

XXV ENCONTRO GALEGO-PORTUGUÉS DE QUÍMICA

SANTIAGO DE COMPOSTELA (SPAIN)

20-22 Noviembre 2019

Ciudade da Cultura (GAIAS)

Trabajando por la sostenibilidad en la salud, el ambiente y
la seguridad alimentaria

20 al 22 de noviembre de 2019

Edificio CINC. Ciudad de la Cultura

Santiago de Compostela-Galicia (España)



**Colegio Oficial de
Químicos de Galicia**



**SOCIEDADE
PORTUGUESA
DE QUÍMICA**



**ASOCIACIÓN DE
QUÍMICOS DE GALICIA**

XXV ENCONTRO GALEGO-PORTUGUÉS DE QUÍMICA

20 al 22 de noviembre de 2019

Edificio Cinc. Ciudad de la Cultura

Santiago de Compostela-Galicia (España)



Colegío Oficial de
Químicos de Galicia



SOCIEDADE
PORTUGUESA
DE QUÍMICA



ASOCIACIÓN DE
QUÍMICOS DE GALICIA

XXV ENCONTRO GALEGO-PORTUGUÉS DE QUÍMICA.

Noviembre 2019

Coordinador Editorial

Cristina Díaz Barral

Manuel Rodríguez Ménez

Edita

Colegio Oficial de Químicos de Galicia

Rúa Lisboa, nº 10, Local 31E – Edificio Área Central Fontiñas.

15707 Santiago de Compostela (A Coruña)

www.colquiga.org

Tirada

50 Ejemplares y 250 en formato digital

Imprime

OCERO

Sada (A Coruña)

Depósito Legal

VG699-2017

ISBN

978-84-09-16320-5

Este libro de comunicaciones y conferencias, presentadas en el XXV Encontro Galego-Portugués de Química, Colegio Oficial de Químicos de Galicia

Catalogación recomendada Libro de resúmenes del XXV Encontro Galego-Portugués de Química.

Edificio Cinc. Cidade da Cultura. Santiago de Compostela (España) 2019

© Colegio Oficial de Químicos de Galicia

Derechos reservados. Prohibida la reproducción de este libro por cualquier medio, total o parcialmente, sin permiso expreso del editor.

El coordinador editorial declara que el contenido de los resúmenes científicos es de la entera responsabilidad de los respectivos autores.

PROGRAMA DEL ENCONTRO

DÍA	hora	SALAS			
		PLENARIAS	A	B	C
		A			
20	10:00-12:00	INSCRIPCIÓN Y RECEPCIÓN			
	12:00-12:30	SESIÓN DE APERTURA. Sala A			
	12:30 -13:30	CONFERENCIA PLENARIA APERTURA. Sala A			
	13:30-15:00	COMIDA			
	15:00		QS01	QO01	QA01
	15:15		QS02	QO02	QA02
	15:30		QS03	QO03	QA03
	15:45		QS04	QO04	QA04
	PAUSA: 5 minutos				
	16:05		QS05	QO05	QA05
	16:20		QS06	QO06	QA06
	16:35		QS07	QO07	QA07
	16:50		QS08	QO08	QA08
	17:05-18:00	CAFÉ - POSTERS			
	18:00-18:45	CP1			
	18:45		QS09	QO09	ALM01
	19:00		QS10	EDU03	ALM02
	19:15		QS11	QO10	ALM03
	19:30		QS12	ELC01	ALM04
	19:45		QS13	ELC02	ALM05

día	hora	SALAS				
		PLENARIAS	A	B	C	
		A				
21	10:00		QS14	NN01	AMB01	
	10:15		QS15	NN02	AMB02	
	10:30		QS16	NN03	AMB03	
	10:45		QS17	NN04	AMB04	
	PAUSA: 5 minutos					
	11:05		QS18	NN05	AMB05	
	11:20		QS19	NN06	AMB06	
	11:35		QS20	NN07	AMB07	
	11:50		QS21	NN08	AMB08	
	12:05-12:45	CAFÉ - POSTERS				
	12:45-13:30	CP2				
	13:30-15:00	ALMUERZO-COMIDA				
	15:00		QS22	NN09	AMB09	
	15:15		QS23	BB01	AMB10	
	15:30		QS24	BB02	AMB11	
	15:45		QS25	BB03	AMB12	
	BB04					
	16:05		QS26	BB04	AMB13	
	16:20		QS27	BB05	AMB14	
	16:35		QS28	QA12	AMB15	
	16:50		ALM06	QA13	AMB16	
	17:05-17:45	CAFÉ - POSTERS				
	17:45 - 18:30	CP3				
	18:30		ALM07	QF01	AMB17	
	18:45		ALM08	QF02	AMB18	
	19:00		ALM09	QF03	AMB19	
	19:15		ALM10	QF04	IND01	
	19:30		ALM11	QF05	IND02	
19:45				IND00		
21:00	CENA DEL ENCONTRO					

día	hora	SALAS				
		PLENARIAS	A	B	C	
		A				
22	10:00		ALM12	QF06	IND03	
	10:15		ALM13	QF07	IND04	
	10:30		ALM14	QF08	IND05	
	10:45		ALM15	QF09	IND06	
	PAUSA: 5 minutos					
	11:05		ALM16	QF10	CAT01	
	11:20		ALM17	QF11	CAT02	
	11:35		ALM18	POL01	CAT03	
	11:50		ALM19	POL02	CAT04	
	12:05		ALM20	POL03	CAT05	
	12:20-12:45	PAUSA- CAFÉ				
	12:45-13:30	CP4				
	13:30-15:00	ALMUERZO-COMIDA				
	15:00		ALM21	QI01	QT01	
	15:15		ALM22	QI02	QT02	
	15:30		ALM23	QI03	QT03	
	PAUSA 5 minutos					
	15:50		ALM24	QI04	QA09	
	16:05		QT04	EDU01	QA10	
	16:20		BB00	EDU02	QA11	
	PAUSA: 5 minutos					
	16:40	ACTO DE CLAUSURA				

Development of a natural ingredient from kiwi epicarp with potential application in the food industry

C. Caleja¹, M. Dias^{1,2}, C. Pereira¹, R.C. Calhella¹, M. Kostic³, M. Sokovic³, Débora Tavares⁴, I.J. Baraldi², L. Barros¹, I.C.F.R. Ferreira^{1*}

¹ Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal.

² Departamento Acadêmico de Alimentos (DAALM), Universidade Tecnológica Federal do Paraná, Campus Medianeira, 85884-000, Paraná, Brasil

³ University of Belgrade, Department of Plant Physiology, Institute for Biological Research "Siniša Stanković", Bulevar Despota Stefana 142, 11000 Belgrade, Serbia

⁴ KiwiCoop, Rua Kiwicoop, n° 37 – Vila Verde 3770-305 Oliveira do Bairro, Portugal

*iferreira@ipb.pt

Kiwifruit is a recognized source of bioactive compounds with beneficial properties for consumers' health [1]. Although only pulp is normally consumed, there are several studies in literature that have been exploring the fruits epicarp, which is characterized as an excellent source of bioactive compounds. Thus, since the food industry produces annually tons of this normally discarded and unused residue [2], this work aimed to characterize two varieties of kiwi (*Actinidia deliciosa* cv. "Hayward" - green pulp kiwi variety and *Actinidia* spp. - red pulp kiwi variety), comparing the two pulps and epicarps. This study will valorize these bio-residues.

The proximal composition (protein, fat, carbohydrates and ash contents, and energy) of the pulp of these varieties, as well as the composition in free sugars, fatty acids, organic acids and tocopherols, and the study of the bioactivities (antioxidant, anti-inflammatory, cytotoxic and antimicrobial activities) of the pulp and epicarp were evaluated. A hydroethanolic extraction was used to obtain compounds subsequently identified and quantified by HPLC-DAD-ESI/MS.

The results revealed that pulps have a high water content and low amount of other macronutrients. Both epicarp varieties presented a higher concentration of phenolic compounds than the corresponding pulp. Additionally, only *Actinidia* spp. (red pulp kiwi variety) presented an anthocyanin, cyanidin-*O*-pentosylhexoside. α -tocopherol was the most abundant vitamin in all the analyzed parts. Four organic acids (quinic, malic, citric and ascorbic acids) were identified in all the studied samples. The best antioxidant activity was shown by the epicarps, highlighting the green pulp kiwi as the best variety. Similarly, only the epicarp of the green pulp kiwi variety presented positive results for all the tested cell lines, being able to inhibit the cell growth in a moderate way. Additionally, none of the extracts showed toxicity in a porcine liver cell line at the highest tested concentration ($GI_{50} > 400 \mu\text{g/mL}$). Both kiwi varieties also demonstrated an excellent antimicrobial activity against some pathogenic bacteria.

These results confirm the potential application of kiwi epicarp in the food industry as a source of functional compounds with bioactive properties, contributing in the valorization of these bio-residues.

Acknowledgements

The authors are grateful to the Foundation for Science and Technology (FCT, Portugal) and FEDER under Programme PT2020 for financial support to CIMO (UID/AGR/00690/2019); national funding by FCT, P.I., through the institutional scientific employment program-contract for L. Barros and R. Calhella's contract, and Carla Pereira's contract through the celebration of program-contract foreseen in No. 4, 5 and 6 of article 23° of Decree-Law No. 57/2016, of 29th August, amended by Law No. 57/2017, of 19th July; research contract of C. Caleja (Project AllNatt, POCI- 01-0145-FEDER-030463); to FEDER-Interreg España-Portugal programme for financial support through the project 0377_ Iberphenol_6_E. The authors are grateful for financial support to the Ministry of Education, Science and Technological Development of Republic of Serbia, grant number 173032. The authors also thank the company KiwiCoop (Oliveira do Bairro, Portugal) for providing the kiwi samples.

References

- [1] C.H. Zhu et al., Storage and Process, 13 (2013), 57-62.
- [2] P.A. Folletta et al., Crop Protection, 115 (2019), 113-121.