Waters™

アプリケーションノート

Patulin in Apple Juice

Waters Corporation

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

Abstract

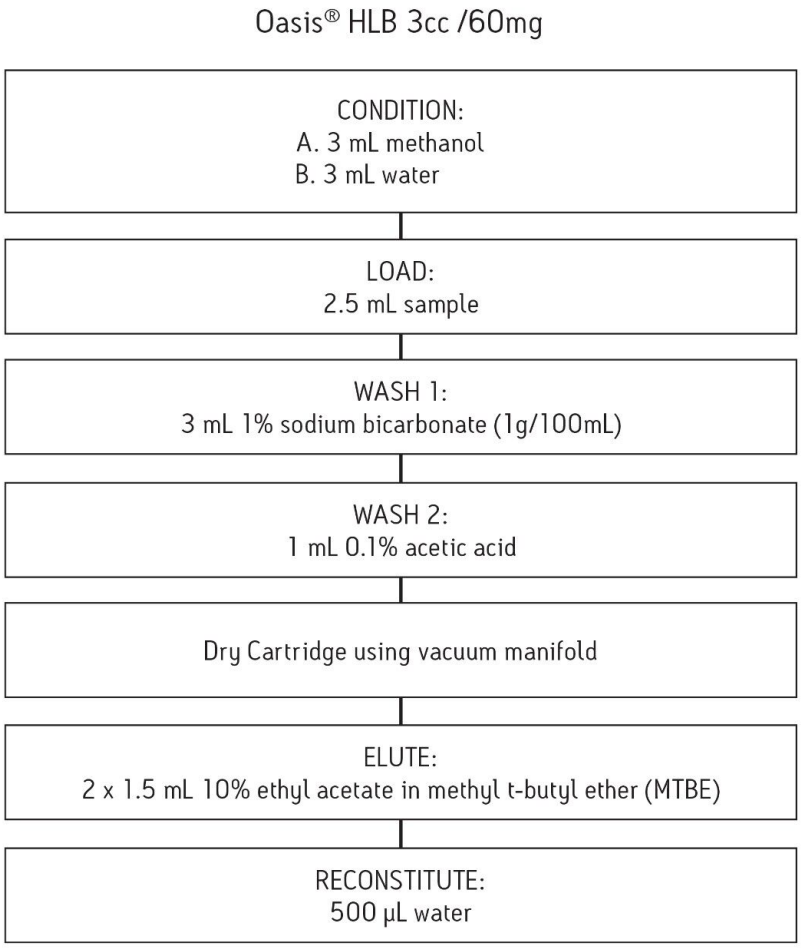
Patulin is a mycotoxin that is produced by certain species of *Penicillium*, *Aspergillus*, and *Byssochylamys* molds that may grow on a variety of foods including fruit, grains, and cheese. Patulin is a safety concern in apple juice.

Introduction

Patulin is a mycotoxin that is produced by certain species of *Penicillium*, *Aspergillus*, and *Byssochylamys* 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



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 µL, Full loop injection
Column temp.:	40 ˚C
Sample temp.:	4 ˚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

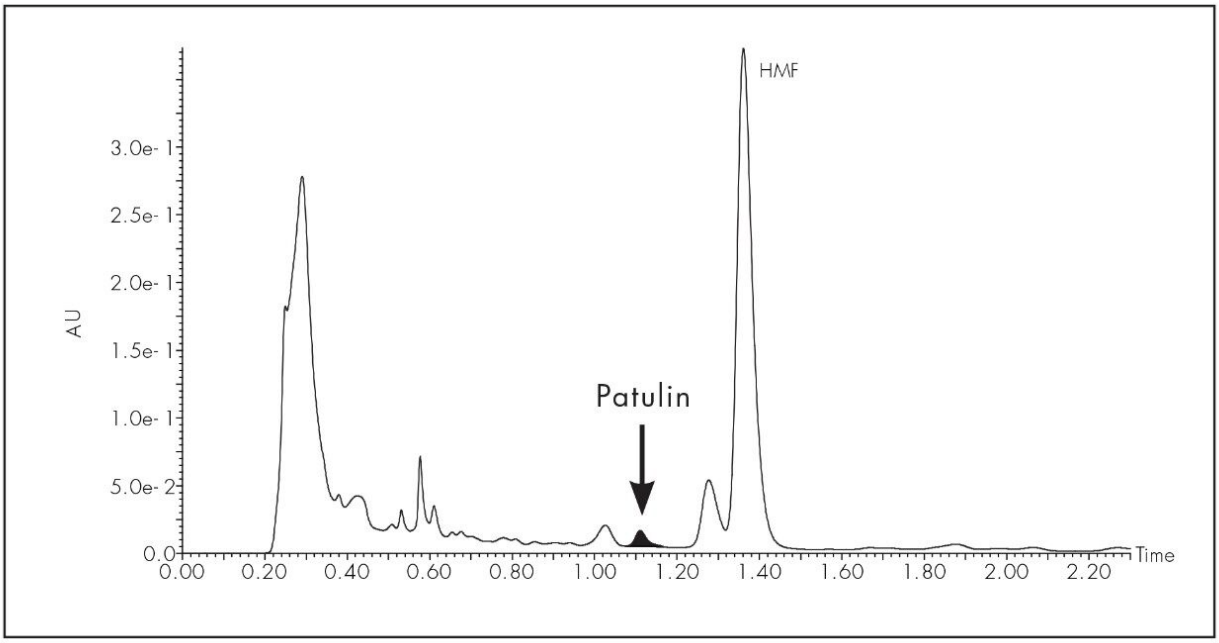
MS Conditions

MS System:	ACQUITY TQ Detector
Ionization mode:	Negative electrospray (ESI^-)
	Multiple reaction monitoring

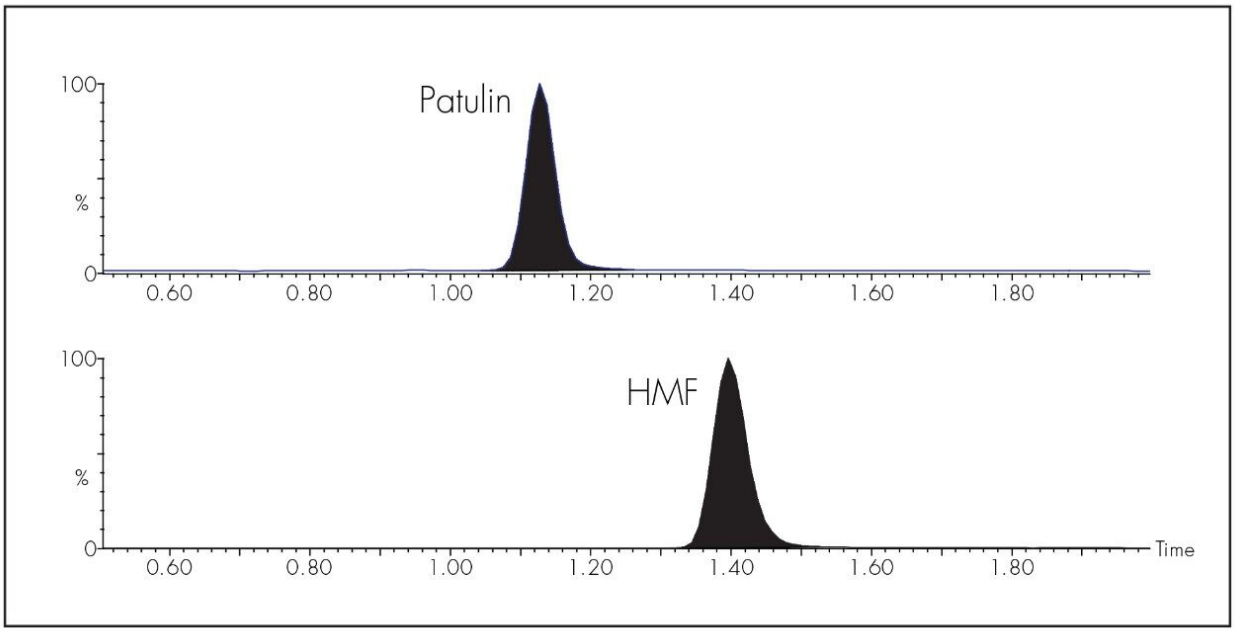
Analytes	MRM Transition
Patulin	153 → 109
	153 → 81
5-hydroxymethylfurfural (HMF)	125 → 95

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>

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