SinCHERS

Product Introduction

Compared with traditional SPE technology, SinCHERS column greatly improved detection efficiency. Compared with the QuEChERS, its purification process does not require centrifugation again and only need one step (30s) to complete the purification process. The development of electric supporting equipment enables the whole purification process to be semi-automated. The purification of 12 samples can be completed within 3 minutes, which greatly improves the detection efficiency and relatively reduces the detection cost of the laboratory.

In addition, Welch also developed special columns for detecting different items: special column for pesticide residue detection in vegetables, fruits, grains, oil samples, and complex matrices such as ginger, garlic and Chinese herbal medicine; Special column for detection of antibiotics and hormones in animal food; Special column for the detection of perfluorinated compounds in soil; Special column for the detection of azo dyes in textiles columns. SinCHERS column has been widely praised and used in textile detection, pesticide residue detection, antibiotic detection and environmental pollutant detection.

SinCHERS: Meet AOAC 2007.1 and EN 15662 standards

SinCHERS=Single-step+Cheap+Effective+Rugged+Safe

QueChERS=Quick+Easy+Cheap+Effective+ Rugged+Safe

Perfect substitution of QueChERS

	SPE	SinCHERS	QuEChERS	SinCHERS Advantages
Detection limit	✓ ✓	✓	✓	8 times sample concentration can be achieved at most
Purification efficiency	✗	✓ ✓	✓	Complete the purification process in one step
Purification effect	✓ ✓	✓ ✓	✗	Extract flows slowly through the purified packing materials, and the impurities are absorbed completely
Solvent required	✗	✓ ✓	✓	One sample consumed only 10ml of organic solvent

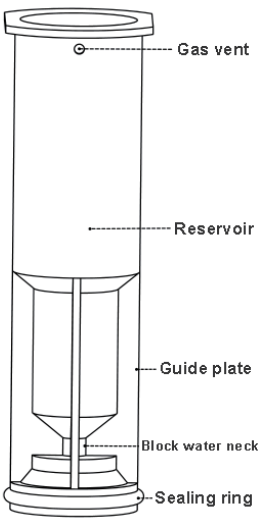
Appearance and structure of SinCHERS:

- Gas vent
  Used to drain the volume of air occupied by the organic extract
- Reservoir
  Used to store purified extract
- Guide plate
  SinCHERS column body plays a guiding role in the descending process inside centrifugal tube
- Block water neck
  Water-blocking filter inside prevents water from contacting packing materials and entering the liquid collection tank
- Sealing ring
  Used for sealing between SinCHERS column body and centrifuge tube

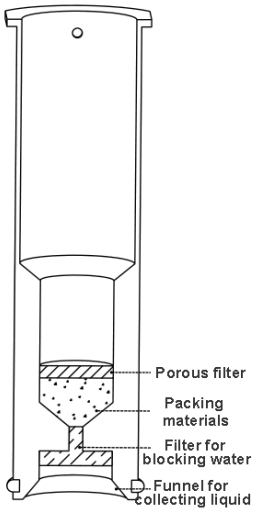
★ The column body is made of medical grade polypropylene.

★ The sealing ring is made of medical grade high-purity silica gel.

★ SinCHERS columns are designed as disposable products.



The internal structure of SinCHERS column:



- Porous filter

  Porous polyethylene filter for fixing packing materials
- Packing materials

  Adsorb dissolved impurities in the organic extract and purify the extract
- Water-blocking filter

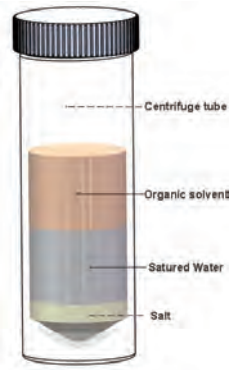
  Water-blocking groups are bonded to prevent water from passing through
- Funnel for collecting liquid

  Funnel-shaped bottom to ensure that all organic extracts enter the packing

★ Packing materials bonded silica gel or with polymer matrix such as C18, PSA, NH_2 and SAX can be selected according to the impurities in the sample and physicochemical properties of the components to be tested. The selection is based on ensuring that impurities in the extract can be adsorbed by the packing materials, and that the components to be tested can enter the reservoir smoothly.

Operation steps:

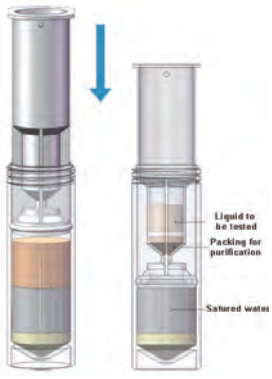
1. Extract



- Weigh the sample in the centrifuge tube.
- Add acetonitrile.
- Ultrasonic or homogenizer extraction, completely release the components to be tested in the sample.
- Add buffer salt or excessive salt to the centrifuge tube, adjust the pH of aqueous solution, improve the recovery rate, and make the organic extract and aqueous solution stratify.
- Vibrate, let the components to be tested be completely dissolved and transferred into the organic extract.
- Centrifuge, let the undissolved salts and particles in the samples be deposited at the bottom of the centrifuge tube, and accelerate the stratification between the organic extract and the aqueous solution in the lower layer.

★ The centrifugation time shall not be less than 3 min.

2. Clean



- Insert SinCHERS column into the centrifuge tube.
- Press down slowly at the speed of 2mm/s.
- The upper organic extract in the centrifuge tube will contact with the packing materials through the water-blocking filter.Impurities and interferents will be adsorbed by the packing and the components to be tested will enter into the reservoir.
- Continue to press down the SinCHERS column until it cannot be descended. The purification process is completed. Take out the tested liquid into the sample vial for testing.
- You can choose to use manual tools or power tools to complete the downpressing process of SinCHERS in a centrifugal tube (find details in product materials).

★ When a water-blocking filter contacts aqueous solution during the descending of the SinCHERS column, the SinCHERS cannot continue to go down.

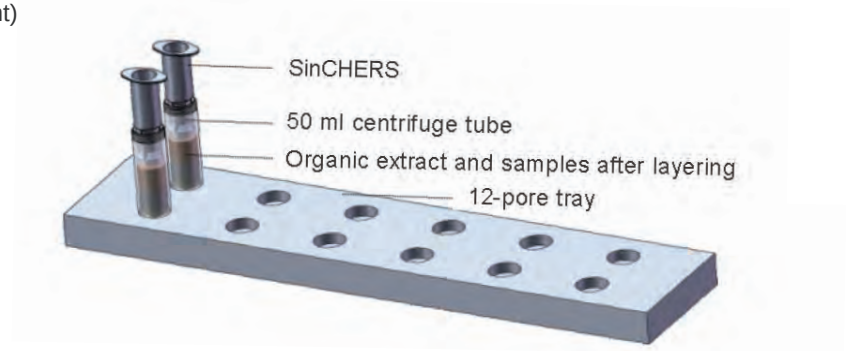
★ After centrifugation, the extract and saturated aqueous solution are stratified. The operation and transfer process should be as smooth as possible to prevent the two layers from mixed dissolving again.

Manual tool

- Put the centrifuge tubes in the centrifuge tube rack in sequence after using.
- Open the lid of the centrifuge tube and insert the SinCHERS column into the centrifuge tube.
- Gently press down with your hand until the bottom of the column is near the liquid level.
- Lift the manual press lever and take out a centrifugal tube with SinCHERS column and place it directly under the small pressure plate.
- Slowly press down the rod, keeping the SinCHERS in the centrifuge tube at a downward speed of 2 mm/s until it can’ t be down. Lift the pressure rod to complete the purification process. The next sample purification process can refer to this instruction.
- The centrifuge tube with flat bottom can be placed directly on the base, and the conical tube needs to be prepositioned with a base.
- ★ Keep the whole operation process as smooth as possible to ensure that the organic extract layer and water layer will not be dissolved together again.
- ★ Manual tools can handle three samples at a time and a tray can be put nine samples.

Power tool

- Put the centrifuge tubes in the tray in sequence after using.
- Open the lid of the centrifuge tube and insert the SinCHERS into the centrifuge tube. Press gently with your hand to the bottom of the column at about 40 ml of the centrifuge tube scale.
- Slowly place the tray into the positioning slot of the power tool base, move the tray back and forth, and move the first group of SinCHERS right under the press-plate.
- Click the button of "An operation" to complete a working cycle, that is, to complete the purification process of a group of samples.
- Then move the tray to keep the second group of SinCHERS columns right under the platens and click the "An operation" button... and so on.
- Or click the "Multiple operations" button to automatically complete three working cycles, just need to move the tray back and forth.
- ★ Keep the whole operation process as smooth as possible to ensure that the organic extract layer and water layer will not be dissolved together again.
- ★ Size: 29cm (long)×16cm (width)×60cm (height)

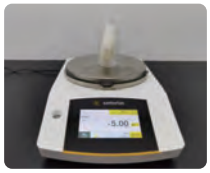


Structure of tray:

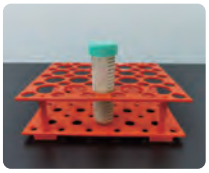
- ★ The size of the tray matches the size of the positioning slot on the base of the power tool.
- ★ The pore size and depth inside the tray coincide with the size of 50 ml centrifuge tube.
- ★ It is also suitable for 50 ml flat bottom self-supporting type and conical centrifuge tube.

Application: detection of pesticide residues in grain

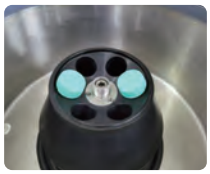
- General column for pesticide residues detection: SinCHERS-General (P/N: 01140-10051)
- Salt bag for extracting: 6g $MgSO_4$, 1.5g NaOAc (P/N: 00528-20000)



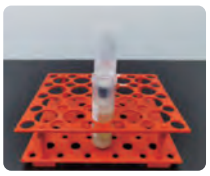
1. Break and grind corn samples. Weigh 5g sample in a 50mL centrifuge tube and then add a spike.



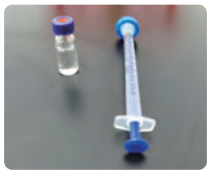
2. Take 10mL water, add it to the centrifuge tube. Let it stand for 30 min to completely moisten the sample and ensure that the tested substance can be completely extracted. Weigh 10 mL acetonitrile containing 1% acetic acid, then open the extracted salt bag at the same time. Add the solution into the centrifuge tube, swirl and vibrate for 1 min.



3. Centrifuge at 4000 r for 5min.



4. After centrifugation, three layers will appear in the centrifuge tube, they are solid residues, aqueous solution and acetonitrile extraction layer from bottom to top. Take the SinCHERS-General and insert it into a centrifuge tube. Then press down as far as possible, the liquid-liquid distribution and purification will be completed at the same



5. After the pipette or other quantitative liquid remover take out liquid to be tested, flush the liquid to be tested once for the purpose of wetting the nozzle and thoroughly mixing the liquid to be tested. Then take out the liquid quantitatively.

- GC/MS: take 5ml acetonitrile solution purified with SinCHERS, and blow it with nitrogen to dry in 40℃ water bath. Have a constant volume with 1ml hexane containing 20% acetone, then filter into the sample injection vial to be tested. (Or inject acetonitrile directly without nitrogen blowing)
- LC/MS: take 2ml acetonitrile solution purified with SinCHERS, and blow it with nitrogen to dry in 40℃ water bath. Have a constant volume with 1ml hexane containing 20% acetone, then filter into the sample injection vial to be tested. (Or inject acetonitrile directly without nitrogen blowing)

Ordering Information

P/N	Product	Specification	P/N	Product	Specification
01140-10011	Welchrom® SinCHERS column	Welchrom® SinCHERS-AZO, 30 pk (include centrifuge tube)	01140-10021	Welchrom® SinCHERS column	Welchrom® SinCHERS-F, 30 pk (include centrifuge tube)
01140-10031	Welchrom® SinCHERS column	Welchrom® SinCHERS-General, 1200 mg $MgSO_4$, 400 mg PSA, 400 mg C18,30 pk	01140-10041	Welchrom® SinCHERS column	Welchrom® SinCHERS-PC, 30pk (include centrifuge tube)
01140-10051	Welchrom® SinCHERS column	Welchrom® SinCHERS-General, 1200 mg $MgSO_4$, 400 mg PSA, 400 mg C18,30 pk	01140-10061	Welchrom® SinCHERS column	Welchrom® SinCHERS-Herb, 900mg $MgSO_4$, 400mg PSA, 400mg C18, 400mg POLY, 200mg GCB-100A, 30 pk (include centrifuge tube)
01140-10071	Welchrom® SinCHERS column	Welchrom® SinCHERS-PC, 30 pk (include centrifuge tube)	01140-10081	Welchrom® SinCHERS column	Welchrom® SinCHERS-ANT I, 30 pk (include centrifuge tube)
01140-10091	Welchrom® SinCHERS column	Welchrom® SinCHERS-ANT II, 30 pk (include centrifuge tube)	01140-20001	Auxiliary tool	Manual tools
01140-20002	Auxiliary tool	Power tool, four ports	00530-20000	Salt bag	4g magnesium sulfate, 1g sodium chloride, 50 pk
00529-20000	Salt bag	4g magnesium sulfate, 1g sodium citrate, 0.5g disodium citrate, 1g sodium chloride, 50 pk	00528-20000	Salt bag	6g magnesium sulfate, 1.5g sodium acetate, 50 pk
005PM-059-50	Salt bag	4g anhydrous sodium sulfate, 1g sodium chloride, 50 pk	005PM-104-50	Salt bag	8g sodium chloride, 50 pk