 1 minute

c) Centrifuge for 10 minutes @ 4,000 rpm

d) Filter extract through a 0.45 µm filter into an LC injection vial if supernatant is not clear

e) Sample is now ready for analysis

## 3. Analysis

a) MSD detection with atmospheric pressure ionization (API) configured for electrospray positive ion mode

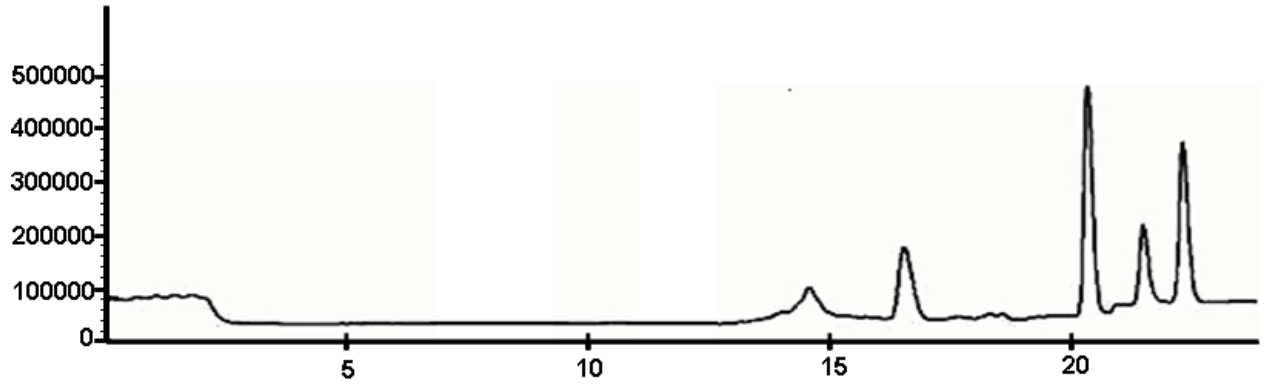
b) Analytical column: Luna C18 (250mm x 4.6 mm x 5 µm) or equivalent may be used but may change elution times

c) Mobile phase A: 1% formic acid in water, B: 1% formic acid in methanol

d) Gradient, Flow 0.5 mL/minute, Initial 40%B, 10 minutes 90% B until 25 minutes

| Mass Ions for Mycotoxins [Na+M] | |
|---|---|
| **Ion** | **M/Z** |
| **NIV** | 355 |
| **DON** | 319 |
| **DAS** | 389 |
| **HT2** | 447 |
| **T2** | 489 |

**Chromatogram Showing Elution of Mycotoxins**
Peaks in order of elution: NIV, DON, DAS, HT-2, T-2




*Modified from Sospedra et al, "Use of the Modified Quick, Easy, Cheap, Effective, Rugged and Safe Sample Preparation Approach for the Simultaneous Analysis of Type A and B Trichothecenes in Wheat Flour," J of Chromatography A