



SPE Application Note for Extraction of Acrylamide from Foodstuffs

This method is recommended for the extraction of acrylamide from foodstuffs using an initial extraction with mixed-mode SPE column ISOLUTE Multimode, followed by clean-up with ISOLUTE ENV+ non-polar SPE columns.

EXTRACTION PROCEDURE

ISOLUTE® SPE Column: ISOLUTE Multimode 1 g/3 mL, part # 904-0100-C
ISOLUTE ENV+ 1 g/6 mL, part # 915-0100-C

Pre-treatment:

1. Homogenize the sample (4 g) with water (40 mL) containing internal standard (400 μ L of water solution containing deuterium-labelled acrylamide (1.0 μ g/mL).
2. Centrifuge (10 Celsius, 4000 rpm, 20 min.).
3. Apply supernatant to a conditioned ISOLUTE Multimode column using the following method:

Column Conditioning: Rinse column with acetonitrile (3 mL).

Column Equilibration: Rinse column with water (2 x 6 mL).

Sample Application: Apply sample (10 mL). Collect eluent.

Apply to an ISOLUTE ENV+ column using the method detailed below.

Solvation: Condition the column with methanol (5 mL).

Equilibration: Equilibrate with water (5 mL).

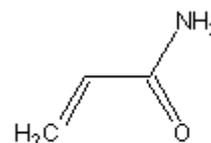
Sample application: Apply the sample (~10 mL).

Interference elution: Rinse with water (2 x 5 mL).

Analyte elution: To elute analytes, apply first volume of elution solvent to extraction cartridge. Soak for two minutes. Add second volume of elution solvent to extraction cartridge and collect.

1. Elute with methanol in water (60% v/v). Discard the first fraction (1.7 mL) and collect the eluate fraction (1.7 mL-3.7 mL).
2. Evaporate until 1 mL of the extract remains.
3. Inject an aliquot into the LC-MS/MS system for analysis.

Structure Acrylamide shown.





Structural considerations

The analyte is polar and highly water soluble.

Matrix considerations

The matrix is complex with a variety of interferences including sugars, salts, proteins, lipids etc.

Analytical method

LC-MS/MS

Reagents

1. Deionized water
2. Internal standard, deuterium-labelled acrylamide
3. Acetonitrile
4. Methanol

General comments

Reference:
Fermentation Reduces Free Asparagine in Dough and Acrylamide content in Bread
Fredriksson, -H; Tallving, -; Rosen, -J; Aman, -P
Cereal Chem. 81(5): pp650-653

ISOLUTE column part numbers represent the product configuration of choice for use with a vacuum sample processing station. For 96-well and alternative column configurations compatible with any SPE automation system, please contact Biotage.

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