

Restek QuEChERS Products



QuEChERS Tubes For Extraction and Clean-Up of Pesticide Residues From Food Products
Convenient, ready to use centrifuge tubes with ultra pure, preweighed adsorbent mixes.

- Fast, simple sample extraction and cleanup using dSPE.
- Fourfold increases in sample throughput.
- Fourfold decreases in material cost.
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Quick, Easy, Cheap, Effective, Rugged, and Safe, the QuEChERS ("catchers") method is based on work done and published by the US Department of Agriculture Eastern Regional Research Center in Wyndmoor, PA.(1) Researchers



there were looking for a simple, effective, and inexpensive way to extract and clean pesticide residues from the many varied sample matrices with which they routinely worked. They had been using the Modified Luke Extraction Method, which is highly effective and rugged, but is both labor and glassware intensive, leading to a relatively high cost per sample. Solid phase extraction also had been effective, but the complex matrices the investigators were dealing with required multiple individual cartridges and packings to remove the many classes of interferences, adding costs and complexity to the process. A new method would have to remove sugars, lipids, organic acids, sterols, proteins, pigments and excess water, any of which often are present, but still be easy to use and inexpensive.



The researchers developed a simple two-step procedure. First, the homogenized samples are extracted and partitioned, using an organic solvent and salt solution. Then, the supernatant is further extracted and cleaned, using a dispersive SPE technique. Multiple adsorbents are placed in a centrifuge tube, along with the 1mL of organic solvent and the extracted residues partitioned from step 1. The contents are thoroughly mixed, then centrifuged, producing a clean extract ready for a variety of GC or HPLC analytical techniques.² Validation and proficiency data for the QuEChERS method are available for a wide variety of pesticides in several common food matrices at www.quechers.com

Using the dispersive SPE approach, the quantity and type of adsorbents, as well as the pH and polarity of the solvent, can be easily adjusted for differing matrix interferences and "difficult" analytes. Results from this approach have been verified and modified at several USDA and Food and Drug Administration labs, and the method now is widely accepted for many types of pesticide residue samples.

Restek products make this approach even simpler. The centrifuge tube format, available in 2mL and 15mL sizes, contains magnesium sulfate (to partition water from organic solvent) and PSA* adsorbent (to remove sugars and fatty acids), with or without graphitized carbon (to remove pigments and sterols) or C18 packing (to remove nonpolar interferences). Custom products are available by quote request. If you are frustrated by the time and cost involved with your current approach to pesticide sample cleanup, we suggest you try this simple and economical new method.

We have products compliant with AOAC, Multi-miniresidue and Draft European methods.

[Click here for our complete QuEChERS SPE Tubes product listing.](#)



Did You Know?

Multiple sorbents are used to extract different types of interferences.

MgSO₄ removes excess water

PSA* removes sugars, fatty acids, organic acids, and anthocyanine pigments

C18 removes nonpolar interferences

Carbon removes pigments, sterols, and nonpolar interferences

PSA primary and secondary amine exchange material.

References

1. Anastassiades, M., S.J. Lehotay, D. Stajnbaher, F.J. Schenck, *Fast and Easy Multiresidue Method Employing Acetonitrile Extraction/Partitioning and "Dispersive Solid-Phase Extraction" for the Determination of Pesticide Residues in Produce* , J AOAC International, 2003, vol 86 no 22, pp 412-431.
2. Schenck, F.J., *SPE Cleanup and the Analysis of PPB Levels of Pesticides in Fruits and Vegetables* . Florida Pesticide Residue Workshop, 2002.

QuEChERS.com

Methods and extensive validation and recovery data developed by QuEChERS researcher Michelangelo Anastassiades.

INTRO TO QuEChERS



[Check out our audio slideshow introduction to the QuEChERS procedure](#), narrated by Jack Cochran, our Director of New Business and Technology.

LITERATURE

Application Note

[Fast, Simple QuEChERS Extraction and Cleanup of Pesticide Residue Samples, GNAN1097 \(165kb pdf\)](#)

Tear Sheet

[QuEChERS Products, FFTS1095 \(342kb pdf\)](#)

Posters

[Optimizing Dispersive Solid Phase Extraction and Splitless Injection-Gas Chromatography for QuEChERS Fruit and Vegetable Extracts \(90kb pdf\)](#)

QuEChERS Methodology Instruction Sheets

[Mini-Multiresidue Method, 805-01-001 \(175kb pdf\)](#)

[AOAC Approach, 805-01-002 \(165kb pdf\)](#)

[dSPE Sample Clean-up, 805-01-003 \(175kb pdf\)](#)

METHODS

[QuEChERS](#)

[A Mini-Multiresidue Method for the Analysis of Pesticide Residues in Low-Fat Products \(91kb pdf\)](#)

[AOAC Official](#)

[Method 2007.01](#)

[Pesticide Residues in Foods by Acetonitrile Extraction and Partitioning with Magnesium Sulfate Gas Chromatography/](#)

[Mass Spectrometry and Liquid Chromatography/](#)

[Tandem Mass Spectrometry First Action 2007](#)

[European method CEN/TC 275 - EN_15662](#)

[Foods of plant origin Determination of pesticide residues using GC-MS and/or LC-MS/MS following acetonitrile extraction/](#)

[partitioning and cleanup by dispersive SPE QuEChERS-method](#)