

응용 자료

Carbamates in Fruits and Vegetables

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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

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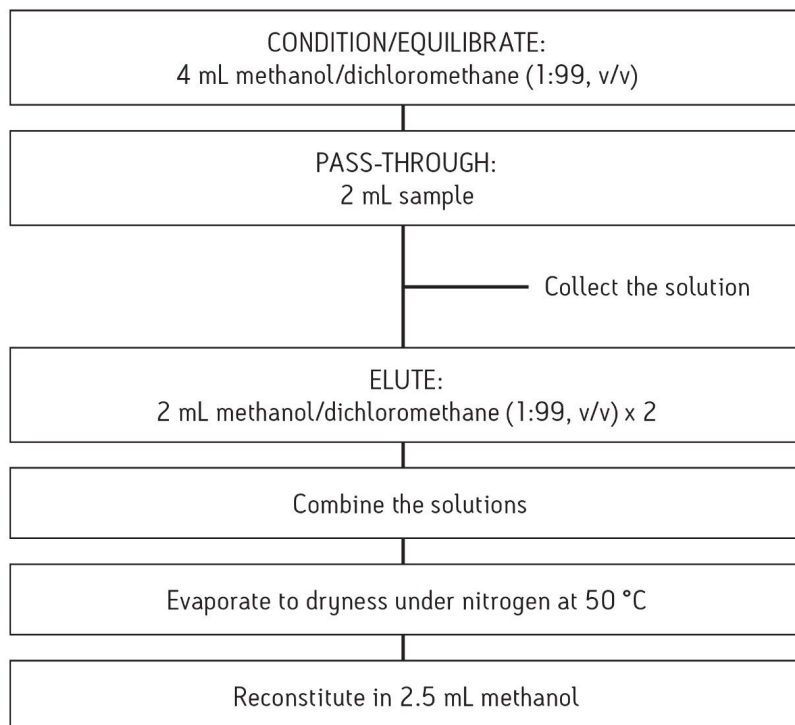
Experimental

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

Sep-Pak® Aminopropyl 6 cc/500 mg



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 |

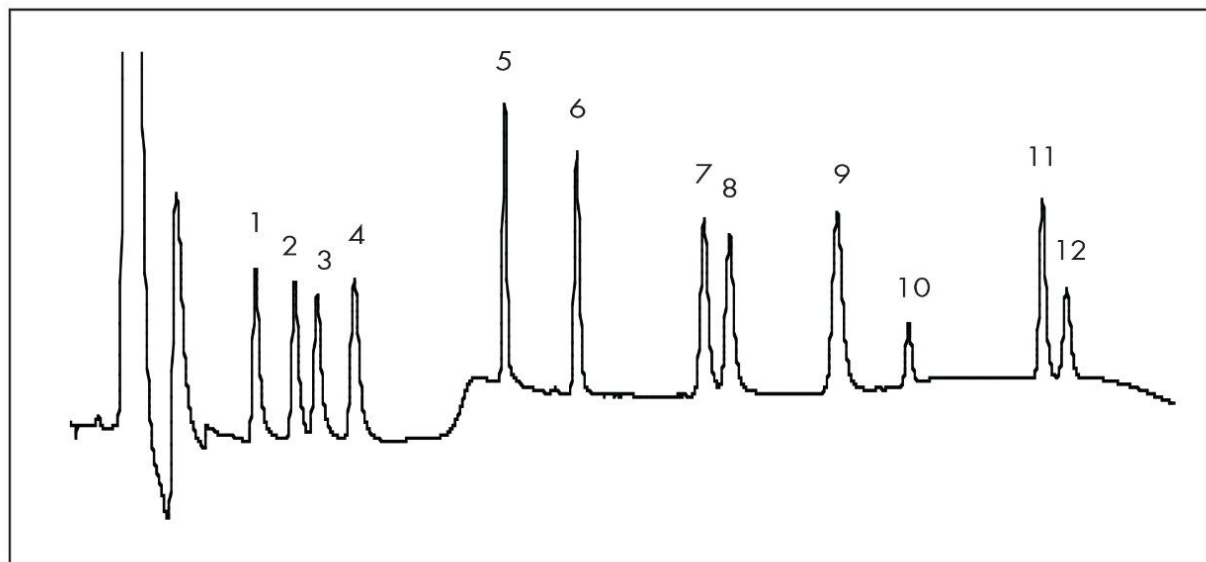
| | |
|------------------------|---|
| Injection volume: | 400 µL |
| Post column addition: | OPA*/NaOH @ 0.5 mL/min |
| Detector: | 2475 Multi Wavelength Fluorescence Detector |
| Excitation wavelength: | 339 nm |
| Emission wavelength: | 445 nm |

*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 μ L |
|------|---------------------|-------------|
| 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).

Featured Products

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

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