

Assessment of pesticide residues in food

Activity 1.2



METHODOLOGY



Document No. SANTE 11312/2021 v2

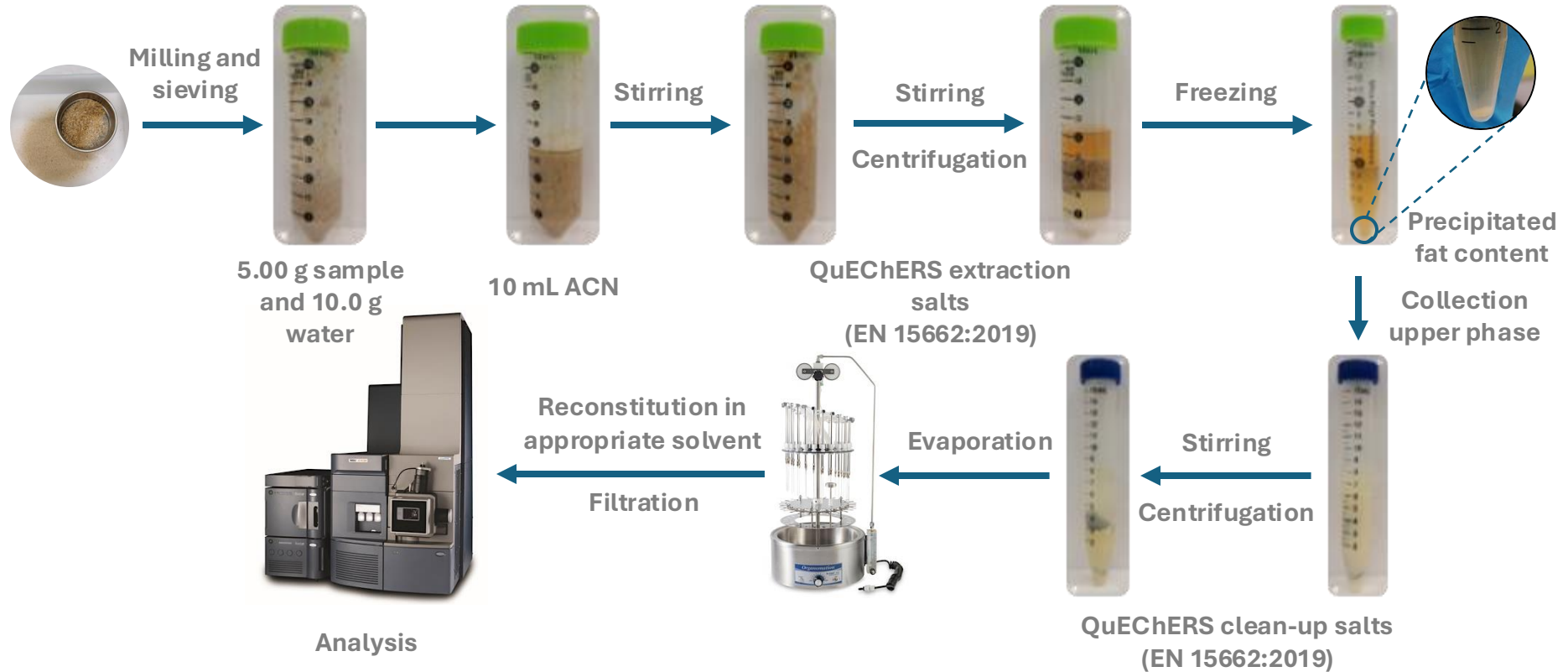
ANALYTICAL QUALITY CONTROL AND METHOD VALIDATION PROCEDURES FOR PESTICIDE RESIDUES ANALYSIS IN FOOD AND FEED SANTE 11312/2021 v2

Supersedes Document No. SANTE/11312/2021. Implemented by 01/01/2024



UNE-EN 15662:2019

Foods of **PLANT ORIGIN**– Determination of pesticide residues using GC-MS and/or LC-MS/MS following acetonitrile extraction/partitioning and clean-up by dispersive SPE – QuEChERS-method



Food Control 153 (2023) 109957



ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Food Control

journal homepage: www.elsevier.com/locate/foodcont



Food safety assessment of wines commercialised in the Canary Islands by monitoring of pesticide residues from 2017 to 2019

Álvaro Santana-Mayor^a, Ruth Rodríguez-Ramos^a, Antonio V. Herrera-Herrera^b, José Elías Conde-González^a, Bárbara Socas-Rodríguez^{a,*}

^a Departamento de Química, Unidad Departamental de Química Analítica, Facultad de Ciencias, Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, s/n^o, 38206, San Cristóbal de La Laguna, España

^b Instituto Universitario de Bio-Organica Antonio González, Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, 2, 38206, San Cristóbal de La Laguna, España

Food Chemistry 400 (2023) 134089

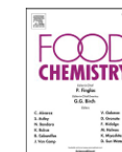


ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Food Chemistry

journal homepage: www.elsevier.com/locate/foodchem



Assessment of pesticide residues contamination in cereals and pseudo-cereals marketed in the Canary Islands

Ruth Rodríguez-Ramos^a, Álvaro Santana-Mayor^a, Bárbara Socas-Rodríguez^{a,*}, Antonio V. Herrera-Herrera^{a,b}, Miguel Ángel Rodríguez-Delgado^{a,*}

^a Departamento de Química, Unidad Departamental de Química Analítica, Facultad de Ciencias, Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, s/n^o, 38206 San Cristóbal de La Laguna, España

^b Instituto Universitario de Bio-Organica Antonio González, Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, 2, 38206 San Cristóbal de La Laguna, España

Microchemical Journal 202 (2024) 110795



ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Microchemical Journal

journal homepage: www.elsevier.com/locate/microc



Evaluation of pesticide residues in rice marketed in Cape Verde by QuEChERS-LC/GC-MS analysis

Ruth Rodríguez-Ramos^a, Álvaro Santana-Mayor^{a,b}, Antonio V. Herrera-Herrera^{a,c}, Bárbara Socas-Rodríguez^{a,*}, Miguel Ángel Rodríguez-Delgado^{a,*}

^a Departamento de Química, Unidad Departamental de Química Analítica, Facultad de Ciencias, Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, s/n^o, 38206 San Cristóbal de La Laguna, España

^b Servicio General de Apoyo a la Investigación (SEGA), Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, s/n^o, 38206 San Cristóbal de La Laguna, España

^c Instituto Universitario de Bio-Organica Antonio González, Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, 2, 38206 San Cristóbal de La Laguna, España



Foods of **ANIMAL ORIGIN** – **UNE-EN-15662:2019**

CENTRO NACIONAL DE ALIMENTACIÓN (CNA)

Reference laboratory of *AGENCIA ESPAÑOLA DE SEGURIDAD ALIMENTARIA Y NUTRICIÓN (AESAN)*

CENTRO NACIONAL DE ALIMENTACIÓN (CNA)



LA CIENCIA DETRÁS DE TU PLATO

PNTCNA_PD009



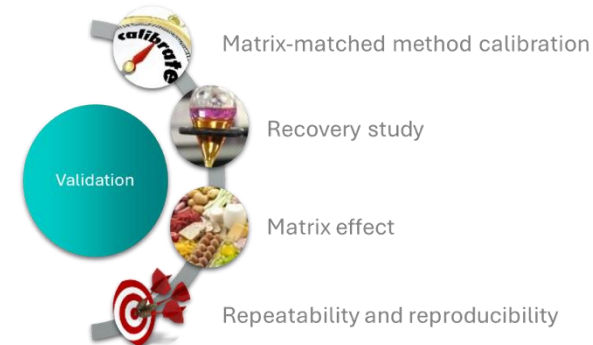
Internal method according to SANTE Guideline: Analytical Quality Control and Method Validation Procedures for Pesticide Residues Analysis in Food and Feed



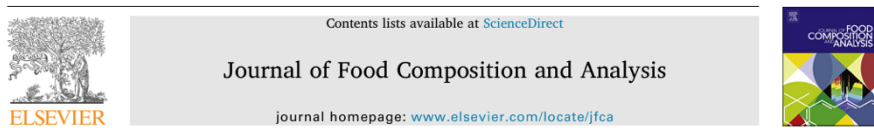
Document No. SANTE 11312/2021 v2

ANALYTICAL QUALITY CONTROL AND METHOD VALIDATION PROCEDURES FOR PESTICIDE RESIDUES ANALYSIS IN FOOD AND FEED SANTE 11312/2021 v2

Supersedes Document No. SANTE/11312/2021. Implemented by 01/01/2024



Journal of Food Composition and Analysis 84 (2019) 103314



Study Review

Recent developments and applications of QuEChERS based techniques on food samples during pesticide analysis

Herbert Musarurwa^a, Luke Chimuka^b, Vusumzi Emmanuel Pakade^c, Nikita Tawanda Tavengwa^{a,*}

^a Department of Chemistry, University of Venda, Private Bag X5050, Thohoyandou, 0950, South Africa
^b Molecular Sciences Institute, School of Chemistry, University of the Witwatersrand, Private Bag 3, 2050, Johannesburg, South Africa
^c Department of Chemistry, Private Bag X 021, Vaal University of Technology, Vanderbijlpark, South Africa



Hindawi
 Journal of Analytical Methods in Chemistry
 Volume 2017, Article ID 2603067, 13 pages
<https://doi.org/10.1155/2017/2603067>

Review Article

Application of QuEChERS for Determining Xenobiotics in Foods of Animal Origin

Coralía V. García and Ahmed Gotah

Department of Food Science and Technology, Keimyung University, Daegu 42601, Republic of Korea

Correspondence should be addressed to Coralía V. García; cvvgarcia@kmu.ac.kr

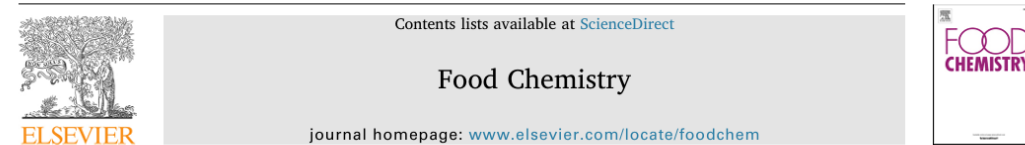
Received 24 July 2017; Accepted 15 October 2017; Published 24 December 2017

Academic Editor: Bradley B. Schneider

Copyright © 2017 Coralía V. García and Ahmed Gotah. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



Food Chemistry 269 (2018) 527–541



Review

Sample preparation and determination of pesticides in fat-containing foods

Katarzyna Madej^{a,*}, Tatyana K. Kalenik^b, Wojciech Piekoszewski^{a,b}

^a Department of Analytical Chemistry, Faculty of Chemistry, Jagiellonian University Krakow, Poland
^b School of Biomedicine, Far Eastern Federal University, Vladivostok, Russia



METHODOLOGY



SERVICIO DE TÉCNICAS AGROALIMENTARIAS (STA)- SEGAI ULL



LABORATORIO AQAIMPA-UDQA



166 pesticides

- Insecticides
- Herbicides
- Growth regulators
- Acaricides
- Fungicides
- Nematicides

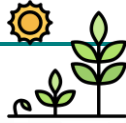


UHPLC-MS/MS



SAMPLES

Plant origin

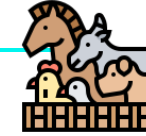


Fruits & vegetables



Cereals and pseudocereals

Animal origin



Milk and diaries



Egg



Meat



Fish



Preliminary Assessment of Plastic Migrants in Foods

Activity 1.2





Agriculture and husbandry

Plastics



Food Processing



Food Packaging



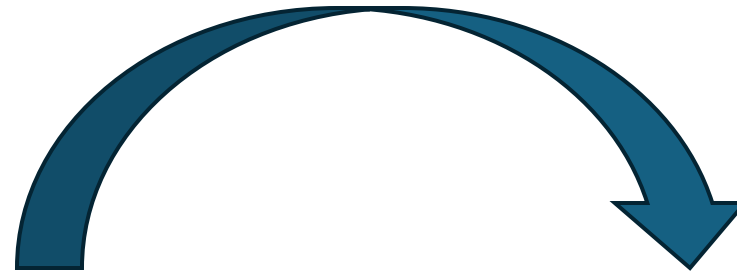


Physical damage

Contamination

Microbial spoilage

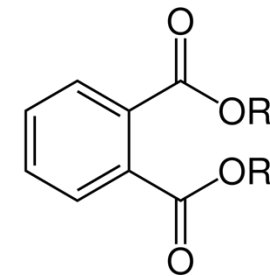




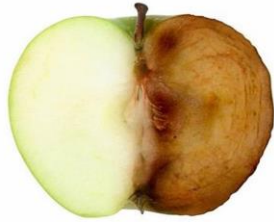
LEGISLATION

Year	EU Regulation
2002	Regulation (EC) No 178/2002: - Creation of EFSA.
2004	Regulation (EC) No 1935/2004: - Applicable to all materials in contact with food.
2006	Regulation (EC) No 1907/2006 (REACH regulation): - Applicable to chemical substances used in the EU.
2008	Regulation (EC) No 1272/2008 (CLP regulation): - Classification, labelling, and packaging of chemicals and mixtures used in the EU.
2011	Regulation (EU) No 10/2011: - Applicable to all plastic materials in contact with food.
2022	Regulation (EU) No 2022/1616: - Applicable to all recycled plastic materials in contact with food.

21 CFR § 178.3740:
Plasticizers and softening agents for polymers in contact with food



Plastic Migrants



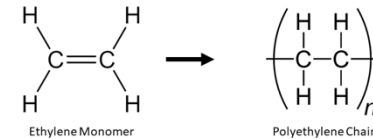
Intentionally added substances (IAS)

- Antioxidants
- Flame-retardants
- Plasticizers
- ...



Non-intentionally added substances (NIAS)

- Reaction auxiliaries
- Unpolymerized monomers
- ...

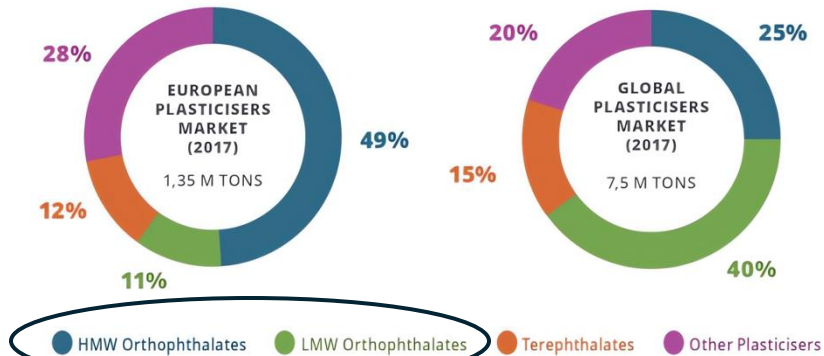


Plasticizers

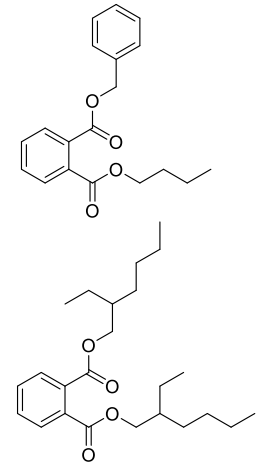
Phthalic acid esters (PAEs)

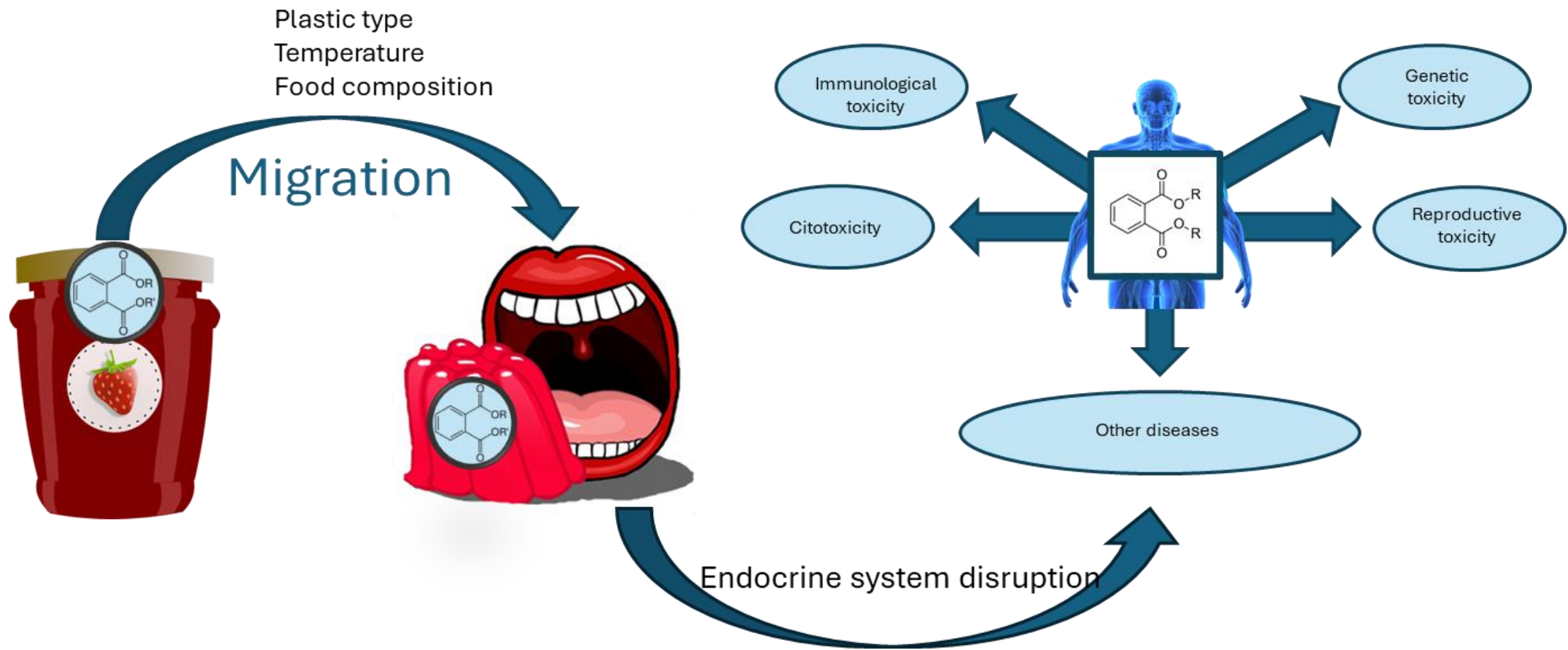
Flexibility
Durability
Estability

Principal plasticizers: 90 % of total



Source: 2018 IHS and European Plasticisers estimates







Robust, selective, sensible

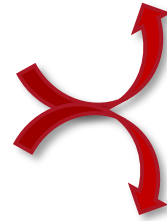
Sustainable analytical procedures



Based on Green Analytical Chemistry



Sustainable analytical procedures



GC-MS/MS

UHPLC-MS
UHPLC-MS/MS



Based on Green Analytical Chemistry





Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Journal of Chromatography A

journal homepage: www.elsevier.com/locate/chroma



Sustainable polypyrrole-based magnetic-microextraction of phthalates from jellies and apple-based beverages prior to tandem mass spectrometry analysis



Ruth Rodríguez-Ramos^a, Bárbara Socas-Rodríguez^{b,*,*}, Álvaro Santana-Mayor^a, Pedro Ángel Salazar-Carballo^c, Miguel Ángel Rodríguez-Delgado^{a,*}

^aDepartamento de Química, Unidad Departamental de Química Analítica, Facultad de Ciencias, Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, s/n°, 38206 San Cristóbal de La Laguna, España

^bLaboratory of Foodomics, Institute of Food Science Research, CIAL, CSIC, Nicolás Cabrera 9, Madrid, 28049, Spain

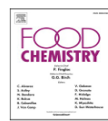
^cLaboratorio de Sensores, Biosensores y Materiales Avanzados, Departamento de Medicina Física y Farmacología, Sección de Medicina, Facultad de Ciencias de la Salud, Universidad de La Laguna (ULL), Campus de Ofra, s/n°. 38071 San Cristóbal de La Laguna, España



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Food Chemistry

journal homepage: www.elsevier.com/locate/foodchem



Analysis of alkylphenols, bisphenols and alkylphenol ethoxylates in microbial-fermented functional beverages and bottled water: Optimization of a dispersive liquid-liquid microextraction protocol based on natural hydrophobic deep eutectic solvents



David Baute-Pérez^a, Álvaro Santana-Mayor^a, Antonio V. Herrera-Herrera^{b,*,*}, Bárbara Socas-Rodríguez^c, Miguel Ángel Rodríguez-Delgado^{a,*}

^aDepartamento de Química, Unidad Departamental de Química Analítica, Facultad de Ciencias, Universidad de La Laguna (ULL), Avenida Astrofísico Francisco Sánchez, s/n°, 38206 San Cristóbal de La Laguna, Tenerife, Spain

^bInstituto Universitario de Bio-Organica Antonio González, Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, 2, 38206 San Cristóbal de La Laguna, Spain

^cLaboratory of Foodomics, Institute of Food Science Research, CIAL, CSIC, Nicolás Cabrera 9, Madrid 28049, Spain



Development of a Green Alternative Vortex-Assisted Dispersive Liquid–Liquid Microextraction Based on Natural Hydrophobic Deep Eutectic Solvents for the Analysis of Phthalate Esters in Soft Drinks

Álvaro Santana-Mayor, Antonio V. Herrera-Herrera,^{*} Ruth Rodríguez-Ramos, Bárbara Socas-Rodríguez, and Miguel Ángel Rodríguez-Delgado^{*}



Cite This: *ACS Sustainable Chem. Eng.* 2021, 9, 2161–2170



Read Online



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Food Research International

journal homepage: www.elsevier.com/locate/foodres



Monitoring of the presence of plasticizers and effect of temperature and storage time in bottled water using a green liquid–liquid microextraction method



Álvaro Santana-Mayor^a, Ruth Rodríguez-Ramos^a, Antonio V. Herrera-Herrera^{a,b}, Bárbara Socas-Rodríguez^a, Miguel Ángel Rodríguez-Delgado^{a,*}

^aDepartamento de Química, Unidad Departamental de Química Analítica, Facultad de Ciencias, Universidad de La Laguna (ULL), Avenida Astrofísico Francisco Sánchez, s/n°, 38206 San Cristóbal de La Laguna, Tenerife, Spain

^bInstituto Universitario de Bio-Organica Antonio González, Universidad de La Laguna (ULL), Avda. Astrofísico Fco. Sánchez, 2, 38206 San Cristóbal de La Laguna, Spain

