



Bonna-Agela MAS-QuEChERS

MAS-QuEChERS



Official Website

Best Value
Guaranteed Product Quality
Innovation to Benefit Customers



Quick, Easy, Cheap, Effective, Rugged and Safe

—— QuEChERS

The QuEChERS (Quick, Easy, Cheap, Effective, Rugged, and Safe) method was first introduced by USFDA and scientists in 2003 and it becomes increasingly popular in the area of multi-residue pesticide analysis in food and agricultural products.



MAS-Q (QuEChERS)

MAS-Q (Multi-mechanism Adsorption SPE-QuEChERS) is an application of modified QuEChERS method which is suitable for most of the pesticides residue analysis, drug or antibiotic residue analysis in vegetable, fruit, grain, and animal issues.



Features

- ▲ Single extraction method could be applied to different kinds of sample matrix;
- ▲ High recovery rate for multiple pesticides residue analysis;
- ▲ Universal Clean-up kits are optimized for different application requirement;
- ▲ The method is simple, fast, reproducible and labor-saving.

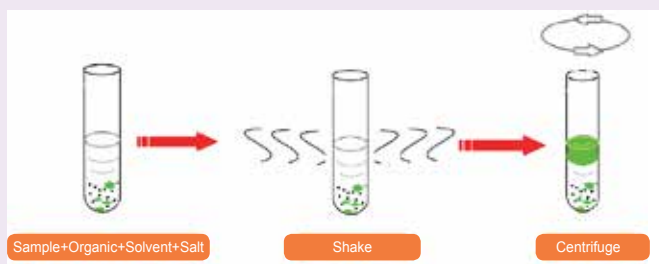
Standard Operating Procedure

• Step 1: Extraction

Weight comminuted sample (10 g or 15 g) into a 50mL centrifuge tube, and then open the extraction kit package, add the salt after adding your solvent to the sample.

Extraction salts is helpful to extract the pesticides into the organic layer.

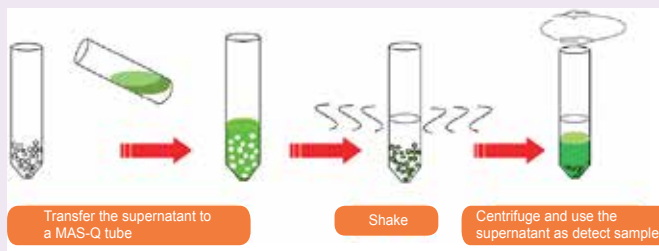
Four glass homogeneous balls are suggested to add in to break the MgSO_4 caking caused by sample rich in water.



• Step 2: Cleanup

Take proper supernatant from step one, and add it into a selected clean up tube which is suited to the food matrix also the method you are following.

2 mL or 15 mL centrifuge tube containing different kind of SPE sorbent and MgSO_4 is available for different sample volume. The sorbent will adsorb the interfering matrix, and the MgSO_4 helps remove excess water.



MAS-QuEChERS Production Selection Guide

Universal Clean-up kits are optimized for different application requirement:

- ▲ Cleanert® Pesticarb removes the pigments, including chlorophyll and carotenoids.
- ▲ Cleanert® PSA removes organic acid.
- ▲ Cleanert® C18 removes non-polar interferences, such as fats.
- ▲ Anhydrous MgSO₄ removes the excess water.

- The clean up kits are available in 2 mL, 15 mL for different sample volume requirement, and extraction kits are packed in anhydrous sealed packets;
- Superior centrifuge tubes and glass homogeneous ball provide you a simple and convenient experience.

Extraction		Clean up	
AOAC 2007.01			
AOAC 2007.01 -AOAC Method 6 g MgSO ₄ (anhydrous) ; 1.5 g NaAc P/N: MS-MG5052	General fruit and vegetable		2 mL Centrifuge tube for 1 mL sample 50 mg PSA, 150 mg MgSO ₄ , P/N: MS-PA0250
			15 mL Centrifuge tube for 8 mL sample 400 mg PSA, 1200 mg MgSO ₄ , P/N: MS-PA1012
	Fruits and vegetables with fats and waxes		2 mL Centrifuge tube for 1 mL sample 50 mg PSA, 50 mg C18, 150 mg MgSO ₄ , P/N: MS-9PA0203
			15 mL Centrifuge tube for 8 mL sample 400 mg PSA, 400 mg C18, 1200mg MgSO ₄ , P/N: MS-9PA1011
	Pigmented fruits and vegetables		2 mL Centrifuge tube for 1 mL sample 50 mg PSA, 50 mg PC, 150 mg MgSO ₄ , P/N: MS-PP0250
			15 mL Centrifuge tube for 8 mL sample 400 mg PSA, 400 mg PC, 1200 mg MgSO ₄ , P/N: MS-PP1550
EN 15662			
EN 15662 -European and Mini-Multiresidue Method 4 g MgSO ₄ , 1 g NaCl, 1 g NaCitrate, 0.5 g disodium citrate sesquihydrate P/N: MS-NMS5050 Original Unbuffered Method 6 g MgSO ₄ (anhydrous); 1.5 g NaCl P/N: MS-MG5051 4 g MgSO ₄ (anhydrous); 1 g NaCl P/N: MS-MG5055	General fruit and vegetable		2 mL Centrifuge tube for 1 mL sample 25 mg PSA, 150 mg MgSO ₄ (anhydrous), P/N: MS-PA0251
			15 mL Centrifuge tube for 6 mL sample 150 mg PSA, 900 mg MgSO ₄ (anhydrous), P/N: MS-PA1011
	Fruits and vegetables with fats and waxes		2 mL Centrifuge tube for 1 mL sample 25 mg PSA, 25 mg C18, 150 mg MgSO ₄ (anhydrous) P/N: MS-9PA0204
			15 mL Centrifuge tube for 6mL sample 150 mg PSA, 150 mg C18, 900 mg MgSO ₄ (anhydrous) P/N: MS-9PA1210
	Pigmented fruits and vegetables		2 mL Centrifuge tube for 1 mL sample 25 mg PSA, 2.5 mg PC, 150 mg MgSO ₄ (anhydrous) P/N: MS-PP0251
			15 mL Centrifuge tube for 6 mL sample 150 mg PSA, 15 mg PC, 900 mg MgSO ₄ (anhydrous) P/N: MS-PP1511

Workflow

--- Pesticide Residue Analysis in the Fruits and Vegetables

AOAC 2007.01

15 g homogenize sample + 15 mL 1% HAc (Acetic Acid) in ACH in 50 mL tube, add internal standard and shake.



Add 6 g Anhydrous MgSO₄ and 1.5 g Anhydrous NaAc, shake vigorously 1 min.



Centrifuge > 1500 RPM 1 min

Transfer supernatant to clean tube with Anhydrous MgSO₄, PSA, C18 and GCB, shake.



Centrifuge > 1500 RPM 1 min

GC/MS analysis- dilute the extract with methylbenzene;
LC/MS/MS analysis- dilute the extract with 6.7 mM formic acid.

EN 15662

10 g homogenize sample + 10 mL MeCH in 50 mL tube, add internal standard and shake.



Add 4 g Anhydrous MgSO₄, 1 g Anhydrous NaAc, 1 g Sodium Citrate, 0.5 g disodium citrate sesquihydrate, shake vigorously.



Centrifuge > 3000 RPM/min

Transfer supernatant to clean tube with 150 mg Anhydrous MgSO₄, 25 mg PSA, 2.5 mg or 7.5 mg GCB (remove pigments, optional) , shake.



Centrifuge > 3000 U/min

GC/MS or LC/MS/MS analysis- dilute the extract with 5% HAc (Acetic Acid) in ACH.

MAS-Q Ordering Information

Sorbent Packet



	Extraction Kit (Without of centrifuge tube) 50/PK	Extraction kit with 50 mL centrifuge tube 50/PK	Extraction kit with 50mL centrifuge tube and glass homogenizer balls 50/PK	Standard Method
6 g MgSO_4 (Anhydrous) 1.5 g NaAc(Anhydrous)	MS-MG5052-1	MS-MG5052	MS-MG5052-H	Buffered AOAC 2007.01 method
4 g MgSO_4 (Anhydrous) 1 g NaAc(Anhydrous)	MS-MG5057-1	MS-MG5057	MS-MG5057-H	Buffered AOAC 2007.01 method
1 g NaCl 4 g MgSO_4 (Anhydrous) 0.5 g Disodium citrate sesquihydrate 1 g NaCitrate	MS-NMS5050-1	MS-NMS5050	MS-NMS5050-H	Buffered EN 15662 method, 10 g samples
4 g MgSO_4 (Anhydrous) 1 g NaCl	MS-MG5055-1	MS-MG5055	MS-MG5055-H	Original method, 15 g samples
6 g MgSO_4 (Anhydrous) 1.5 g NaCl	MS-MG5051-1	MS-MG5051	MS-MG5051-H	Original method, 15 g samples
6 g MgSO_4 (Anhydrous) 1.5 g NaAc.3H ₂ O	MS-MG5050-1	MS-MG5050	MS-MG5050-H	Buffered AOAC 2007.01 method

Glass Homogenizer



	Package	Part No.
Glass Homogenizer	50/PK	HG01
	500/PK	HG500



MAS-QuEChERS Cleanup Kits

Cleanup Kits, Fruits and Vegetables Samples

Sample Type	Contents	Method	Tube Size	Part No.
General fruits and vegetables, such as apple, cabbage, cucumber 	50 mg PSA, 150 mg MgSO ₄ (Anhydrous)	AOAC 2007.01	2 mL centrifuge tube 100/PK	MS-PA0250
	400 mg PSA, 1.2 g MgSO ₄ (Anhydrous)	AOAC 2007.01	15 mL centrifuge tube 50/PK	MS-PA1012
	25 mg PSA, 150 mg MgSO ₄ (Anhydrous)	EN 15662	2 mL centrifuge tube 100/PK	MS-PA0251
	150 mg PSA, 900 mg MgSO ₄ (Anhydrous)	EN 15662	15 mL centrifuge tube 50/PK	MS-PA1011
Fruits and vegetables with fats and protein, such as potato, corn, avocado 	50 mg C18, 50 mg PSA, 150 mg MgSO ₄ (Anhydrous)	AOAC 2007.01	2 mL centrifuge tube 100/PK	MS-9PA0203
	400 mg C18, 400 mg PSA, 1200 mg MgSO ₄ (Anhydrous)	AOAC 2007.01	15 mL centrifuge tube 50/PK	MS-9PA1011
	25 mg C18, 25 mg PSA, 150 mg MgSO ₄ (Anhydrous)	EN 15662	2 mL centrifuge tube 100/PK	MS-9PA0204
	150 mg C18, 150 mg PSA, 900 mg MgSO ₄ (Anhydrous)	EN 15662	15 mL centrifuge tube 50/PK	MS-9PA1210
	100 mg PSA, 100 mg C18, 300 mg MgSO ₄ (Anhydrous)	NYT 1380-2007	15 mL centrifuge tube 50/PK	MS-9PA1010
Fruits and vegetables rich in pigment, such as carrot, spinach, lettuce 	25 mg PSA, 2.5 mg PestiCarb, 150 mg MgSO ₄ (Anhydrous)	EN 15662	2 mL centrifuge tube 100/PK	MS-PP0251
	150 mg PSA, 15 mg PestiCarb, 900 mg MgSO ₄ (Anhydrous)	EN 15662	15 mL centrifuge tube 50/PK	MS-PP1511
	25 mg PSA, 7.5 mg PestiCarb, 150 mg MgSO ₄ (Anhydrous)	EN 15662	2 mL centrifuge tube 100/PK	MS-PP0252
	50 mg PSA, 50 mg PC, 150 mg MgSO ₄ (Anhydrous)	AOAC 2007.01	2 mL centrifuge tube 100/PK	MS-PP0250
	150 mg PSA, 50 mg PC, 900 g MgSO ₄ (Anhydrous)	EN 15662	15 mL centrifuge tube 50/PK	MS-PP1510
	400 mg PSA, 400 mg PC, 1200 mg MgSO ₄ (Anhydrous)	AOAC 2007.01	15 mL centrifuge tube 50/PK	MS-PP1550

Sample Type	Contents	Method	Tube Size	Part No.
Complicated Sample matrix rich in pigment and fatty 	50 mg PSA, 50 mg C18 50 mg PC 150 mg MgSO ₄ (Anhydrous)	AOAC 2007.01	2 mL centrifuge tube 100/PK	MS-9PP0250
	400 mg PSA, 400 mg C18 400 mg PC 1200 mg MgSO ₄ (Anhydrous)	AOAC 2007.01	15 mL centrifuge tube 50/PK	MS-9PP0253
	150 mg PSA, 150 mg PC 150 mg C18 900 mg MgSO ₄ (Anhydrous)		15 mL centrifuge tube 50/PK	MS-9PP0252
Empty centrifuge tube	50 mL		50 mL centrifuge tube 50/PK	LXG0050
	15 mL		15 mL centrifuge tube 50/PK	LXG0015
	2 mL		2 mL centrifuge tube 100/PK	LXG0002-L

Cleanup Kits for dairy sample

Sample Type		Contents	Tube Size	Part No.
Highly protein content dairy sample, milk 	Melamine in complex matrix (fodder, chocolate, flour, fish, meat)	Blend of ion exchange and reversed phase materials	50 mL centrifuge tube 50/PK	MS-SPC5001
	Melamine in dairy sample		50 mL centrifuge tube 50/PK	MS-SPM5001
	Dicyandiamide in dairy sample		15 mL离心管 50/PK	MS-SQA02

Cleanup Kit for biological sample

Sample Type		Contents	Tube Size	Part No.
Drugs analysis in plasma 	Basic drug	50 mg PAX	2 mL centrifuge tube 100/PK	MS-AX0250
		200mg PAX	15 mL centrifuge tube 50/PK	MS-AX1020
	Acidic drug	50 mg PCX	2 mL centrifuge tube 100/PK	MS-CX0250
		200 mg PCX	15 mL centrifuge tube 50/PK	MS-CX1020
	Neutral drug	50 mg PEP	2 mL centrifuge tube 100/PK	MS-PE0250
		200 mg PEP	15 mL centrifuge tube 50/PK	MS-PE1020

Analysis of Multi-pesticide Residues in Apple using MAS-QuEChERS Kits (AOAC 2007.01)



Extraction

- Weight 5 g comminuted apple sample into a 50 mL centrifuge tube
- Add 15 mL MeOH with 0.1% HAc into the sample
- Open the MAS-QuEChERS Extraction Kits (P/N: MS-MG5050) and transfer the material into the sample also four glass homogenizers
- Shake by hand for 1 min

Centrifuge 5 min, 8000 r/min

Cleanup

- Take 10 mL supernatant into a 15 mL MAS-QuEChERS Cleanup Tube (P/N: MS-9PA1011)
- Shake by hand for 1 min

Centrifuge 5 min, 8000 r/min

Analysis

- Take 5 mL supernatant from step two and concentrate it by N₂ evaporator at 40°C, reconstitute the residue with 1 mL acetone and then for GC/MS analysis
- Take another 5 mL supernatant and concentrate it by N₂ evaporator at 40°C, reconstitute the residue with 1 mL ACN and then for HPLC analysis.

Ordering Information

Product Name	Specification	Package	Part No.
MAS-QuEChERS Extraction Kits	6 g MgSO ₄ (Anhydrous), 1.5 g NaAc.3H ₂ O with 50 mL centrifuge tube	50/PK	MS-MG5050
MAS-QuEChERS Cleanup Tube	400 mg C18, 400 mg PSA, 1200 mg MgSO ₄ (Anhydrous), with 15 mL centrifuge tube	50/PK	MS-9PA1011
1.5 mL vials	Short thread, 32 × 11.6 mm	100/pk	1109-0519
Caps and Septa	Screw neck cap, short 9 mm, center hole; red silicone/ white PTFE septa 45° Shore A; 1.0 mm	100/pk	0915-1819
Nylon Syringe Filters	13 mm, 0.22 µm	200/PK	AS021320
Disposable Syringe	2 mL, no needle	100/PK	LZSQ-2ML

Analysis of Multi-pesticide Residues in Cabbage using MAS-QuEChERS Kits Using LC-MS/MS (EN 15562)



Extraction

- Weight 10 g comminuted sample in 50 mL centrifuge tube
- Add 10 mL ACN into the sample firstly open the MAS-QuEChERS Extraction Kits (P/N: MS-NMS5050) and transfer the material into the sample also four glass homogenizers
- Shake by hand for 1 min



Centrifuge 5 min, 8000 r/min

Cleanup

- Take out 1 mL supernatant and add it into MAS-QuEChERS cleanup tube (P/N: MS-PA0215)
- Shake by hand for 1 min



Centrifuge 5 min, 8000 r/min

Analysis

- Take the supernatant then for LC-MS/MS analysis

Ordering Information

Product Name	Specification	Package	Part No.
MAS-QuEChERS Extraction Kits	1 g NaCl, 4 g MgSO ₄ (Anhydrous), 0.5 g Disodium citrate sesquihydrate, 1 g NaCitrate, with 50 mL centrifuge tube	50/PK	MS-NMS5050
MAS-QuEChERS Cleanup Kits	25 mg PSA, 150 mg MgSO ₄ (Anhydrous), 2 mL centrifuge tube	100/PK	MS-PA0251
Glass homogenizers	Diameter: 10 mm	50/PK	HG01
1.5 mL vials	Short thread, 32×11.6 mm	100/PK	1109-0519
Caps and Septa	Screw neck cap, short 9 mm, center hole; red silicone/ white PTFE septa 45° Shore A; 1.0 mm	100/PK	0915-1819
Nylon Syringe Filters	13 mm, 0.22 µm	200/PK	AS021320
Disposable Syringe	2 mL, no needle	100/PK	LZSQ-2ML

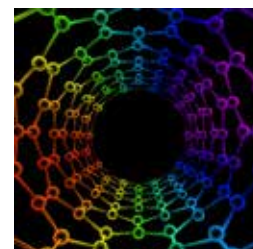
Cleanert[®] NANO

— A New Material of Carbon Nanotube

Cleanert[®] NANO was developed base on carbon nanotube material. After Functionalized process, the nano material has better affinity to remove colorants and fatty acids. And the surface deactivation process could control the over-adsorption within limited area, and ensure the recovery of pesticide with a benzene ring structure. The material which has a layer stacked structure could significantly increase the specific surface area and also the loading capacity.

These characteristics allow much less use of the material and improve specificity and selectivity. The amount of material used per sample is about only 1/10 to 1/5 when comparing to traditional PSA, C18 or GCB SPE material.

It could be widely used in the analysis of multiple-pesticide residues in fruit, vegetable and other agro-products. Small amount of the nano material about 10-15mg is enough for most of the sample matrix, and small sorbent bed make it could be packed as a filter format cartridge and show more benefit for fast analysis and small amount of sample analysis requirement.



Structure of the Cleanert[®] Nano



Syringe Filter Format

Product Formats

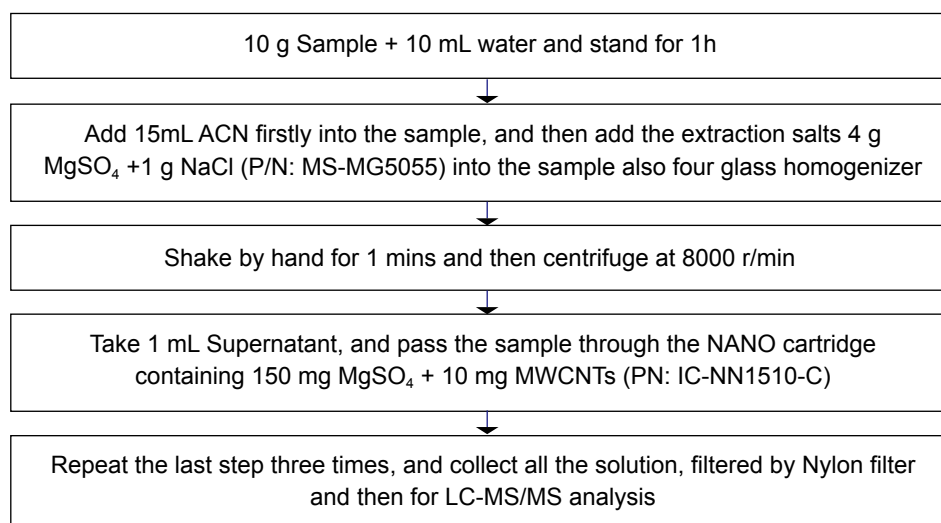
Optimized sorbent was packed into a syringe filter format cartridge and make it could be operated with a simple two-Step operation, conditioning, loading sample and collect the eluent.

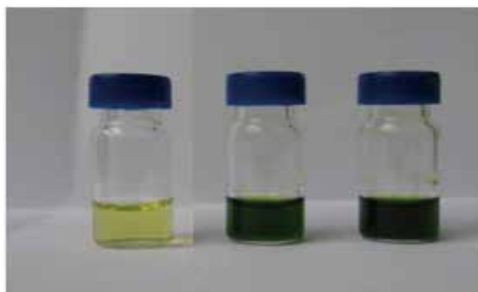
This kind of design make it could be easily compatible with an automated workstation for high throughput requirement.

Application Note

Detection of 112 kinds of pesticide residue in black tea leaves sample using LC-MS/MS method

Sample Preparation Procedure





Cleanup performance comparison for leek sample: cleanert nano(left), PSA (middle) and before cleanup (right)

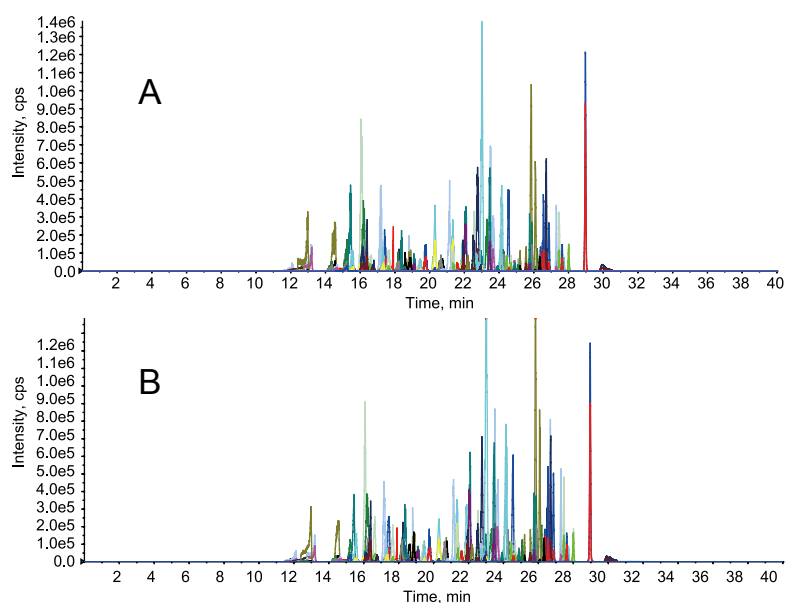


Figure 1. LC-MS/MS chromatogram of tea leaves extract. (A) 114 kinds of pesticides standard solution; (B) tea leaves extract spiked with 0.02 µg/mL 114 kinds of pesticides standard solution.

The recoveries for 114 kinds of pesticides are from 60 to 110%, and the RSD is lower than 10%.

Ordering Information

Product Name	Specification	Package	Part No.
Cleanert® NANO Nano tube for Complex Samples	10 mg Nano, 150 mg MgSO ₄	50/PK	IC-NN1010-V
MAS-QuEChERS Cleanup Kits	15 mg Nano, 150 mg MgSO ₄	50/PK	IC-NN1510-C

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