

Part A. PERSONAL INFORMATION

CV date	10/01/2023
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First name	María Victoria		
Family name	Selma García		
Gender (*)	Female	Birth date (dd/mm/yyyy)	31/12/1974
Social Security, Passport, ID number	30/10093719/01, DNI: 45561359S		
e-mail, URL Web	mvselma@cebas.csic.es	https://www.academia-net.org/profile/maria-victoria-selma/76706	
Open Researcher and Contributor ID (ORCID) (*)	N-3997-2014 (WoS) and 0000-0002-6780-974X (Orcid)		

A.1. Current position

Position	Tenured Scientist		
Initial date	27/07/2012		
Institution	Spanish National Research Council (CSIC)		
Department/Center	Food Science and Technology. Food and Health Lab	/CEBAS	
Country	Spain	Teleph. number	0034 968 396 200 ext. 445502
Key words	Gut Microbiome in health and disease, Dietary polyphenols, Novel probiotics, prebiotics and postbiotics, Functional Foods, Gut microbes metabolism, Food microbiology and safety		

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

Period	Position/Institution/Country/Interruption cause
2009-2012	Senior Researcher 'Ramon y Cajal' Program. CEBAS-CSIC, Spain
2007-2009	Post-doctoral Researcher 'I3P-CSIC Program'. CEBAS-CSIC, Spain
2006 - 2007	Post-doctoral Researcher Spanish Government Fellowship, University of Valencia, Spain. Department of Microbiology and Ecology
2004-2005	Post-doctoral Researcher. Department of Plant Sciences. Microbial safety, College of Agricultural and Environmental Sciences, University of California, Davis. USA
2002-2003	PhD student. 'Marie Curie Training site fellowship'. Division of Food Science, School of Bioscience, University of Nottingham, UK. European PhD.
1999-2002	PhD student. Department of Crop Production and Microbiology. University Miguel Hernandez, Elche, Alicante/Spain and Food Safety Microbiology Section, Institute of Food Research (IFR) Norwich / UK

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
European PhD Degree.	Universidad Politécnica de Cartagena, Spain	2003
Food Science and Technology (Licensed)	University of Murcia, Spain	1998
Medicine and Surgery (First Cycle Degree)	University of Murcia, Spain	1996

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

I have been working for 23 years in the microbiology field. Throughout my research career, my main scientific objective has been: "to study the trinomial Plant food-Intestinal Microbiota-Individual to preserve and promote consumers' health". The associated research lines focus on the study of:

a) Mechanisms to guarantee the microbiological safety of plant foods against intestinal human pathogenic bacteria and viruses. We have analyzed the sources of contamination of fresh fruits and vegetables and acted in the control of microbiological risks, among others: i) optimizing the use of new non-thermal technologies for the disinfection and preservation of food, maintaining its healthy properties such as polyphenol content and ii) developing rapid methods for the detection of human pathogens.

b) Modulating the gut-microbiota abundance and functionality derived from consuming plant foods rich in polyphenols. We have performed *in vitro*, animal, and human studies (both healthy or those with chronic diseases) to identify changes in potentially beneficial or harmful gut microbial populations after consuming dietary polyphenols, including resveratrol from grapes, ellagitannins from pomegranates as well as rosemary compounds.



c) Role of the gut microbiota in the metabolism of plant food polyphenols and the impact on human health. Research on determining the metabolites produced by the gut microbiota as a consequence of transforming dietary polyphenols, their bioavailability, and the mechanisms behind the biological activity of these metabolites (effects on intestinal inflammation, obesity, and colon cancer). From the intestine of healthy individuals, we have isolated, identified, and described, for the first time, several bacteria genera and their microbial enzymes capable of metabolizing some polyphenols into bioactive compounds. We have tested different bacterial consortia *in vitro*, but we have also demonstrated their metabolizing contribution *in vivo*, and we are evaluating their safety as potential probiotics in animal studies. Also, we have revealed the existence of different human metabolic phenotypes (metabotypes) characterizing the metabolism of polyphenols, depending on the type of predominant gut microbial metabolites, and we have associated it with states of health/disease, which opens a new field in the area of personalized nutrition.

Consequently, we have pioneered the research on this double-way interaction between polyphenols-microbiota in the context of the benefits and safety of polyphenol-rich foods. These investigations have resulted in patents, high-impact publications, and my inclusion in the Highly Cited Researchers list (Clarivate Analytics, WOS), and in the Portal to Excellent Women Academics (AcademiaNet, Swiss National Science Foundation). They have been developed within the framework of National, Regional and International projects and through contracts with companies. At the same time, they have served me for the training of young researchers from technical degree, secondary education institutes, university Master's degrees and doctorates from different national and foreign institutions.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications 134 publications (86 SCI, 10 Book chapters, 5 non-SCI, 33 Proceedings). H-index: 43 (Scopus), 42 (Web of science).

1. Romo-Vaquero M., Fernández-Villalba E., Gil-Martinez A.L., Cuenca-Bermejo L., Espín J.C., Herrero, M.T.*, **Selma M. V.***, 2022. Urolithins: Potential Biomarkers of Severity of Gut Dysbiosis and Stage of Parkinson's Patients. *Food Funct.* 13, 6306. IF: 5.396. Q1 (Open Access). Citas: 3
2. Cortés-Martín, A., García-Villalba, R., García-Mantrana, I., (5), **Selma, M. V.***, 2020. Urolithins in Human Breast Milk after Walnut Intake and Kinetics of *Gordonibacter* Colonization in Newly Born: The Role of Mothers' Urolithin Metabotypes. *J. Agric. Food Chem.* 68, 12606–12616. IF:4,192. D1 & Q1 Citas:7
3. Cortés-Martín, A., Romo-Vaquero, M., Rodríguez-Valera, A., García-Mantrana, I., Collado, M.C., Espín, J.C., **Selma, M.V.***, 2019. Urolithin Metabotypes can Anticipate the Different Restoration of the Gut Microbiota and Anthropometric Profiles during the First Year Postpartum. *Nutrients*. 11, 2079-2096. IF: 4,546. Q1 Open access. Citas:9
4. Romo-Vaquero, M., Cortés-Martín, A., Loria-Kohen, V., Ramírez-de-Molina, A., García-Mantrana, I., Collado, M.C., Espín, J.C., **Selma, M.V.***, 2019. Deciphering the human gut microbiome of urolithin metabotypes: association with enterotypes and potential cardiometabolic health implications *Mol. Nutr. Food Res.* 63, 1800958. IF: 5,309 Category Food Science&Technology 2019: 8/139. Top cited paper 2019-2020 in MNFR. D1 & Q1. Highly-cited in the field (Citation benchmarking y FWCI, Scopus). Citas: 66
5. **Selma, M.V.***, González-Sarriás, A. Salas-Salvado, J., Andrés-Lacueva, C., Alasalvar, C., Orem, A., Tomás-Barberán, F.A., Espín, J.C. 2018. The gut microbiota metabolism of pomegranate or walnut ellagitannins yields two urolithin-metabotypes that correlate with cardiometabolic risk biomarkers: Comparison between normoweight, overweight-obesity and metabolic syndrome. *Clinical Nutrition*. 37, 897-905. IF: 6'402. D1 & Q1. Open access, highly-cited in the field (Citation benchmarking y FWCI, Scopus) Citas: 88
6. Beltrán, D., Romo-Vaquero, M., García-Villalba, R., Mira, A., Espín, J.C., Tomás-Barberán, F.A., **Selma, M.V.*** 2018. *Ellagibacter isourolithinifaciens* gen. nov., sp. nov., a new member of the family *Eggerthellaceae*, isolated from human gut. *International Journal of Systematic and Evolutionary Microbiology*. 68, 1707-1712. Q1. Highly-cited in the field (FWCI, Scopus) It is the Official Journal of Prokaryotic Systematics for publication of novel microbial taxa. Citas: 49
7. **Selma, M.V.***, Romo-Vaquero, M., García-Villalba, R., Gonzalez-Sarrias, A., Tomás-Barberán, F.A., Espín, J.C. 2016. The human gut microbial ecology associated to overweight and obesity determines



- ellagic acid metabolism. *Food Funct.* 77, 1769-1774. IF: 3'247. *Q1 highly-cited in the field (FWCI, Scopus)* Citas: 70
8. Romo-Vaquero, M., García-Villalba, R., Gonzalez-Sarriás, A., Beltrán, D., Tomás-Barberán, F.A., Espín, J.C., **Selma, M.V.***. 2015 Interindividual variability in the human metabolism of ellagic acid: Contribution of *Gordonibacter* to urolithin production. *J. Funct. Foods.* 17, 785-791. IF: 3'973. *D1 & Q1. Highly-cited in the field (Citation benchmarking y FWCI, Scopus)* Citas: 62
 9. Sánchez, G., Elízaquivel, P., Aznar, R., **Selma, M.V.** 2015. Virucidal effect of High Power Ultrasound Combined with a Chemical Sanitizer containing Peroxyacetic Acid for water reconditioning in the Fresh-cut industry. *Food Control.* 52,126 - 131. IF: 3'388. *Q1 highly-cited in the field (FWCI, Scopus)* Citas: 22
 10. **Selma, M.V.***, Larrosa, M., Beltrán, D., Tomás-Barberán, F., Espín, J.C. 2012. Resveratrol and some glucosyl-, glucosyl-acyl- and glucuronide derivatives reduce *Escherichia coli* O157:H7, *Salmonella* Typhimurium and *Listeria monocytogenes* Scott A adhesion to the colonic epithelial cell lines. *J. Agric. Food Chem.* 60, 7367-7374. IF: 2'906 *D1 & Q1.* Citas: 28

C.2. Congress, 14 National (2 invited conf., 5 oral & 7 poster) & 26 International Conferences (8 invited conf., 9 oral & 9 poster); 1 Technology transfer Conferences (Invited); 3 Scientific seminars (invited) and numerous social outreach interventions in the media (press, radio and TV), in the science week and IDIES program (I+D+I en Institutos de Educación Secundaria)(<https://www.idies-murcia.es/>)

1. **Selma, M.V.** Member of the Scientific Organizing Committee of the Conferences:
 - o ISHS Stellenbosch 2022 – V International Symposium on Pomegranate and Minor Mediterranean Fruit. *Universidad de Stellenbosch, Sudáfrica, February 15 -17, 2022.*
 - o I Congreso AOVE: Cultura, Gastronomía y Salud. *Museo Arqueológico de Alicante (Marq) June 1-2*, President of the Scientific Advisory Committee of the Association for the Defense of Extra Virgin Olive Oil (ADAOVE),
2. Iglesias-Aguirre, C.E.; González-Sarriás, A.; Cortés-Martín, A.; Romo-Vaquero M.; Osuna L.; Cerón, J.J.; Espín, J.C., **Selma, M.V.***. XXXI Congreso de la Sociedad Española de Nutrición (SEÑ). Cartagena, 14-17 de septiembre, 2022. The oral administration of bacteria isolated from the human gut induces urolithins production in a urolithin-non-producing rat model. Poster.
3. **Selma, M.V.*** Congreso Latinoamericano de Microbioma. Centro de Ciencias Genómicas, UNAM. Méjico. 28-30-2021. Contribución del microbioma intestinal en los efectos saludables de los polifenoles de la dieta. Invited conference.
4. **Selma, M.V.***, González-Sarriás, A., Romo-Vaquero, M, García-Villalba, R Tomás-Barberán, F.A., Espín, J.C. The 1st International Society of Microbiota Symposium on Microbiota and Food. Paris, France. June 14th 2018. The gut microbiota metabolism of polyphenols and cardiometabolic risk biomarkers. Invited conference.
5. **Selma M.V.***; Beltrán D.; García-Villalba R.; Espín J.C.; Tomás-Barberán F.A. V Workshop Probióticos, Prebióticos y Salud. Evidencia Científica. SEPyP Valencia, 23-24 de enero de 2014. Descripción de dos especies bacterianas del intestino humano capaces de transformar ácido elálgico en urolitinas con actividad anti-inflamatoria. Invited conference.

C.3. Research projects *Participation in 42 Research projects: 25 National & 11 International projects & 4 Scientific networks & 2 Technological Transfer projects (Total amount for CSIC: 2,092,169 €)*

21647/PDC/21. Implementation and validation of the technology to produce naturolithins with a preventive effect against cell deterioration associated with age. Proof of concept. Fundación Séneca-Agencia de Ciencia y Tecnología de la Región de Murcia. P.I.: M.V. Selma (From 1-1-2022 to 31-12-2022). (28,000 €). Principal Investigator. <http://agrotransfer.csic.es/urobotec/>

PID2019-103914RB-I00. Frontier strategies through fecal transplants: Human polyphenol gut microbiota metabotypes, cardiometabolic risk and cognitive impairment (MetaboGut). MICIN. P.I.: J.C. Espín & co-P.I. M.V. Selma (From 1-6-2020 to 31-5-2023). (193,600 €). Principal Investigator.

20880/PI/18. Modulation of the intestinal microbiota and biotechnological production of bioactive urolithins to universalize the benefits of pomegranate: Personalized nutrition for the prevention of cardiovascular risk. Fundación Séneca. Ayudas a la realización de proyectos para el desarrollo de



investigación científica y técnica por grupos competitivos. P.I.: M.V. Selma. (From 1-1-2019 to 31-12-2021). (61,500 €). Principal Investigator.

AGL2015-64124-R. Ellagitannins as a tool to study the interindividual variability of polyphenols' metabolism. MICIN. P.I.: J.C. Espín & co-P.I. M.V. Selma (From 1-1-2016 to 31-12-2019). (325,000 €). Principal Investigator.

201570I005 Ability of the intestinal microbiota of patients with Parkinson's disease to transform dietary ellagitannins into urolithins with anti-inflammatory activity. Special intramural projects (PIE-CSIC). P.I.: M.V. Selma. (From 01/10/2015 to 30/09/2016) (7,500 €) Principal Investigator.

FA COST Action FA1403, Interindividual variation in response to consumption of plant food bioactives and determinants involved (POSITIVE), Unión Europea. PI: Christine Morand (INRA, Clermont, Francia), (11/12/2014-10/12/2018), (600,000 €). Member of the research team.

C.4. Contracts, technological or transfer merits.

C4.1. Industrial Contracts *Participation in 19 contracts with companies (Amount for CSIC: 585,845€)*

- ✓ Relationship between microbiome, genome and regulatory genome in motor neurone disease. Iggy Get Out Limited, (Sidney, Australia). I.P.: M.V. Selma (05/2018-09/2018). 7,700 €. Principal Investigator.
- ✓ Effect of different technological and biotechnological on the bioavailability and efficacy of phenolic bioactives of specific foods and dietary supplements. NESTEC LTD (Suiza) P.I.: F.A. Tomás Barberán. (2018-21). 107,161 €.
- ✓ Pharmacokinetics and metabolism of bioactive phenolics from orange, lemon, and milk thistle extracts. Euromed S.A. 01/10/2019 HASTA: 30/06/2020. P.I.: J.C. Espín. 70,180€

C4.2. Knowledge Transfer Activities:

- ✓ **Research supervision.** *2 Doctoral Theses, 1 D.E.A., 4 Master Thesis (3 International & 1 National), 3 Bachelor Theses, Research Projects of 6 High school students (IDIES Program), 5 training of pre & postdoctoral students, 1 research starting grants JAEINT_22_EXP00008*
- ✓ **Teacher in:** *4 University Doctoral Programs; 4 University Official Masters; 2 Official Degree Program; 1 University summer course.*

C4.3. Technology Transfer Activities: *14 contributions of technological development and innovation to companies in the sector and 5 Products on the market:*

- ✓ Desarrollo de tomate rallado fresco, listo para su consumo (CSIC, Empresa Bonisa, Comercialización: Mercadona).
- ✓ Desarrollo de guacamole fresco (CSIC, Empresa Frutos Montosa, comercialización: Mercadona).
- ✓ Patatas microondables “el abuelo” (CSIC, Empresa Agroinnova, El Corte Inglés)

C.4.4. Patents (*3 +1 European application*)

- ✓ **Selma, M.V.**, Tomás Barberán, F., Beltrán, D., García-Villalba, R., Espín, J. C. Microbial method for reproducing the human urolithin metabotypes *in vitro* and *in vivo*. Solicitud europea. EP22382999.5. (18-10-2022). En negociación con Archer-Daniels-Midland Company (ADM, Chicago, Illinois, EEUU). Submitted Patent.
- ✓ **Selma, M.V.**, Tomás Barberán, F., Beltrán, D., García-Villalba, R., Espín, J. C. Microorganismo capaz de convertir ácido elágico y elagitaninos en urolitinas y uso del mismo. PCT/ES2014/070207, País de prioridad España. Publicación: WO2014147280 A1 (25-9-2014).
- ✓ **Selma, M.V.**, Gil Muñoz, M. I., Beltrán, D., López-Gálvez, F. y Allende A. Método y sistema asociado para la detección y el análisis de agentes patógenos y/o capaces de causar el deterioro en alimentos vegetales. PCT/ES2011/070651. Priority country: Spain ES1641.804.
- ✓ Espín, J.C.; Morales, J.C.; Medina, I. Otros colaboradores en la patente: Larrosa, M.; **Selma, M.V.**; Tomás-Barberán, F.; Lucas, R.; González-Pérez, M.J.; J. Lois, M.S. Compuestos con actividad anti-inflamatoria. ES2362065, Licenciada a la empresa PBL (Plant Biosystem Limited, UK; 1-11-2011) Licensed patent.

C.4.4. Transfer of biological material to public international bacterial collections in Germany (DSMZ) and Sweden (CCUG) (4): *Ellagibacter Isourolithinifaciens* gen. nov., sp. nov., CEBAS (=DSM 104140T=CCUG 70284T); *Gordonibacter urolithinifaciens* sp. nov. strain CEBAS 1/15P (DSM 27213T=CCUG 64261T); deposit in Germany collection (DSMZ) of two strains for patent purpose DSM 34392 and DSM 26536.