

# Extraction of Pyrethrin and Pyrethroid Pesticides From Fish Using the QuEChERS Approach



## UCT Part Numbers

**EC4MSSA50CT-MP**  
(4000 mg MgSO<sub>4</sub> and 1000 mg sodium acetate)

**CUMPSC18CT**  
(150 mg MgSO<sub>4</sub>, 50 mg PSA and 50 mg endcapped C18)

The QuEChERS approach is used for the determination of trace levels of natural pyrethrins and synthetic pyrethroids (cypermethrin & deltamethrin) in fish.

## Procedure:

### 1. Extraction

- Weigh 10 grams of homogenized fish into a 50 mL centrifuge tube.
- Add 500 ng cis-permethrin (phenoxy-<sup>13</sup>C<sub>6</sub>) surrogate standard.
- Add 10 mL 1% acetic acid in acetonitrile.
- Add the contents of pouch **EC4MSSA50CT-MP**.
- Shake vigorously for 1 minute then centrifuge.

### 2. Clean-up, Dispersive Solid-Phase (dSPE)

- Transfer 1 mL of supernatant to a 2 mL micro-centrifuge tube **CUMPSC18CT**.
- Shake for 1 minute then centrifuge.
- Transfer 0.5 mL of extract to a graduated tube then evaporate to near dryness.
- Add 50 ng trans-permethrin (phenoxy-<sup>13</sup>C<sub>6</sub>) and bring to exactly 0.5 mL with trimethyl phosphate (TMP).
- Add MgSO<sub>4</sub> to the 0.2 mL mark then vortex.
- Transfer supernatant to injection vial for analysis.

### 3. Analysis

- Use GC/MS in CI mode
- Column: HP-5, 30m X 0.32 mm with 0.25 µm film (or equivalent)
- Splitless mode @ 240°

## GC Oven Program

Initial 80 °C, hold 1 minute

50 °C/min to 200 °C

5 °C/min to 285 °C

50 °C/min to 325 °C, hold 5 minutes

Transfer line 250 °C

## MS Conditions

Source 150 °C

Methane reagent gas

Selected Ion Monitoring Mode

Calibration using matrix matching may be required



## References:

[1] Adapted from Roscoe, Veronica, Judge, Judy, Rawn, Dorothea F.K., "Application of the QuEChERS Extraction Method for the Analysis of Pyrethrin and Pyrethroid Pesticides in Fin and non Fin Fish", Health Products and Food Program, Winnipeg, Manitoba and Bureau of Chemical Safety, Food Research Division, Ottawa, Ontario, Canada, Florida Pesticide Residue Workshop, July 2009

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UCT, LLC • 2731 Bartram Road • Bristol, PA 19007 800.385.3153 • 215.781.9255

[www.unitedchem.com](http://www.unitedchem.com) Email: [methods@unitedchem.com](mailto:methods@unitedchem.com)

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