

RESEARCH GROUP BACKGROUND AND ACCOMPLISHMENTS
FOOD SAFETY

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2014-2019

FOOD SAFETY

CURRENT MEMBERS OF THE RESEARCH AREA

Group Director

Dra. Clara Coscollà Raga coscolla_cla@gva.es (2016 -)

Dr. Vicent Yusà Pelechà: yusa_vic@gva.es (2008 – 2016)

Researchers

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Dña. Ana María Miralles Marco

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Dña. Carmen González Maciá gonzalez_carmac@gva.es

RECORD OF THE RESEARCH AREA

GROUP ACTIVITIES

The Research carried out by the Environmental Contaminants in Food Safety (CASA) Group focuses basically on the development of analytical methods to determine contaminants and residues in foods and environmental matrices, and the assessment of risk derived from the presence of contaminants in food.

LINES OF RESEARCH

1. Development of new methods for extracting organic contaminants in food and environmental matrices.
2. Development of new analytical methods using HPLCMS/MS for the determination of emerging organic contaminants and trace residues of veterinary medicines.
3. Development of analytical and sampling methods to control pesticides and emerging contaminants in the environment and evaluation of the impacts on food and health.
4. Evaluation of the risk derived from the presence of contaminants and trace residues in food.

CURRENT COLLABORATIONS WITH OTHER RESEARCH GROUPS

Valencian Community:

1. Analytical Chemistry Department, University of Valencia
2. Centro de Estudios Ambientales del Mediterráneo Foundation (CEAM).

National: n/a

International:

1. ICARE-CNRS (Institut de Combustion, Aérothermique, Réactivité et Environnement (Orléans, France)
2. LIG'AIR-Surveillance de la qualité de l'air en Région Centre (Orléans, France)
3. University of Strasbourg-CNRS (Strasbourg, France)
4. RIKILT, Institute of Food Safety (Wageningen, The Netherlands)

SCIENTIFIC/TECHNICAL RECORD

1. Research projects funded

1. 2012-2014. DENAMIC – Developmental Neurotoxicity Assessment of Mixtures in Children. Entidad financiadora: Comisión Europea. Número de referencia: FP7-ENV.2011.1.2.2-1. IP: Dra. Marisa Rebagliato. IP del Proyecto Internacional: P. Leonard. Importe: 463.472,00 €.
2. 2011-2012. Control e impacto de los plaguicidas en la atmósfera de la Comunidad Valenciana (CIPAV). Entidad Financiadora: Conselleria de Educación. Número de referencia: GV/2011/007. IP: Dr. Vicent Yusà Pelechà. Importe: 10.800,00 €.
3. 2009-2012. Desarrollo de nuevos muestreadores pasivos de membranas semipermeables: Determinación de contaminantes orgánicos en aguas y aire. Entidad financiadora: Ministerio de Educación y Ciencia. Entidades participantes: Facultad de Química (UV), Laboratorio de Salud Pública de Valencia. IP: Dr. Agustín Pastor. N.º Investigadores participantes: 10. Importe: 120.000 €.

2. Participation in research contracts with companies or administrators.

n/a

3. Publications

YEAR 2019

1. Beser MI, Pardo O, Beltran J, Yusa V. Determination of 21 perfluoroalkyl substances and organophosphorus compounds in breast milk by liquid chromatography coupled to orbitrap high-resolution mass spectrometry. Anal Chim Acta. 2019;1049:123-32. DOI: [10.1016/j.aca.2018.10.033](<http://dx.doi.org/10.1016/j.aca.2018.10.033>)
2. Climent MJ, Coscolla C, Lopez A, Barra R, Urrutia R. Legacy and current-use pesticides (CUPs) in the atmosphere of a rural area in central Chile, using passive air samplers. Sci Total Environ. 2019;662:646-54. DOI: [10.1016/j.scitotenv.2019.01.302](<http://dx.doi.org/10.1016/j.scitotenv.2019.01.302>)
3. Dualde P, Pardo O, Corpas-Burgos F, Kuligowski J, Gormaz M, Vento M, Pastor A, Yusa V. Biomonitoring of bisphenols A, F, S in human milk and probabilistic risk assessment for breastfed infants. Sci Total Environ. 2019;668:797-805. DOI: [10.1016/j.scitotenv.2019.03.024](<http://dx.doi.org/10.1016/j.scitotenv.2019.03.024>)
4. Sanchis Y, Coscolla C, Yusa V. Comprehensive analysis of photoinitiators and primary aromatic amines in food contact materials using liquid chromatography High-Resolution Mass Spectrometry. Talanta. 2019;191:109-18. DOI: [10.1016/j.talanta.2018.08.047](<http://dx.doi.org/10.1016/j.talanta.2018.08.047>)

YEAR 2018

1. Lopez A, Coscolla C, Yusa V. Evaluation of sampling adsorbents and validation of a LC-HRMS method for determination of 28 airborne pesticides. *Talanta*. 2018;189:211-9. DOI: [10.1016/j.talanta.2018.06.078](<http://dx.doi.org/10.1016/j.talanta.2018.06.078>)
2. Marin S, Pardo O, Sanchez A, Sanchis Y, Velez D, Devesa V, Font G, Yusa V. Assessment of metal levels in foodstuffs from the Region of Valencia (Spain). *Toxicol Rep*. 2018;5:654-70. DOI: [10.1016/j.toxrep.2018.05.005](<http://dx.doi.org/10.1016/j.toxrep.2018.05.005>)
3. Perez R, Suelves T, Molina Y, Corpas-Burgos F, Yusa V, force Bt. Biomonitoring of mercury in hair of children living in the Valencian Region (Spain). Exposure and risk assessment. *Chemosphere*. 2018;217:558-66. DOI: [10.1016/j.chemosphere.2018.11.017](<http://dx.doi.org/10.1016/j.chemosphere.2018.11.017>)

YEAR 2017

1. Coscolla C, Lopez A, Yahyaoui A, Colin P, Robin C, Poinsignon Q, Yusa V. Human exposure and risk assessment to airborne pesticides in a rural French community. *Sci Total Environ*. 2017;584-585:856-68. DOI: [10.1016/j.scitotenv.2017.01.132](<http://dx.doi.org/10.1016/j.scitotenv.2017.01.132>)
2. Lopez A, Coscolla C, Yusa V, Armenta S, de la Guardia M, Esteve-Turrillas FA. Comprehensive analysis of airborne pesticides using hard cap espresso extraction-liquid chromatography-high-resolution mass spectrometry. *J Chromatogr A*. 2017;1506:27-36. DOI: [10.1016/j.chroma.2017.05.040](<http://dx.doi.org/10.1016/j.chroma.2017.05.040>)
3. Moragues F, Igualada C, León N. Confirmatory Method for the Determination of Amphenicols in Muscle and Kidney of Several Animal Species *Food Analytical Methods*. 2017;10(3):610-7. DOI: [10.1007/s12161-016-0623-2](<http://dx.doi.org/10.1007/s12161-016-0623-2>)

4. Quijano L, Yusa V, Font G, McAllister C, Torres C, Pardo O. Risk assessment and monitoring programme of nitrates through vegetables in the Region of Valencia (Spain). *Food Chem Toxicol.* 2017;100:42-9. DOI: [10.1016/j.fct.2016.12.010](<http://dx.doi.org/10.1016/j.fct.2016.12.010>)
5. Sanchis Y, Yusa V, Coscolla C. Analytical strategies for organic food packaging contaminants. *J Chromatogr A.* 2017;1490:22-46. DOI: [10.1016/j.chroma.2017.01.076](<http://dx.doi.org/10.1016/j.chroma.2017.01.076>)
6. Yusa V, Perez R, Suelves T, Corpas-Burgos F, Gormaz M, Dualde P, Coscolla C, Quiles J, Roca M, Vento M. Biomonitoring of mercury in hair of breastfeeding mothers living in the Valencian Region (Spain). Levels and predictors of exposure. *Chemosphere.* 2017;187:106-13. DOI: [10.1016/j.chemosphere.2017.08.100](<http://dx.doi.org/10.1016/j.chemosphere.2017.08.100>)

YEAR 2016

1. Coscollà C, Yusà V. Pesticides and Agricultural Air Quality. *Comprehensive Analytical Chemistry*: Elsevier; 2016 p. 423-90.
2. Borrás E, Tortajada-Genaro LA, Rodenas M, Vera T, Coscolla C, Yusa V, Muñoz A. Gas-phase and particulate products from the atmospheric degradation of the organothiophosphorus insecticide chlorpyrifos-methyl. *Chemosphere.* 2015;138:888-94. DOI: [10.1016/j.chemosphere.2014.11.067](<http://dx.doi.org/10.1016/j.chemosphere.2014.11.067>)
3. Leon N, Pastor A, Yusa V. Target analysis and retrospective screening of veterinary drugs, ergot alkaloids, plant toxins and other undesirable substances in feed using liquid chromatography-high resolution mass spectrometry. *Talanta.* 2016;149:43-52. DOI: [10.1016/j.talanta.2015.11.032](<http://dx.doi.org/10.1016/j.talanta.2015.11.032>)
4. Li X, Kaeli D, Wang P, Yusà V. A Framework for Big Metabolomic Data Management and Analysis. *International Journal on Advances in Software.* 2016;9(1-2):50-61.
5. Liaud C, Brucher M, Schummer C, Coscolla C, Wolff H, Schwartz JJ, Yusa V, Millet M. Utilization of long duration high-volume sampling coupled to SPME-GC-MS/MS for the assessment of airborne pesticides variability in an urban area (Strasbourg, France) during agricultural application. *J Environ Sci Health B.* 2016;51(10):703-14. DOI:

- [10.1080/03601234.2016.1191916](<http://dx.doi.org/10.1080/03601234.2016.1191916>)
6. Lopez A, Dualde P, Yusa V, Coscolla C. Retrospective analysis of pesticide metabolites in urine using liquid chromatography coupled to high-resolution mass spectrometry. *Talanta*. 2016;160:547-55. DOI: [10.1016/j.talanta.2016.07.065](<http://dx.doi.org/10.1016/j.talanta.2016.07.065>)
 7. Lopez A, Yusa V, Millet M, Coscolla C. Retrospective screening of pesticide metabolites in ambient air using liquid chromatography coupled to high-resolution mass spectrometry. *Talanta*. 2016;150:27-36. DOI: [10.1016/j.talanta.2015.11.068](<http://dx.doi.org/10.1016/j.talanta.2015.11.068>)
 8. Lopez A, Yusa V, Munoz A, Vera T, Borrás E, Rodenas M, Coscolla C. Risk assessment of airborne pesticides in a Mediterranean region of Spain. *Sci Total Environ*. 2016;574:724-34. DOI: [10.1016/j.scitotenv.2016.08.149](<http://dx.doi.org/10.1016/j.scitotenv.2016.08.149>)
 9. Quijano L, Yusa V, Font G, Pardo O. Chronic cumulative risk assessment of the exposure to organophosphorus, carbamate and pyrethroid and pyrethrin pesticides through fruit and vegetables consumption in the region of Valencia (Spain). *Food Chem Toxicol*. 2016;89:39-46. DOI: [10.1016/j.fct.2016.01.004](<http://dx.doi.org/10.1016/j.fct.2016.01.004>)
 10. Roca M, Sánchez A, Pérez R, Pardo O, Yusà V. Biomonitoring of 20 elements in urine of children. Levels and predictors of exposure. *Chemosphere*. 2016;144:1698-705. DOI: [http://dx.doi.org/10.1016/j.chemosphere.2015.10.008](<http://dx.doi.org/10.1016/j.chemosphere.2015.10.008>)

YEAR 2015

1. Borrás E, Tortajada-Genaro LA, Rodenas M, Vera T, Coscolla C, Yusa V, Munoz A. Gas-phase and particulate products from the atmospheric degradation of the organothiophosphorus insecticide chlorpyrifos-methyl. *Chemosphere*. 2015;138:888-94. DOI: [10.1016/j.chemosphere.2014.11.067](<http://dx.doi.org/10.1016/j.chemosphere.2014.11.067>)
2. Camaró-Sala ML, Martínez-García R, Olmos-Martínez P, Catalá-Cuenca V, Ocete-Mochón MD, Gimeno-Cardona C. Validación y verificación analítica de los métodos microbiológicos. *Enferm Infecc Microbiol Clin*. 2015;33(7):e31-e6. DOI: [http://dx.doi.org/10.1016/j.eimc.2013.11.010](<http://dx.doi.org/10.1016/j.eimc.2013.11.010>)

3. Doménech E, Jiménez-Belenguer A, Pérez R, Ferrús MA, Escriche I. Risk characterization of antimicrobial resistance of Salmonella in meat products. Food Control. 2015;57:18-23. DOI: [http://dx.doi.org/10.1016/j.foodcont.2015.04.001](http://dx.doi.org/http://dx.doi.org/10.1016/j.foodcont.2015.04.001)
4. Sanchis Y, Coscolla C, Roca M, Yusa V. Target analysis of primary aromatic amines combined with a comprehensive screening of migrating substances in kitchen utensils by liquid chromatography-high resolution mass spectrometry. Talanta. 2015;138:290-7. DOI: [10.1016/j.talanta.2015.03.026](http://dx.doi.org/10.1016/j.talanta.2015.03.026)
5. Vera T, Borrás E, Chen J, Coscolla C, Daele V, Mellouki A, Rodenas M, Sidebottom H, Sun X, Yusa V, Zhang X, Munoz A. Atmospheric degradation of lindane and 1,3-dichloroacetone in the gas phase. Studies at the EUPHORE simulation chamber. Chemosphere. 2015;138:112-9. DOI: [10.1016/j.chemosphere.2015.05.061](http://dx.doi.org/10.1016/j.chemosphere.2015.05.061)
6. Yusa V, Millet M, Coscolla C, Pardo O, Roca M. Occurrence of biomarkers of pesticide exposure in non-invasive human specimens. Chemosphere. 2015;139:91-108. DOI: [10.1016/j.chemosphere.2015.05.082](http://dx.doi.org/10.1016/j.chemosphere.2015.05.082)
7. Yusa V, Millet M, Coscolla C, Roca M. Analytical methods for human biomonitoring of pesticides. A review. Anal Chim Acta. 2015;891:15-31. DOI: [10.1016/j.aca.2015.05.032](http://dx.doi.org/10.1016/j.aca.2015.05.032)
8. Yusà V, Pardo O. Human risk assessment and regulatory framework for minerals in food. Handbook of Mineral Elements in Food: John Wiley & Sons, Ltd; 2015. p. 69-108.

YEAR 2014

1. Beser MI, Beltran J, Yusa V. Design of experiment approach for the optimization of polybrominated diphenyl ethers determination in fine airborne particulate matter by microwave-assisted extraction and gas chromatography coupled to tandem mass spectrometry. J Chromatogr A. 2014;1323:1-10. DOI: [10.1016/j.chroma.2013.10.081](http://dx.doi.org/10.1016/j.chroma.2013.10.081)
2. Boix C, Ibáñez M, Sancho JV, León N, Yusà V, Hernández F. Qualitative screening of 116 veterinary drugs in feed by liquid chromatography-high resolution mass spectrometry: Potential application to quantitative analysis. Food Chem. 2014;160(0):313-20. DOI: [http://dx.doi.org/10.1016/j.foodchem.2014.03.086](http://dx.doi.org/http://dx.doi.org/10.1016/j.foodchem.2014.03.086)

3. Borrás E, Tortajada-Genaro LA, Rodenas M, Vera T, Coscolla C, Yusa V, Muñoz A. Gas-phase and particulate products from the atmospheric degradation of the organothiophosphorus insecticide chlorpyrifos-methyl. *Chemosphere*. 2014. DOI: [10.1016/j.chemosphere.2014.11.067](<http://dx.doi.org/10.1016/j.chemosphere.2014.11.067>)
4. Coscolla C, Leon N, Pastor A, Yusa V. Combined target and post-run target strategy for a comprehensive analysis of pesticides in ambient air using liquid chromatography-Orbitrap high resolution mass spectrometry. *J Chromatogr A*. 2014;1368:132-42. DOI: [10.1016/j.chroma.2014.09.067](<http://dx.doi.org/10.1016/j.chroma.2014.09.067>)
5. Coscolla C, Muñoz A, Borrás E, Vera T, Rodenas M, Yusa V. Particle size distributions of currently used pesticides in ambient air of an agricultural Mediterranean area. *Atmos Environ*. 2014;95:29-35. DOI: [10.1016/j.atmosenv.2014.06.022](<http://dx.doi.org/10.1016/j.atmosenv.2014.06.022>)
6. Pardo O, Beser MI, Yusa V. Probabilistic risk assessment of the exposure to polybrominated diphenyl ethers via fish and seafood consumption in the Region of Valencia (Spain). *Chemosphere*. 2014;104:7-14. DOI: [10.1016/j.chemosphere.2013.12.084](<http://dx.doi.org/10.1016/j.chemosphere.2013.12.084>)
7. Roca M, Leon N, Pastor A, Yusa V. Comprehensive analytical strategy for biomonitoring of pesticides in urine by liquid chromatography-orbitrap high resolution mass spectrometry. *J Chromatogr A*. 2014;1374:66-76. DOI: [10.1016/j.chroma.2014.11.010](<http://dx.doi.org/10.1016/j.chroma.2014.11.010>)
- 8.
9. Roca M, Miralles-Marco A, Ferrer J, Perez R, Yusa V. Biomonitoring exposure assessment to contemporary pesticides in a school children population of Spain. *Environ Res*. 2014;131C:77-85. DOI: [10.1016/j.envres.2014.02.009](<http://dx.doi.org/10.1016/j.envres.2014.02.009>)
10. Rubert J, Leon N, Saez C, Martins CP, Godula M, Yusa V, Manes J, Soriano JM, Soler C. Evaluation of mycotoxins and their metabolites in human breast milk using liquid chromatography coupled to high resolution mass spectrometry. *Anal Chim Acta*. 2014;820:39-46. DOI: [10.1016/j.aca.2014.02.009](<http://dx.doi.org/10.1016/j.aca.2014.02.009>)
11. Sanchis E, Ferrer M, Calvet S, Coscollà C, Yusà V, Cambra-López M. Gaseous and particulate emission profiles during controlled rice straw burning. *Atmos Environ*. 2014;98(0):25-31. DOI:

[<http://dx.doi.org/10.1016/j.atmosenv.2014.07.062>](<http://dx.doi.org/http://dx.doi.org/10.1016/j.atmosenv.2014.07.062>)

12. Yusa V, Coscolla C, Millet M. New screening approach for risk assessment of pesticides in ambient air. Atmos Environ. 2014;96:322-30. DOI: [10.1016/j.atmosenv.2014.07.047](<http://dx.doi.org/10.1016/j.atmosenv.2014.07.047>)

4. Participation in education and training programs.

1. Training of students from degrees studies in chemistry, biology, pharmacy and veterinary from different Universities of Valencia Region.
2. Master of Experimental Techniques in Chemistry (Faculty of Chemistry, University of Valencia)
3. Master of Pollution and Ambient Toxicology (Faculty of Biology, University of Valencia)
4. Master of Public Health (EVES, Health Department)
5. Associate professors in the Analytical Chemistry and Preventive Medicine, Public Health, Food Sciences, Toxicology and Legal Medicine Departments, University of Valencia.
6. Professors in the programme "Formació a la carta", Chemistry Faculty, University of Valencia
7. Trainings related with Food Safety and Public Health Laboratories (EVES, Conselleria Sanitat)

5. Doctoral theses

Title: Desarrollo de estrategias analíticas basadas en la Espectrometría de masas de alta resolución para la determinación de plaguicidas en el aire ambiente.

PhD student: Antonio López Tobaruela

Supervisors: Dr. Vicente Yusà Pelechà, Dra. Clara Coscollà Raga

Place and year: Universitat de València, 2018

Mark: Sobresaliente Cum Laude

Title: Aplicación de la cromatografía líquida acoplada a la espectrometría de masas de alta resolución para el control alimentario y la evaluación de la exposición a contaminantes y residuos.

PhD student: Nuria León Roca

Supervisors: Dr. Vicente Yusà Pelechà, Dr. Agustín Pastor García

Place and year: Universitat de València, 2015

Mark: Sobresaliente Cum Laude

Title: Estudios de dieta total. Exposición de la población de la Comunidad Valenciana a metales y evaluación del riesgo.

PhD student: Silvia Marín Villuendas

Supervisors: Dr. Vicente Yusà Pelechà, Dra. Guillermina Font Pérez

Place and year: Universitat de València, 2015

Mark: Sobresaliente Cum Laude