

Extraction of pesticide residues in food and feed samples (ZentriMix-QuEChERS-Method)

Plant protection products like fungicides and pesticides used in conventional agriculture and the use of antibiotics in factory farming may lead to residues of those compounds in meat, vegetable food and animal feed which constitute a serious risk for public health.

To protect consumers, meat, vegetable food and animal feed are analyzed for residues of plant protection products and antibiotics. More than 800 residues can be measured using chromatographic methods like HPLC or GC.

Extraction of the residues during sample preparation is often performed by the QuEChERS-Method (**Q**uick, **E**asy, **C**heap, **E**ffective, **R**ugged, **S**afe), which allows parallel extraction of most of the residues.

The ZentriMix-QuEChERS-method presented here combines all steps of the QuEChERS-extraction to only one by the use of a powerful dual centrifuge - the ZentriMix 380R. The new protocol (for meat products) was developed together with the EU Reference Laboratory for food of animal origin in Freiburg, Germany.



ZentriMix 380R



Advantages of the ZentriMix-QuEChERS-Method

- **Saving of time:** 50 - 75% compared to conventional QuEChERS-method. Sample tubes have to be opened only once. Up to 6 samples per run.
- **Efficiency:** Maximum recoveries guaranteed by the powerful extraction process.
- **Reproducibility:** Extraction efficiency is independent of the individual person who conducts the extraction. No errors by manual tasks.
- **Sample protection:** The cooled ZentriMix 380R provides protection for thermosensitive analytes.
- **Higher sample throughput:** Relieving the staff from time-consuming extraction steps may allow a higher sample throughput.

Comparison: Conventional QuEChERS-method & ZentriMix-QuEChERS-method

QuEChERS–Method (Time required: approx. 60 min)	ZentriMix-QuEChERS-Method (Time required: approx. 24 min)
Add to 50 ml tube: · 5 g homogenized sample · Internal Standard · 10 ml H ₂ O	Add to 50 ml tube*): · 5 g homogenized sample · Internal Standard · 10 ml H ₂ O · 10 ml Acetonitrile · extraction salt mixture with mixing aid**)
Shake intensively***) (10 min)	ZentriMix, 1000 rpm (2 min)
Add Acetonitrile (10 ml)	not necessary
Shake intensively***) (10 min)	
Add extraction salt mixture**)	
Shake intensively***) (10 min)	
Centrifugation (1500 xg for 5 min at 4 °C)	
transfer aliquots in 15 ml tubes *) (containing 150 mg/ml magnesium sulfate and optional 25 mg/ml PSA)	
Shake intensively (10 min)	ZentriMix, 1000 rpm (2 min)
Centrifugation (1500 x g for 5 min at 4 °C) Use supernatant for further analysis.	

*) Due to the high mechanical stress during ZentriMix-QuEChERS-extraction, use only tubes distributed or authorized by our company (50 ml PP tubes with conical base from TPP (Zollstrasse 7, CH-8219 Trasadingen; article no. 91050, 91014) or from Sarstedt (article no. 62.547.254).

**) Mixture contains 4 g magnesium sulfate, 1 g sodium chloride, 1 g sodium citrate tribasic dihydrate, 0.5g sodium citrate dibasic sesquihydrate and 7g mixing aid (only ZentriMix-Method).

***) 30 sec vortex shaker, then roller shaker

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Order information

	Order no.
ZentriMix 380 R (200-240V, 50-60 Hz)	3200
ZentriMix rotor	3206
Adapter for 50 ml (30 x 115 mm) and 15 ml (17.1 x 120 mm) tubes	3218