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Nota applicativa

Carbamates in Fruits and Vegetables

Waters Corporation

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

Abstract

Carbamates have been identified as a health risk. They affect the nervous system by reducing the ability of cholinesterase, an enzyme, to function properly in regulating the neurotransmitter acetylcholine.

Introduction

Carbamates have been identified as a health risk. They affect the nervous system by reducing the ability of cholinesterase, an enzyme, to function properly in regulating the neurotransmitter acetylcholine.

Experimental

Pre-treatment

1. Add 50 mL of acetonitrile to 25 g of sample. Homogenize for 2 minutes and filter.

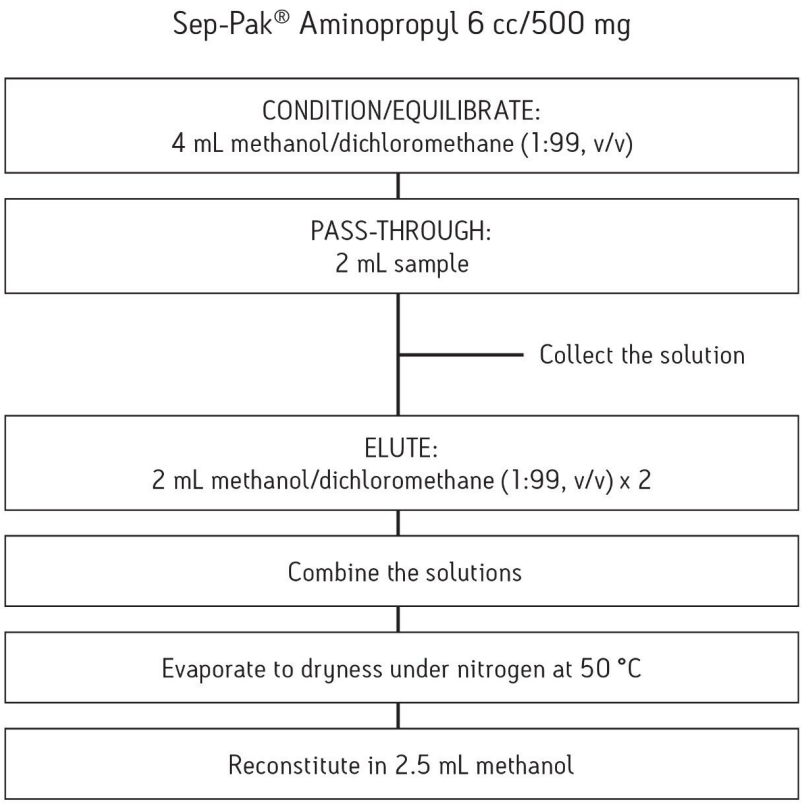
2. Collect 40-50 mL of filtrate into a flask containing 5–7 g sodium chloride.

3. Shake vigorously for 1 minute. Leave to stand at room temperature.

4. Take 10 mL aliquot from the acetonitrile layer and evaporate sample to dryness (80 °C under nitrogen or air).

5. Reconstitute with 2 mL methanol/dichloromethane (1:99, v/v).

SPE Procedure



LC Conditions

System:	Alliance HPLC 2695
Column:	Carbamate Analysis Column, 3.9 x 150 mm
Flow rate:	1.5 mL/min
Mobile phase A:	Water
Mobile phase B:	Methanol
Mobile phase C:	Acetonitrile
Sample:	10 ng of each analyte on column

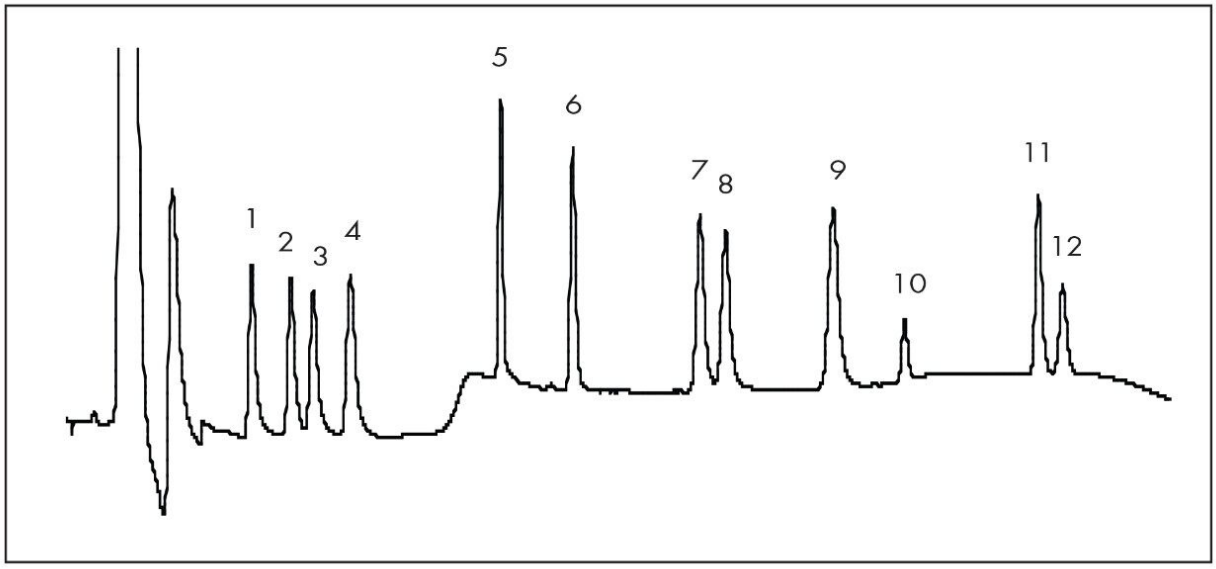
Injection volume:	400 µL
Post column addition:	OPA*/NaOH @ 0.5 mL/min
Detector:	2475 Multi Wavelength Fluorescence Detector
Excitation wavelength:	339 nm
Emission wavelength:	445 nm

**OPA: Orthophthaldehyde*

Gradient:

Time (min)	A%	B%	C%
0.00	88	12	0
5.30	88	12	0
5.40	68	16	16
14.00	68	16	16
16.10	50	25	25
20.00	50	25	25
22.00	88	12	0
30.00	88	12	0

Results and Discussion



Chromatogram of aldicarb standards.

Peak	Analyte	400 µL
1	Aldicarb Sulfoxide	3.77
2	Aldicarb Sulfone	4.66
3	Oxamyl	5.17
4	Methomyl	6.03
5	3-Hydroxycarbofuran	9.83
6	Aldicarb	11.46
7	Propoxur	14.35
8	Carbofuran	14.94
9	Carbaryl	17.37
10	1-Naphthol	18.99
11	Methiocarb	22.02
12	BDMC	22.56

Expected retention times for aldicarb standards.

References

1. Ministry of Agriculture, China (NY/T 761.1 – 2004 and NY/T761.3 – 2004).

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Alliance HPLC System <https://www.waters.com/534293>

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