

## PESTICIDE ANALYSIS: HYDROLYSIS-RELEVANT SUBSTANCES

The pesticide residue definitions according to Regulation (EC) No 396/2005 include for some active substances esters and conjugates (e.g. phenoxy-carboxylic acids) in addition to the free acids. These have to be fully included in the evaluation of the maximum levels. The determination of those esters and conjugates is not completely covered by conducting the proven QuEChERS multi-method. All relevant active substances, however, can be extracted by an additional alkaline hydrolysis and subsequently be analysed with the multi-method.

### WHY IS HYDROLYSIS NEEDED?

The QuEChERS multi-method only detects the residues in the form of free acids, phenols and some of their esters, but not the residues bound as conjugates. However, these substances may be important from a toxicological point of view. By means of an additional hydrolysis, all relevant residues can be converted to the corresponding free acid and thus be completely mapped according to their residue definition. Without hydrolysis, underestimates are possible in some matrices under certain circumstances.

Current studies (e.g. EURL-SRM-Analytical Observations Report 2020) show that the amount of bound residues after release by hydrolysis can be considerably higher than the free acids and esters detected by the multi-method. In some cases, significantly higher hydrolysis factors (extent of the increase in concentration after hydrolysis compared to the QuEChERS method without hydrolysis) than previously assumed were detected.

Due to the now known high hydrolysis factors, it is no longer guaranteed that relevant residues are still indicated by the detection of traces of free acid via the QuEChERS multi-method, since the findings without hydrolysis can be far below the limit of determination.

### HYDROLYSIS: AN ANALYTICAL TOPIC FOR THE FUTURE

It can be assumed that this topic will become more important in the future. For example, the German *QS Fachgesellschaft Obst-Gemüse-Kartoffeln GmbH* will expand its list of practice-relevant active substances from March 2021, which will also include several hydrolysis-relevant substances.

Furthermore, the German *Bundesverband Naturkost Naturwaren e.V.* recommends carrying out an additional hydrolysis if sub-findings cannot be ruled out.

### We recommend an additional hydrolysis in the following matrices:

- Citrus fruits
- Nuts (e.g. peanuts)
- Berries and small fruits/vegetables (e.g. strawberries, tomatoes, potatoes, etc.)
- Oil seeds/oil fruits incl. extraction meal (e.g. linseed, rape seed, etc.)
- Tea and herbal teas
- Cereals
- Infant formulae and follow-on formulae



[www.agrolab.de](http://www.agrolab.de)

#### AGROLAB LUFA GmbH

Dr.-Hell-Str. 6  
24107 Kiel  
Germany

Tel.: +49 4311228-0  
Fax: +49 4311228-498  
E-Mail: [lufa@agrolab.de](mailto:lufa@agrolab.de)

## HYDROLYSIS PACKAGES OF AGROLAB

AGROLAB LUFA GmbH offers you the following hydrolysis packages in addition to the proven QuEChERS multi-method for full compliance with the maximum residue limit definition according to Regulation (EC) No. 396/2005. Package 13004 contains the phenoxy-carboxylic acids, which represent the largest group of hydrolysis-relevant substances. Packages 13014 and 13024 contain further hydrolysis-relevant substances which, however, do not chemically belong to the group of phenoxy-carboxylic acids.

- Package 13004 „Phenoxy-carboxylic acids“
- Package 13024 „Acidic pesticides for feed, food“
- Package 13014 „Acidic pesticides for fresh fruit & vegetables“

Substance	LOQ (mg/kg)	Package 13004	Package 13024	Package 13014
2,4-D	0.01	<b>Phenoxy-carboxylic acids</b>	<b>Acidic pesticides for feed, food</b>	<b>Acidic pesticides for fresh fruit &amp; vegetables</b>
2,4 – DB	0.01			
2,4,5 –T	0.01			
Dichlorprop	0.01			
Fluazifop	0.01			
Haloxyfop	0.01			
MCPA	0.01			
MCPB	0.01			
Fluroxypyr	0.01			
Quizalofop	0.01			
Dinoterb	0.01			
Pyridate	0.01			
Acibenzolar-S-methyl	0.01			

## CONTACT

For questions and explanations, please contact your AGROLAB LUFA GmbH customer relation manager directly. He/She will be happy to discuss the details with you personally.

Your regional sales representative will also be happy to send you an offer that is tailored to your exact needs.

## RELATED LINKS

EURL-SRM-Analytical Observations Report 2020

[https://www.eurl-pesticides.eu/userfiles/file/EurlSRM/EurlSrm\\_Observation\\_alkaline\\_hydrolysis\\_acidic\\_herbicides.pdf](https://www.eurl-pesticides.eu/userfiles/file/EurlSRM/EurlSrm_Observation_alkaline_hydrolysis_acidic_herbicides.pdf)

Prüfgesellschaft ökologischer Landbau mbH: MANUAL Laboranalyse und Pestizidrückstände im Kontrollverfahren für den Ökologischen Landbau

[https://www.lach-bruns.de/wp-content/uploads/2020/06/Manual\\_Deutsch\\_v1\\_2020-05-20\\_web\\_s.pdf](https://www.lach-bruns.de/wp-content/uploads/2020/06/Manual_Deutsch_v1_2020-05-20_web_s.pdf)

## NEWS FROM THE FOOD INDUSTRY



Our service for food customers. Up to date information on current topics. Once a month we report on current issues in the market.

[Sign up for free now](#)

