

Nota de aplicación

## Patulin in Apple Juice

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Waters Corporation



This is an Application Brief and does not contain a detailed Experimental section.

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### Abstract

Patulin is a mycotoxin that is produced by certain species of *Penicillium*, *Aspergillus*, and *Byssochlamys* molds that may grow on a variety of foods including fruit, grains, and cheese. Patulin is a safety concern in

apple juice.

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## Introduction

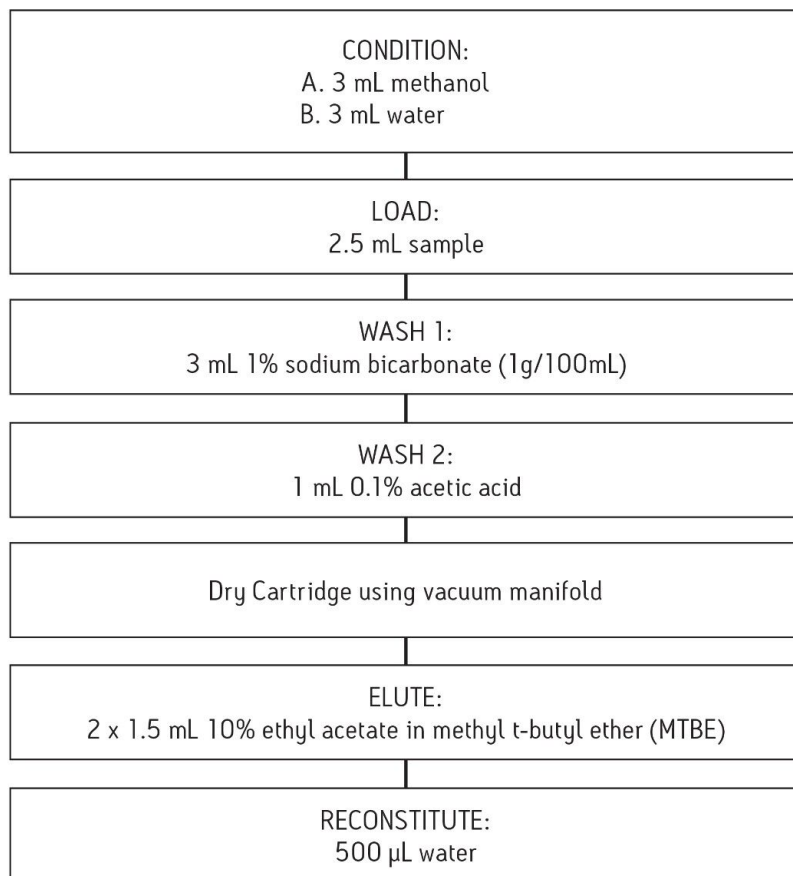
Patulin is a mycotoxin that is produced by certain species of *Penicillium*, *Aspergillus*, and *Byssochlamys* molds that may grow on a variety of foods including fruit, grains, and cheese. Patulin is a safety concern in apple juice.

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## Experimental

## SPE Procedure

Oasis® HLB 3cc /60mg



## LC Conditions

|                 |  |
|-----------------|--|
| System:         | ACQUITY UPLC                                       |
| Column:         | ACQUITY UPLC BEH Shield RP18, 1.7 µm, 2.1 x 100 mm |
| Flow rate:      | 600 µL/min   |
| Mobile phase A: | 0.1% aqueous ammonium hydroxide                    |
| Mobile phase B: | 0.1% ammonium hydroxide in acetonitrile            |

Injection volume: 20  $\mu$ L, Full loop injection

Column temp.: 40  $^{\circ}$ C

Sample temp.: 4  $^{\circ}$ C

Detector: ACQUITY UPLC PDA

Detection: 276 nm

## Gradient

| Time (min) | %A | %B |
|------------|----|----|
| 0          | 99 | 1  |
| 1.8        | 99 | 1  |
| 2.3        | 10 | 90 |
| 2.8        | 10 | 90 |
| 2.81       | 99 | 1  |

## MS Conditions

MS System: ACQUITY TQ Detector

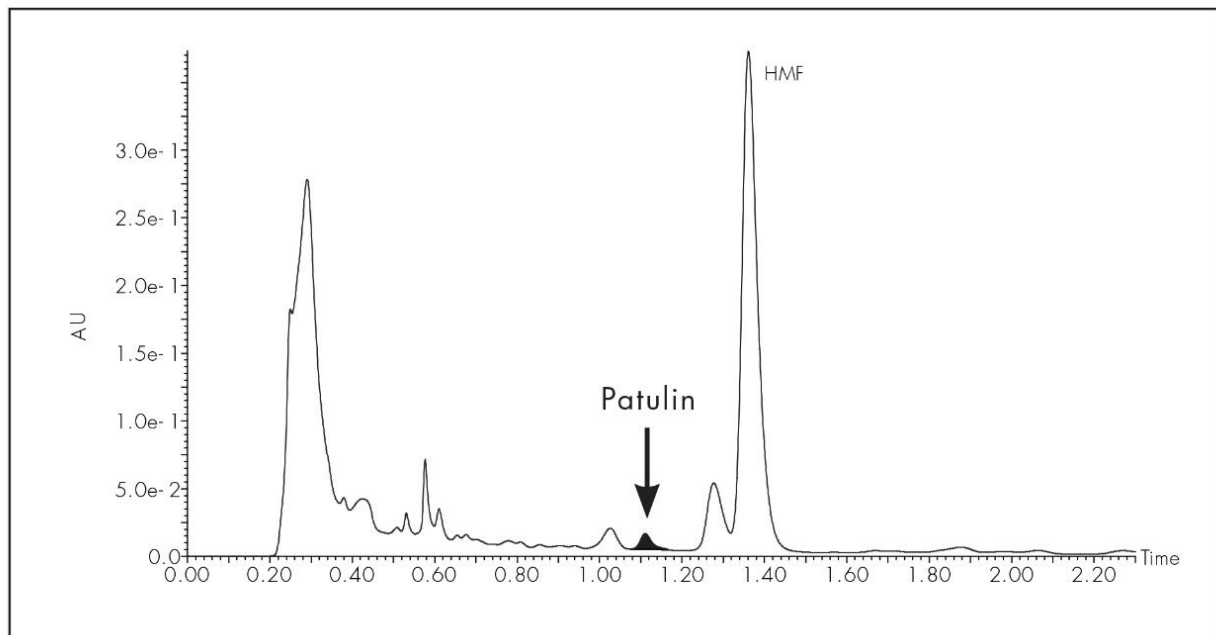
Ionization mode: Negative electrospray (ESI<sup>-</sup>)

Multiple reaction monitoring

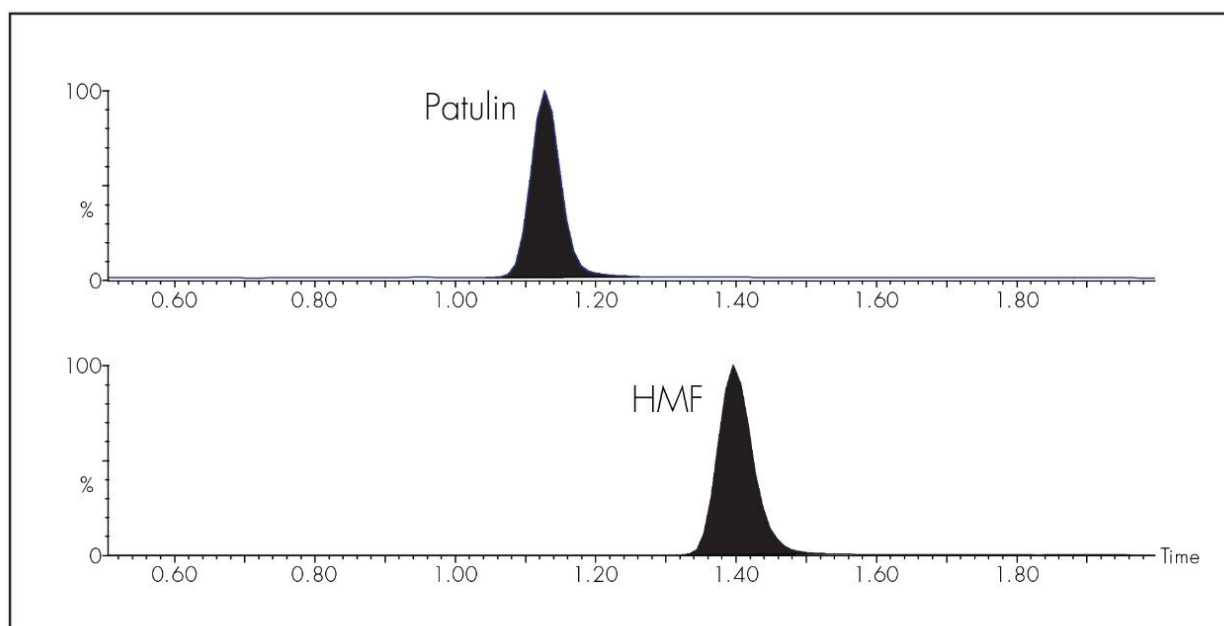
| Analytes                      | MRM Transition |
|-------------------------------|----------------|
| Patulin                       | 153 → 109      |
|                               | 153 → 81       |
| 5-hydroxymethylfurfural (HMF) | 125 → 95       |

*MRM method parameters.*

## Results and Discussion



*Apple juice extract at 50 µg/kg containing patulin and 5 hydroxymethylfurfural (HMF) at 276 nm.*



*Apple juice extract at 50 µg/kg containing patulin and 5 hydroxymethylfurfural in negative electrospray mode.*

| Concentration | Average Recovery (%RSD) |
|---------------|-------------------------|
| 5 µg/kg       | 86.1% (13.6)            |
| 50 µg/kg      | 95.4% (5.9)             |
| 500 µg/kg     | 89.9% (17.5)            |

*Recovery data obtained from Oasis HLB extraction of patulin in apple juice. Four data points were measured at each level.*

## References

1. Developed by Vural Gökmen, Food Engineering Department, Hacettepe University, Ankara, Turkey and John Martin, Waters Corporation.

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## Featured Products

ACQUITY UPLC System <<https://www.waters.com/514207>>

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