

## Patulin in Apple Juice

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Waters Corporation



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

### 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.

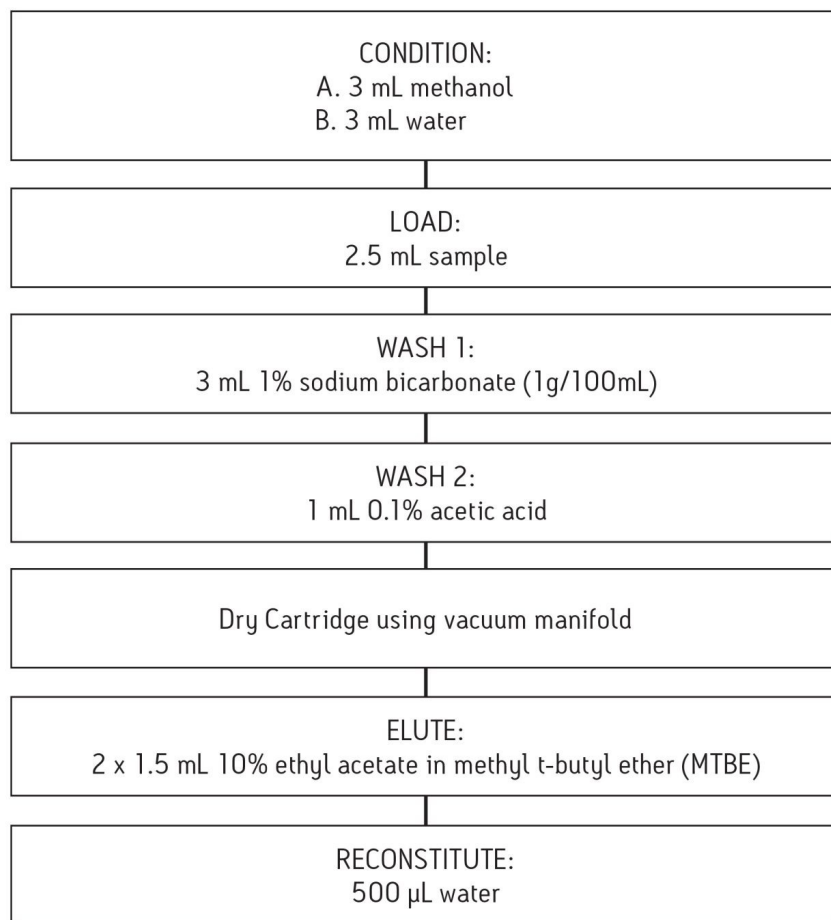
## Introduction

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

## Experimental

### SPE Procedure

#### Oasis® HLB 3cc /60mg



### LC Conditions

System: ACQUITY UPLC

Column: ACQUITY UPLC BEH Shield RP18, 1.7  $\mu\text{m}$ , 2.1 x 100

Flow rate: 600  $\mu\text{L}/\text{min}$

Mobile phase A: 0.1% aqueous ammonium hydroxide

Mobile phase B: 0.1% ammonium hydroxide in acetonitrile

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

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

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

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

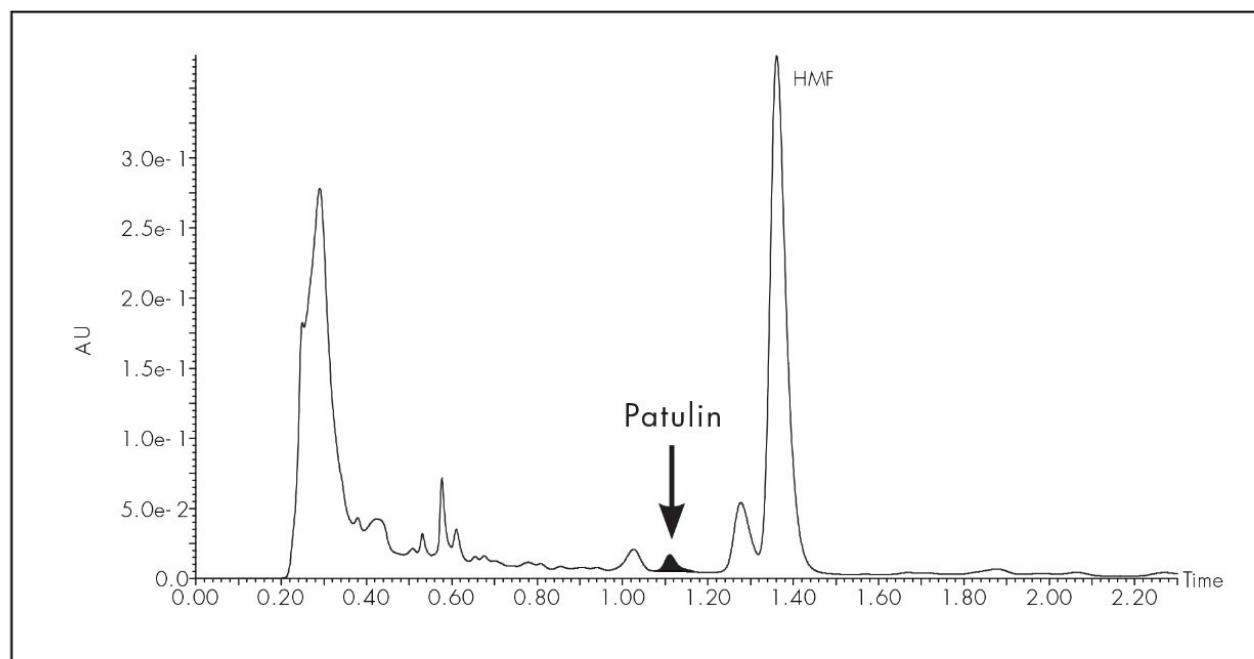
Ionization mode: Negative electrospray (ESI<sup>-</sup>)

Multiple reaction monitoring

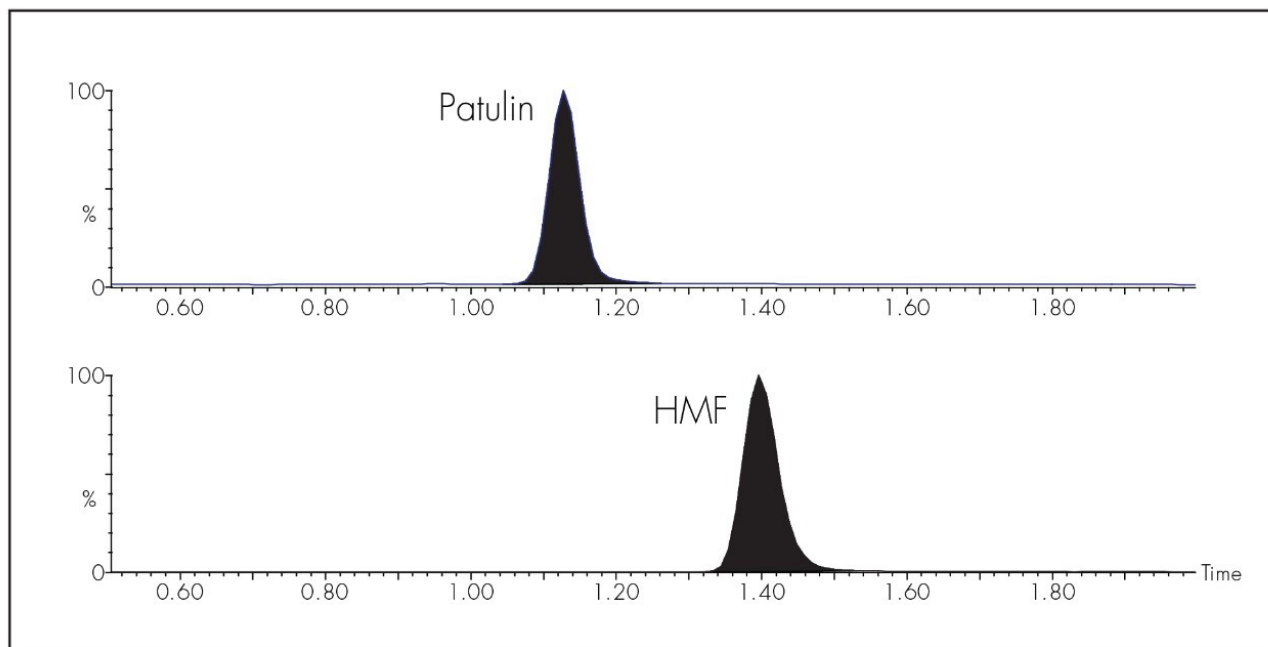
Analytes	MRM Transition
Patulin	153 → 109
	153 → 81
5-hydroxymethylfurfural (HMF)	125 → 95

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.

## Featured Products

- [ACQUITY UPLC System <https://www.waters.com/514207>](https://www.waters.com/514207)

720002593, April 2008



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