

## CURRICULUM VITAE ABREVIADO (CVA)

**IMPORTANT** – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

### Part A. PERSONAL INFORMATION

First name	María del Mar		
Family name	Villamiel Guerra		
Gender (*)	Female	Birth date (dd/mm/yyyy)	27/07/1968
Social Security, Passport, ID number	03843764G		
e-mail	m.villamiel@csic.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-6847-8359		

(\*) Mandatory

#### A.1. Current position

Position	Director of CIAL/Research Scientific		
Initial date	1 March 2021/16 June 2009		
Institution	CIAL-CSIC		
Department/Center	Bioactivity and Analysis of Foods		
Country	Spain	Teleph. number	696330388
Key words	Food technology, Bioactive carbohydrates, Food preservation, revalorization of by-products, characterization		

#### A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
August 2000-June 2009	Tenured Scientist/CSIC/Spain
March 2017-October 2019	Deputy Director of CIAL/Spain

#### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Pharmacy	Computense University of Madrid	1995
Grade in Pharmacy	Computense University of Madrid	1991

### Part B. CV SUMMARY (max. 5000 characters, including spaces)

**Leader of the Chemistry and Functionality of Carbohydrates and Derivatives (PREBIOIN)** research group at CIAL. Lines of research, contributions: i) *Selection of indicators for the control of processes in the agri-food industry* (pre- and post-doctoral period and incorporation as a Senior Scientist). ii) *Development and optimization of sustainable methodologies for food preservation and the extraction of bioactive compounds* (pre- and post-doctoral stage in the Netherlands). iii) *Obtainment, structural characterization and technological and biological evaluation of functional carbohydrates derived from agri-food by-products* (projects AGL201453445-R, ilink22016, 168-2020 Fondecyt, PID2021-123862OB-I00 ALI, being IP). iv) *Establishment of in vitro models of digestion of functional carbohydrates* (stay as a senior in the United Kingdom (IFR). Participation in **72 projects, 44 national projects (6 technology transfer) and 28 international**, being in **8 Principal Investigator; 34 contracts with companies (24 as Principal Investigator)**. Co-author of **7 patents (2 international)**. Funding, approximately 4 million euros. **173 scientific publications in JCR, h-index 46 (WoS)** (7,640 citations, 7183 without own citations), of which, in the last 6 years, 90% are in Q1 and more than 70% correspond to collaborations with other groups, both national and international; **h-index 47 (Scopus)**.

Scopus (Updated science-wide author databases of standardized citation indicators. Ioannidis et al. 2020, Plos Biology) c(ns) 3.13405958 (<https://doi.org/10.1371/journal.pbio.3000918>), as well as Ranking of the World Scientists: **World Top 2% Scientists of Stanford University and Elsevier (2024)**. Author/co-author of **20 book chapters**, **17 articles in non-JCR journals**, **45 dissemination materials**, **8 reports**, as well as **editor of 6 journals and books** (Wiley & Sons, Ultrasonics Sonochemistry (OA, Elsevier, IF 9.336). Participation in **17 invited conferences, round tables**, and **157 presentations at congresses (115 international)**. **Supervision of 16 Doctoral Theses** (5 in international universities, 2 with International Mention, 2 Extraordinary Award), **7 DEA**, **19 TFM** (5 international) and **10 TFG** (2 international) and **tutoring of 88 stays** (27 international) from PhD to technicians). **Collaboration with international institutions**: NIZO Food Research and Van Hall Larenstein, University of Applied Sciences (Netherlands), Aberystwyth University, Quadram Institute and University of Reading (United Kingdom), TEAGASC (Ireland), University of Turin (Italy), University of Melbourne (Australia), National Polytechnic Institute, Autonomous University of the State of Mexico, Autonomous University of Querétaro, Autonomous University of Coahuila and Tecnológico de Monterrey (Mexico), Universidad del Cauca, Universidad Nacional de Colombia, Universidad de la Amazonia, Colciencias and CENIGAA (Colombia), Universidad Nacional Agraria La Molina (Lima, Peru) and Université de Bejaia (Algeria). **National collaborations**: Institute of General Organic Chemistry, Institute of Acoustics, Institute of Food Science and Technology and Nutrition, Institute of Agrochemistry and Food Technology, Institute of Dairy Products of Asturias, Institute of Fat and Institute of Marine Research (CSIC), Autonomous University of Madrid, Polytechnic University of Valencia, University of Salamanca, University of Granada and University of Seville. Participation in the **PTI+ Green Horizon Platform, Food for Life Platform (Fruit and Vegetable Sector group)** and **BIC: Biobased Industries Consortium AISBL**, **delegate of CSIC in the Agrofood Cluster of Community of Madrid**. Participation in **8 research studies for the development of EU regulations on dairy products**, **29 committees**, **organization of 17 R+D+i activities**, as well as in numerous tribunals. Recognition of research activity with **10 awards**, positive evaluation **5 six-year periods**. **Deputy Director** of the Institute for Research in Food Sciences (22 March 2017-31 October 2019). **Currently Director of CIAL** (March 1, 2021-).

## Part C. RELEVANT MERITS (sorted by typology)

### C.1. Publications (see instructions)

- 12.-Hernández-Hernández, O., Ferreira-Lazarte, A., Tiwari, B., **Villamiel, M (AC)**. Update of high-intensity ultrasound applications for the extraction of pectin from agri-food by-products. TrAC-Trends in Analytical Chemistry 175, June 2024, 11772 (2024) <https://doi.org/10.1016/j.trac.2024.117728> Q1
- 11.-Vitor Pereira, D.T., Méndez-Albiñana, P., Mendiola, J.A., **Villamiel, M.**, Cifuentes, A., Martínez, J., Ibañez, E. An eco-friendly extraction method to obtain pectin from passion fruit rinds (*Passiflora edulis* sp.) using subcritical water and pressurized natural deep eutectic solvents. Carbohydrate Polymers 326: 121578 (2024) <https://doi.org/10.1016/j.carbpol.2023.121578> Q1
- 10.- Condezo-Hoyos, L., Cortés-Avendaño, P., Lama-Quispe, S., Calizaya-Milla, E., Méndez-Albiñana, P., **Villamiel, M. (AC)**. Structural, chemical and technofunctional properties pectin modification by green and novel intermediate frequency ultrasound procedure. Ultrason. Sonochem. 102: 106743 (2023). <https://doi.org/10.1016/j.ultsonch.2023.106743> Q1
- 9.-Djaoud, K., Muñoz-Almagro, N., Benítez, V., Martín-Cabrejas, M.A., **Villamiel, M. (AC)**. New approach of underutilized Algerian dates by ultrasound pectin extraction: Physicochemical, technofunctional, antioxidant and antidiabetic properties. Int. J. Biolog. Macromol. 212:337-347 (2022). DOI10.1016/j.ijbiomac.2022.05.115. Q1
- 8.-Muñoz-Almagro, N., Garrido-Galand, S., Taladrid, D., Moreno-Arribas, M.V., **Villamiel, M. (AC)**, Montilla, A. Use of natural low-methoxyl pectin from sunflower by-products for the formulation of low-sucrose strawberry jams. J. Sci. Food Agr. 102: 5957–5964 (2022). DOI 10.1002/jsfa.1194.). DOI 10.1002/jsfa.1194. D1
- 7.-Sabater, C., **Villamiel, M. (AC)**, Montilla, A. Obtaining pectin from agro-food industrial by-products in a biorefinery context. Food Hydrocoll. 128:107564 (2022). DOI10.1016/j.foodhyd.2022.107564. D1
- 6.-Muñoz-Almagro, N., Ruiz-Torralba, A., Méndez-Albiñana, P., Guerra-Hernández, E., García-Villanova, B., Moreno, R., **Villamiel, M. (AC)**, Montilla, A. Berry fruits as source of pectin:

Conventional and non-conventional extraction techniques. *Int. J. Biol. Macromol.* 186: 962-974 (2021). <https://doi.org/10.1016/j.ijbiomac.2021.07.016>. D1

**5.-Muñoz-Almagro, N., Vendrell-Calatayud, M., Méndez-Albiñana, P., Moreno, R., Cano, M.P., Villamiel, M. (AC).** Study of the persimmon fruit (*Diospyros kaki* Thunb. var. Rojo brillante) pectin: Extraction conditions and structural characterization. *Carbohydr. Polym.* 272:118411 (2021). DOI: 10.1016/j.carbpol.2021.118411. D1

**4.-Muñoz-Almagro, N., Valadez-Carmona, I., Mendiola, J.A., Ibáñez, E., Villamiel, M. (AC).** Comparison of conventional and subcritical water pectin extractions from cacao pod husks and its structural characterization after phenolic supercritical fluid extraction. *Carbohydr. Polym.* 217: 69–78 (2019). DOI10.1016/j.carbpol.2019.04.040. D1.

**3.-Muñoz-Labrador, A.M., Prodanov, M., Villamiel, M. (AC).** Effects of high intensity ultrasound on depolymerisation and bioactivity of tannins from grape seeds *Vitis vinifera* L. *Ultrason. Sonochem.* 50:74–81 (2019). DOI10.1016/j.ultsonch.2018.08.030. D1.

**2.-Ferreira-Lazarte, A., Moreno, F.J., Villamiel, M. (AC).** Bringing the digestibility of prebiotics into focus: update of carbohydrate digestion models. *Crit. Rev. Food Sci. Nutr.* 61:3267-3278 (2021). DOI: 10.1080/10408398.2020.1798344. D1

**1.-Muñoz-Almagro, N., Prodanov, M., Villamiel, M. (AC), Montilla, A.** Obtainment and characterisation of pectin from sunflower heads purified by membrane separation techniques. *Food Chem.* 318: 126476 (2020). DOI10.1016/j.foodchem.2020.126476. D1

## C.2. Congress, indicating the modality of their participation

**8.-Gabaldón, M., Villamiel, M., Montilla, A.** EFF 2023 the 4th International Conference on Engineering Future Food. “Obtaining extracts enriched in phytochemical compounds and subsequent extraction of pectin from broccoli by-products”. Florence, Italy, 2023 (oral presentation)

**7.- Méndez-Albiñana, P., Rodrigues-Díez, R., Rodríguez-Rodríguez, P., Moreno, R., Muñoz-Valverde, D., Casani, L., Blanco-Rivero, J., Villamiel, M.** EFF 2023 the 4th International Conference on Engineering Future Food. “Citrus pectin supplementation improved biomarkers related to metabolic syndrome in an animal model fed with a high fat diet”. Florence, Italy, 2023 (oral presentation)

**6.-Méndez-Albiñana, P., Ferreira-Lazarte, A., Moreno, F.J., Blanco-Rivero, J., Villamiel, M.** Green Extraction of Natural Products. “Obtaining pectin of Premium quality from industrial orange juice by-products”. POREČ, Croacia, 2022 (invited conference)

**5.-Sánchez-Baca, A., Crespo, P., Hernández-Hernández, O., Villamiel, M.** International Conference on Biochemical Engineering and Biotechnology for Young Scientists. “Use of orange peel for the production of galacturonic acid”. Belgrade, Serbia, 2023, (poster)

**4.-Gabaldón, M., Villamiel, M., Montilla, A.** International Conference on Biochemical Engineering and Biotechnology for Young Scientists. “Effects of the physical state of broccoli waste on the extraction of pectin and phytochemical compounds”. Belgrade, Serbia, 2023, (poster)

**3.-Condezo-Hoyos, L., Cortés-Avendaño, P., Lama-Quispe, S., Méndez-Albiñana, P., Villamiel, M.** 3er Food Chemistry Conference, Shaping a healthy and sustainable food chain through knowledge. “Effect of continue and pulsed intermediate frequency ultrasound on structural, chemical and functional properties of high-methoxyl grade pectin”. Dresden, Germany, 2023 (poster). *First award of the conference*

**2.-Villamiel, M.** Fruit Attraction 2023, Foro Innova. International Fruit and Vegetable Sector Fair. “Increasing the shelf life of strawberries with a low-glycemic edible coating”, Madrid, España, 2023 (invited conference)

**1.-Villamiel, M., Méndez-Albiñana, P., Dajoud, K., Muñoz-Almagro, M., Benítez, V., Martín-Cabrejas, M.A.** PolyScience2022. “New understanding of pectin as an exceptional health-promoting agent”. Barcelona, España, 2022 (invited conference)

## C.3. Research projects, indicating your personal contribution (PI: principal investigator).

**10.-Spanish Council of Scientific Research. PI M. Villamiel.** “CIAL Internationalization Unit (INTERNACIAL)”, Ref. REDIN24025, 01/01/2025-31/12/2027, 149,950 €

**9.-Spanish Council of Scientific Research. PI M. Villamiel.** “Transversal strengthening aimed at the operation, maintenance and growth of the infrastructures and systems of the CIAL Multiomics Platform”, PIE Ref. 202570E010, 01/01/2025-31/12/2027, 170,000 €

- 8.-Departamental Government of Tolima (Colombia). **PI M. Villamiel**. "Strengthening the productive capacities and sustainable value addition of the cocoa chain in the south-central region". Ref. 113044, 01/01/2025-31/12/2025, 85,000 €
- 7.-Spanish Council of Scientific Research. **PI M. Villamiel**, "Ultrasound and microwaves as innovative responses to meet the challenges of the 21st century in the agro-food waste recovery". ilink2022 Internationalization Network. Participating countries: Ireland (TEAGASC), United Kingdom (Aberystwyth University), 01/01/2023-31/12/2024, 23,446.6 €
- 6.-British Council-Newton Caldas Fund (United Kingdom) and COLCIENCIAS (Colombia), **PI M. Villamiel**, "Investigation of the comparative advantages of Huila's cocoa subsector". Ref. OPE027729, 01/01/2021-31/12/2025, 235,620 €
- 5.-FONDECYT-CONCYTEC (Lima, Perú), **PI Spain M. Villamiel**, "Obtaining antioxidant pectin through the application of green intermediate frequency ultrasound technology". Ref. Contract nº 168-2020 2021-2023, 80,414 €
- 4.-Spanish Council of Scientific Research, **PI M. Villamiel**, "New sustainable strategies to revalue waste from the olive industry". PIE Ref. 202270E075, 01/07/2022-30/06/2023, 54,456.50 €
- 3.-Spanish Council of Scientific Research, **PI M. Villamiel**, "Characterization of raw materials used in the chocolate processing industry". PIE Ref. 202470E061, 01/01/2024-31/12/2026, 21,000 €
- 2.-MCIIN, **PI M. Villamiel**, A. Montilla. "Integral use of vegetable agri-food by-products within the concept of biorefinery. Production and characterization of pectin and other relevant compounds". Ref. PID2021-123862OB-I00 ALI, 01/09/22-31/8/25, 222,640 €
- 1.-MINECO, **PI M. Villamiel**, "Obtaining pectins and derivatives from agri-food by-products through alternative procedures. Characterization and evaluation as bioactive ingredients". Ref. 53445-R, 01/01/2015-31/12/2018, 260,150 €.

**C.4. Contracts, technological or transfer merits**, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.)

- 9.-Research contract between SANICITRUS S.L. and CIAL: "Extraction, structural characterization and study of the functionality of pectins from by-products of the agri-food industry for their application as a coating and/or formation of films that prolong the shelf life of food". **PI M. Villamiel**. 30/01/2024-29/07/2025. 15,984.37 €
- 8.- Research contract between Sigma Biotech S.L. (Santa Fe, Granada) and CIAL: "Maceration of green olives with aromas by the application of power ultrasound". **PI M. Villamiel**. 21/03/2023-21/05/2023. 3.049.2 €
- 7.-Research contract between PANNONIA BIO ZRT (Budapest, Hungary) and CIAL: "Fiber digestibility trials". **PI M. Villamiel**. 19/12/2022-19/12/2023. 3,049.3 €.
- 6.-Contract between CÍTRICOS DEL ANDÉVALO S.A. and CIAL. Reference 20204284. **PI M. Villamiel**. 29/06/2020-14/09/2022. 120,000 €. CDTI 585.093,26 €
- 5.-Contract between BIONANO CONSULTING and CIAL: Scientific and Consultancy Services related to the BRITISH COUNCIL project: "Improvement of the international competitiveness of agricultural value chain (fruits and vegetables)". **PI M. Villamiel**. 05/03/2018-05/06/2018. 7,000 €
- 4.-Contract between Optibiotix (Health PLC, United Kingdom) and CIAL: "Enzymatic modification of commercial natural sweeteners". **PI M. Villamiel**, F. J. Moreno. 2016-2018. 35,000 €
- 3.-Patent. Inventors: Vitor Pereira, D.T., Martinez, J., Ibáñez Ezequiel, E., **Villamiel Guerra, M.**, Mendiola, J.A., Pablo Méndez Albiñana, P. Title: "Processo de extração de pectina de casca de maracujá usando água pressurizada e solventes eutéticos profundos". Titular Entity: University of Campinas (Brazil)/CSIC (Spain). Date of application and submission: 23/02/2023. Application number: BR102023003364-4. Priority: Brazil/Spain.
- 2.-Patent. Inventors: Muñoz-Almagro, N., **Villamiel, M.**, Montilla, A. Title: "Low glycemic pectin gel for food coating". Titular Entity: CSIC, Number: P202130019. Date of application and submission: 14-1-2021. Priority: Spain.
- 1.-Patent. Inventors: Muñoz-Almagro, N., **Villamiel, M.**, Montilla, A., Corzo, N., Herrero, M. Title: "Low methoxyl pectin gel for food coating". Titular entity: CSIC, Number: 201931062. Date of application and submission: 29-11-2019. Priority: Spain.