RELACIÓN ENTRE LA PRESENCIA DE COMPUESTOS FENÓLICOS Y LOS ATRIBUTOS SENSORIALES DEL AOV. ESTADO ACTUAL DEL TEMA.

Dra. Ana María Rivas Velasco

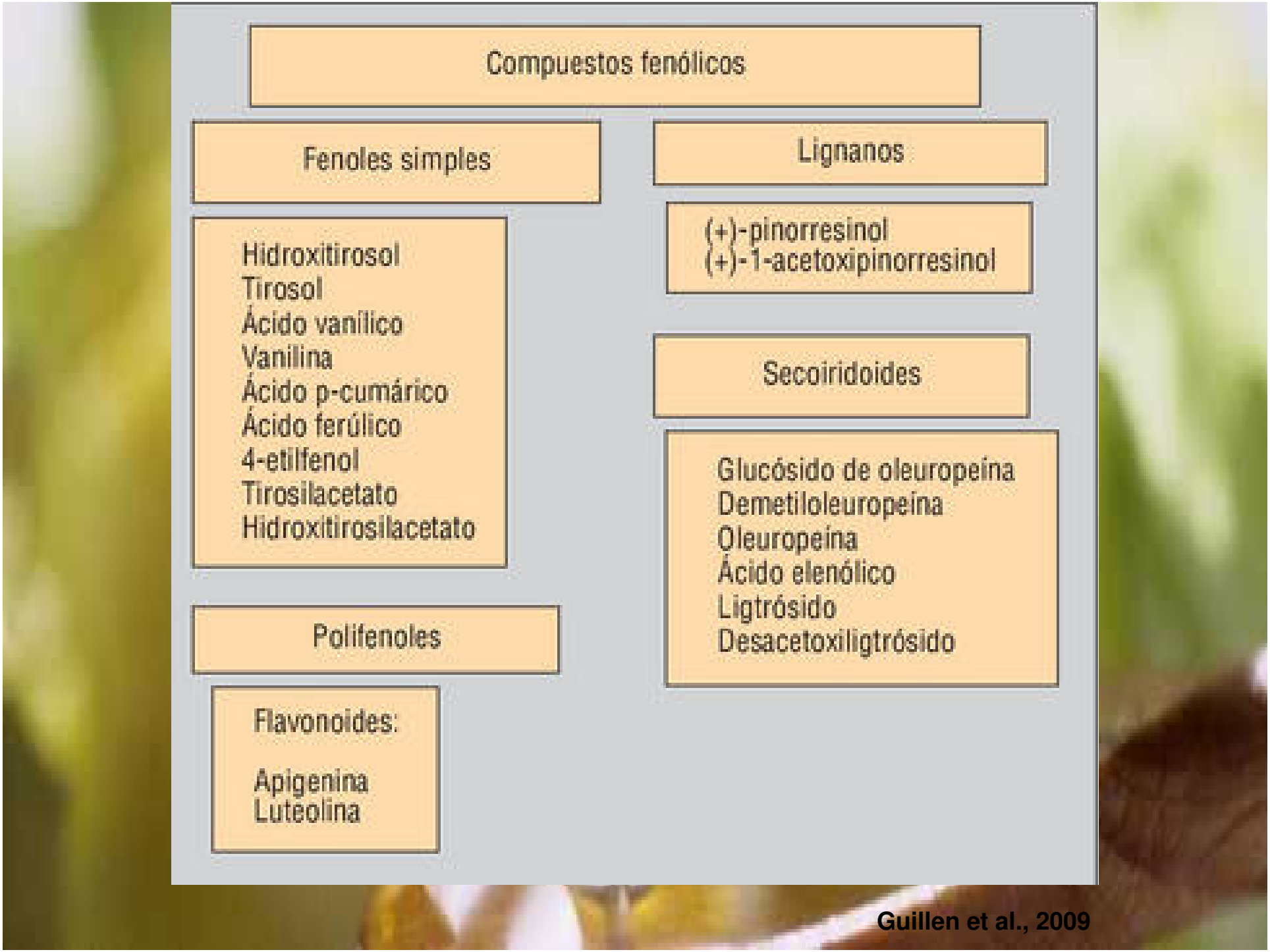
Dpto. de Nutrición y Bromatología, Universidad de Granada

TABLA 2. **Componentes minoritarios del aceite de oliva virgen**[31,34]

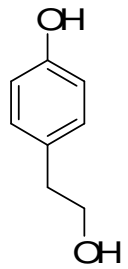
Componentes	Concentración (mg/100 g aceite)
Compuestos terpénicos	100-350
Esteroles	100-250
Hidrocarburos	
Escualeno	150-800
Carotenos	0,5-1
Compuestos fenólicos	5-100
Alcoholes alifáticos	10-70
Tocoferoles	0,5-30
Ésteres	10-20
Aldehídos y cetonas	4-8
Clorofilas	0,1-2

Guillen et al., 2009

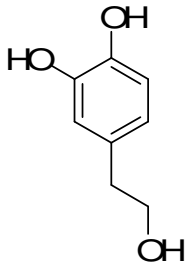

LA CONCENTRACIÓN DE COMPUESTOS FENÓLICOS EN EL AOV DEPENDE
VARIEDAD DE ACEITUNA
CONDICIONES DE ALMACENAMIENTO
GRADO DE MADUREZ DE LA ACEITUNA
MÉTODOS SEGUIDOS PARA OBTENER EL ACEITE



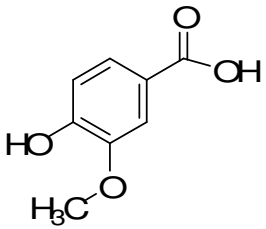
Guillen et al., 2009



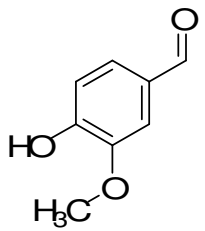
Tyrosol



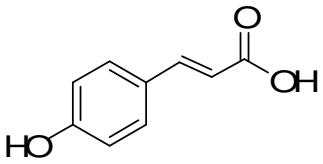
Hidroxityrosol



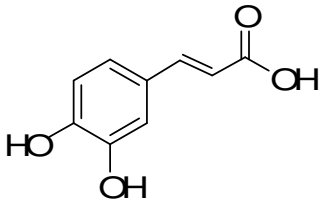
Vanillic acid



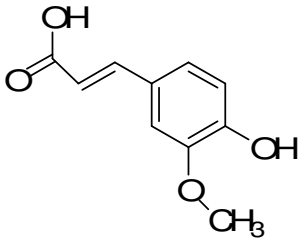
Vanillin



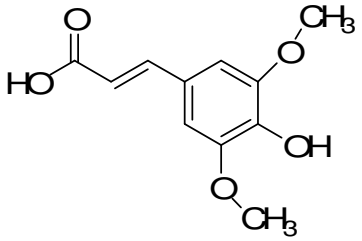
P-Coumaric acid



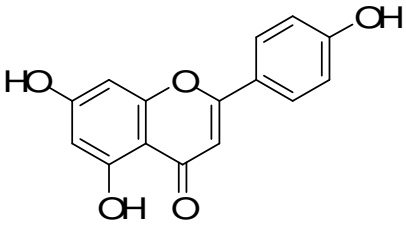
Caffeic acid



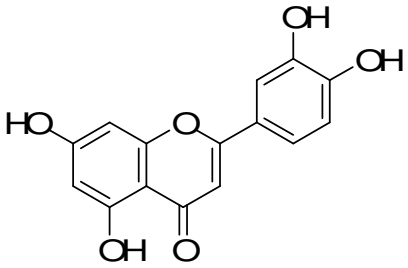
Ferulic acid



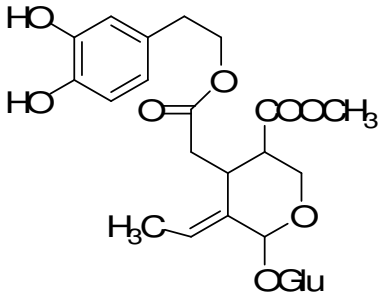
Sinapic acid



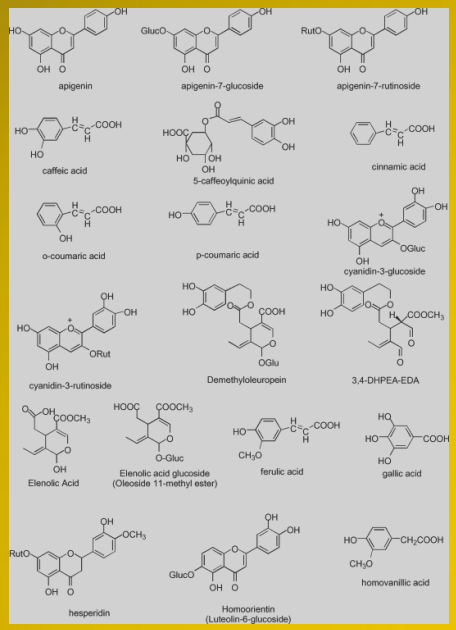
Apigenin



Luteolin



Cleuropein



COMPUESTOS FENÓLICOS

ESTABILIDAD OXIDATIVA

PROPIEDADES NUTRICIONALES

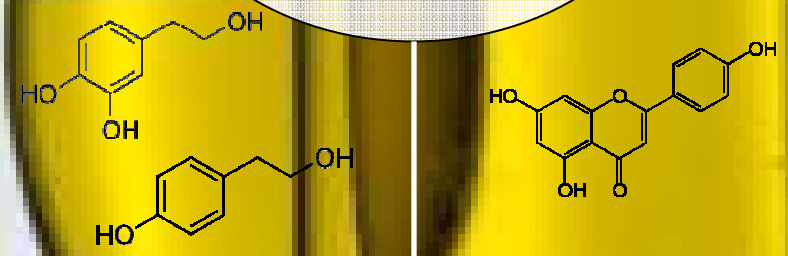
PROPIEDADES SENSORIALES

ENFERMEDADES CV

ENFERMEDADES ÓSEAS

COMPUESTOS FENÓLICOS DEL AOV

CÁNCER

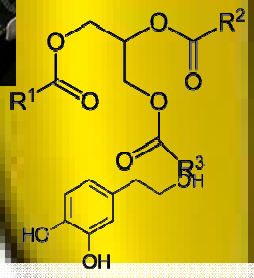


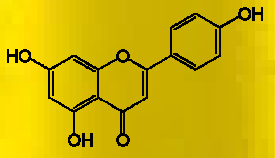
ENVEJECIMIENTO

PROPIEDADES SENSORIALES DE LOS COMPUESTOS FENÓLICOS

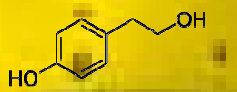
EL ⇑ DEMANDA DE AOV NO SOLO PUEDE SER EXPLICADO POR SU EFECTO EN SALUD

ATRIBUTOS SENSORIALES





DETERMINAN LA PREFERENCIA DE LOS CONSUMIDORES



COMPUESTOS FENÓLICOS

↓

AMARGOR Y ASTRINGENCIA

↓

VINO, TE, FRUTAS

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

J. Agric. Food Chem. 2004, 52, 3649–3654 3649

Effect of Olive Ripening Degree on the Oxidative Stability and Organoleptic Properties of Cv. Nostrana di Brisighella Extra Virgin Olive Oil

ANNALISA ROTONDI,*,† ALESSANDRA BENDINI,§ LORENZO CERRETANI,§ MATTEO MARI,† GIOVANNI LERCKER,§ AND TULLIA GALLINA TOSCHI§

Institute of Biometeorology, National Research Council, Via Gobetti 101, 40129 Bologna, Italy, and Department of Food Science, University of Bologna, P.zza Goidanich 60, 47023 Cesena (FC), Italy

A MEDIDA QUE EL ACEITE SE OBTENIA DE ACEITUNAS EN ESTADOS DE MADURACIÓN MÁS ALTOS

⇩ **AMARGO Y PICANTE**

⇩ **COMPUESTOS FENOLICOS TOTALES**

CORRELACIÓN POSITIVA ENTRE EL CONTENIDO DE SECOIRIDOIDES Y EL AMARGO Y PICANTE

J. Agric. Food Chem. **2001,** *49,* 4231–4235

Reduction of Oil Bitterness by Heating of Olive (*Olea europaea*) Fruits

José M. García,* Khaled Yousfi, Raquel Mateos, Manuel Olmo, and Arturo Cert

Instituto de la Grasa (CSIC), Departamento de Fisiología y Tecnología de Productos Vegetales, Avenida Padre García Tejero 4, 41012 Sevilla, Spain

Correlación positiva entre el contenido de Secoiridoides y el amargor en los aceites obtenidos de las aceitunas var. Manzanilla y Verdial

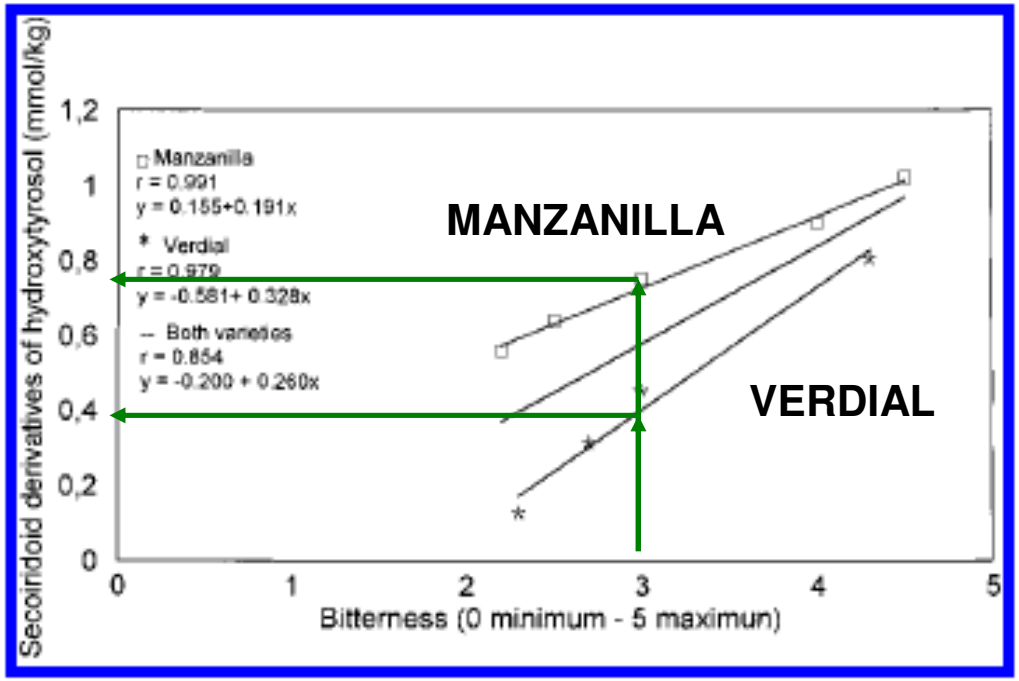


Figure 1. Correlation found between bitterness intensity and content of hydroxytyrosol secoiridoid derivatives on virgin olive oils obtained from Manzanilla and Verdial olives. Each point is the mean value of three replicates.

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

J. Agric. Food Chem. 2003, 51, 6021–6025 6021

Main Polyphenols in the Bitter Taste of Virgin Olive Oil. Structural Confirmation by On-Line High-Performance Liquid Chromatography Electrospray Ionization Mass Spectrometry

F. GUTIÉRREZ-ROSALES,* J. J. RÍOS, AND MA. L. GÓMEZ-REY

Instituto de la Grasa (CSIC), Departamento Caracterización y Calidad de los Alimentos, Avda Padre García Tejero 4, 41012 Sevilla, Spain

CORRELACIÓN POSITIVA ENTRE EL CONTENIDO DE LAS LAS FORMAS DIALDEHÍDICAS Y ALDEHÍDICAS DE LAS AGLICONAS DE LA OLEUROPEINA Y LIGSTROSIDO (DGO, DGL, AGO, AGL) CON EL AMARGOR

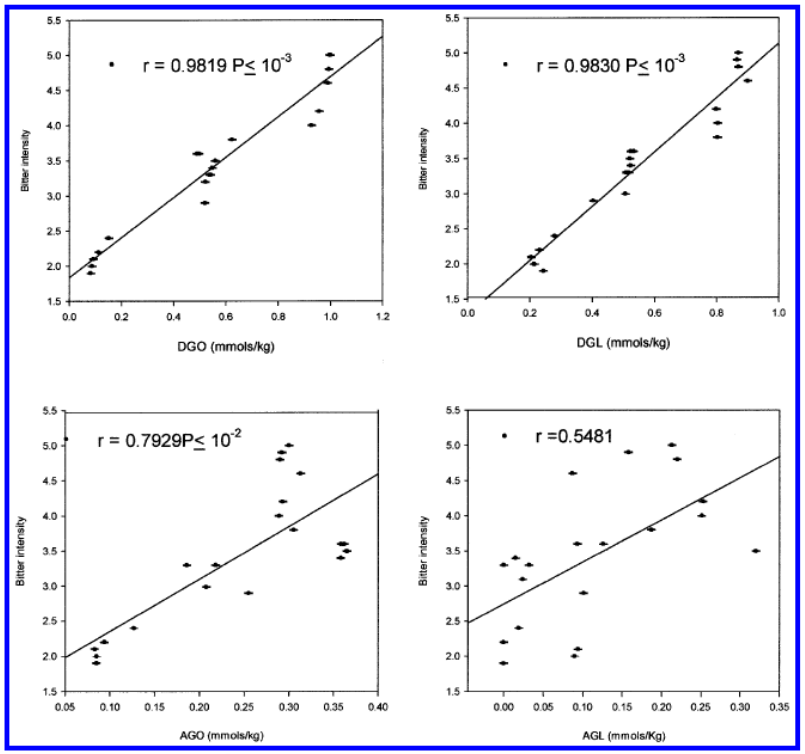


Figure 2. Relationship between the content of DGO, DGL, AGO, AGL, and bitter intensity.

ELSEVIER

Food Chemistry 68 (2000) 283–287

Food Chemistry

www.elsevier.com/locate/foodchem

Virgin olive oil odour notes: their relationships with volatile compounds from the lipoxygenase pathway and secoiridoid compounds

Franca Angerosa*, Roberta Mostallino, Carla Basti, Raffaella Vito

Istituto Sperimentale per la Elaiotecnica, Contrada Fonte Umano, 65013-Città S. Angelo (PE), Italy

Received 5 May 1999; received in revised form 2 July 1999; accepted 2 July 1999

RELACIONAN LOS COMPUESTOS SECOIRIDOIDES CON LOS ATRIBUTOS AMARGO, PICANTE Y CASCARA DE NUEZ.

Table 1

R^2 and regression coefficients of examined variables for each sensory attribute

	Bitter	Pungent	Sweet	Fruity (green olives)	Leaf	Almond	Banana	Lawn	Walnut husk	Flowers	Tomato	Artichoke	Hay	Apple
R^2	0.80	0.80	0.72	0.66	0.65	0.62	0.60	0.57	0.57	0.56	0.51	0.36	0.35	0.21
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Polyphenols	0.40	0.39	−0.12	0.11	0.27	−0.27	−0.13	0.20	0.51	−0.01	−0.29	−0.05	0.23	0.28

Journal of the American Oil Chemists' Society
April 1992, Volume 69, Issue 4, pp 394-395

Evaluation of the bitter taste in virgin olive oil

F. Gutiérrez Rosales, S. Perdiguero, R. Gutiérrez, J. M. Olias

» Get Access

Abstract

An analytical method has been developed to evaluate the intensity of the bitter taste in virgin olive oil. Results from the proposed method, based on extraction of the bitter constituents of virgin olive oil with methanol/water and measurement of the absorbance at 225 nm, show a significant correlation with the intensity of bitterness that had been evaluated in a sensorial manner by a panel. The developed method, therefore, offers a real alternative to the panel test for the evaluation of this attribute.

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EXTRACCIÓN SPE DE LOS FENOLES

↓

DETECCIÓN ESPECTROFOTOMÉTRICA A 225 NM DEL EXTRACTO

↓

ÍNDICE DE AMARGOR k_{225}

↓

CORRELACION POSITIVA CON EL AMARGOR DETERMINADO ORGANOLEPTICAMENTE MEDIANTE UN PANEL DE CATA

Evaluation of Virgin Olive Oil Bitterness by Quantification of Secoiridoid Derivatives

Raquel Mateos, Arturo Cert, M. Carmen Pérez-Camino, and José M. García*
Instituto de la Grasa (Consejo Superior de Investigaciónes Científicas), E-41012 Sevilla, Spain

LA DETERMINACIÓN ANALÍTICA DE LA FORMA ALDEHÍDICA DE LA OLEUROPEINA AGLICONA (AOA) PARA MEDIR EL AMARGOR

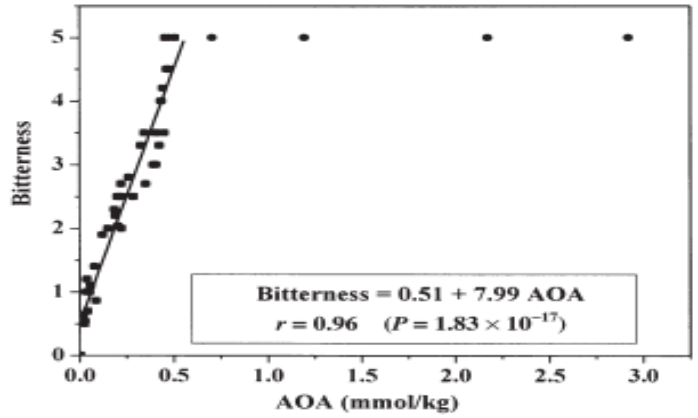


FIG. 1. Linear function that correlates concentration of the aldehydic form of oleuropein aglycone (AOA) and sensory bitterness in the range 0.03 to 0.5 mmol/kg (*r*, linear regression coefficient; *P*, probability that *r* = 0).

SI AOA ES > 0.5 MMOL/KG
AMARGOR= 5

SI AOA ES < 0.5 MMOL/KG

AMARGOR=0.51+7.99AOA

Eur. J. Lipid Sci. Technol. **108** (2007) 193–197 DOI 10.1002/ejlt.200600231 193

Gabriel Beltrán
María T. Ruano
Antonio Jiménez
Marino Uceda
María P. Aguilera

Instituto Andaluz de Investigación y Formación Agraria, Pesquera, Alimentaria y de la Producción Ecológica (IFAPA), CICE, Mengibar, Spain

Evaluation of virgin olive oil bitterness by total phenol content analysis

Bitterness is an important sensory attribute of virgin olive oil (VOO). It is usually assessed by tasting, which is a time-consuming method and needs trained tasters. Bitterness is related to the phenolic compounds and can be estimated by the measurement of the specific absorbance at 225 nm (K_{225}). This paper proposes to evaluate oil bitterness intensity as estimated from the K_{225} values measuring the phenol content. A significant relationship between phenol content and K_{225} as well as a prediction model for bitterness intensity estimation from the phenol content was obtained. Classification of oil bitterness was based on the phenol content. Furthermore, when 12 VOO samples were classified by their bitterness intensities as estimated by the prediction model and by sensory analysis, more than 92% of the oil samples were correctly classified. Therefore, by measuring the phenol content, the bitterness intensity can be estimated and oils can be classified by their bitterness. This model may represent an easy method to evaluate the bitterness intensity without any sensory assessment.

Keywords: Virgin olive oil, bitterness, prediction model, phenol content, K_{225}.

PROPONEN UN MÉTODO PARA DETERMINAR EL AMARGOR DE UN ACEITE MIDIENDO EL CONTENIDO FENÓLICO TOTAL MEDIANTE EL MÉTODO DE FOLIN-CIOCALTEAU

AMARGOR $IB_e = -7 \times 10^{-6}\, Phenols^2 + 0.0123\, Phenols - 0.8722$

BRIEF COMMUNICATIONS

Ibuprofen-like activity in extra-virgin olive oil

Enzymes in an inflammation pathway are inhibited by oleocanthal, a component of olive oil.

Table 1 | Selective inhibition of COX enzymes by oleocanthal enantiomers

Agent	Concentration (μM)	COX-1 (%)	COX-2 (%)
(−)Oleocanthal	100	83.5 ± 3.5	70.9 ± 8.6
	25	56.1 ± 3.2	56.6 ± 9.5
	7	24.6 ± 7.3	14.5 ± 2.3
(+)Oleocanthal	100	68.0 ± 15.2	69.6 ± 3.9
	25	54.5 ± 4.6	41.3 ± 15.9
	7	24.6 ± 7.5	6.1 ± 4.2
Ibuprofen	25	17.8 ± 2.3	12.7 ± 3.6
	7	0.0	1.3
Indomethacin	25	90.1	89.8
	7	86.6	66.3
NDGA	25	ND	ND
	7	ND	ND
caffeic acid	25	ND	ND
	7	ND	ND

Percentage inhibition of cyclooxygenases 1 and 2 (COX-1, COX-2) and 15-lipoxygenase (15-LO) by three dif
oleocanthal and of ibuprofen are presented as mean ± s.e.m. for three independent experiments. ND, not det
was used as a positive (inhibitory) control in the cyclooxygenase assays and *nor*-dihydroguaiaretic acid (
were used as positive (inhibitory) controls in the lipoxygenase assay. The concentrations for 50% inhibiti
least-squares regression analysis of inhibition versus concentration) for the natural (−) oleocanthal are 2
COX-1 and COX-2, respectively; IC_{50} values for (+)oleocanthal are 25 μM and 40 μM for COX-1 and CO
values for ibuprofen are 5 μM and 223 μM for COX-1 and COX-2, respectively[13]. (For methods, see supple

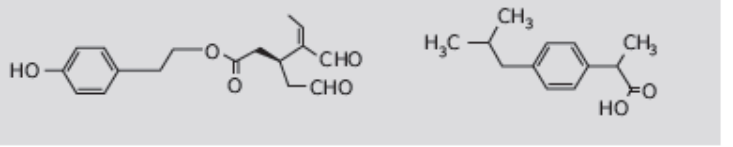


Figure 1 | Structures of (−)oleocanthal (left) and the anti-inflammatory drug ibuprofen (right). How they underpin the similar throat-irritating and pharmacological properties of the two compounds is unclear as yet.

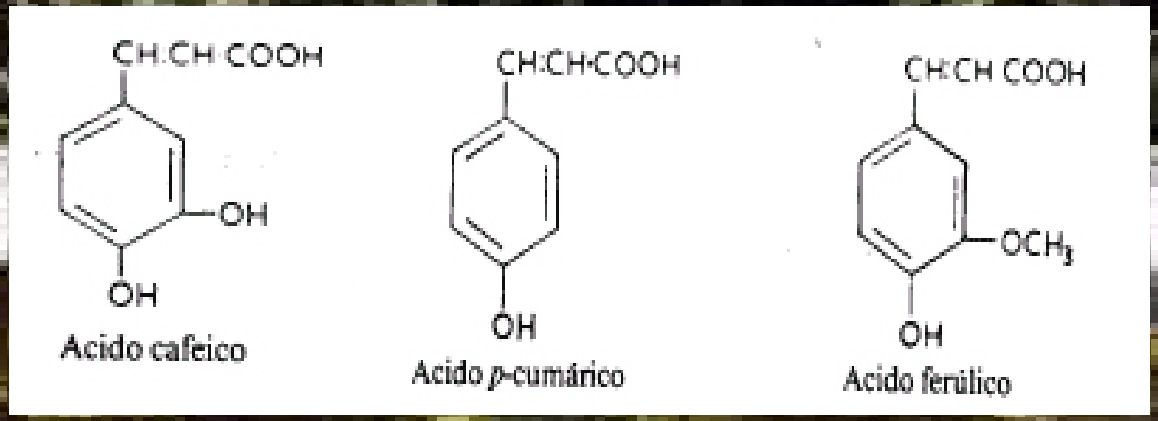
SIMILAR SENSACIÓN DE IRRITACIÓN EN LA GARGANTA

COMPARTEN ACTIVIDAD ANTIINFLAMATORIA

INHIBEN LAS ENZIMAS CICLOOXIGENASAS

(INTERVIENEN EN SÍNTESIS DE PG)

RELACIÓN ENTRE ÁCIDOS FENÓLICOS Y ATRIBUTOS SENSORIALES



IFAPA, UNIVERSIDAD DE GRANADA

Situación geográfica

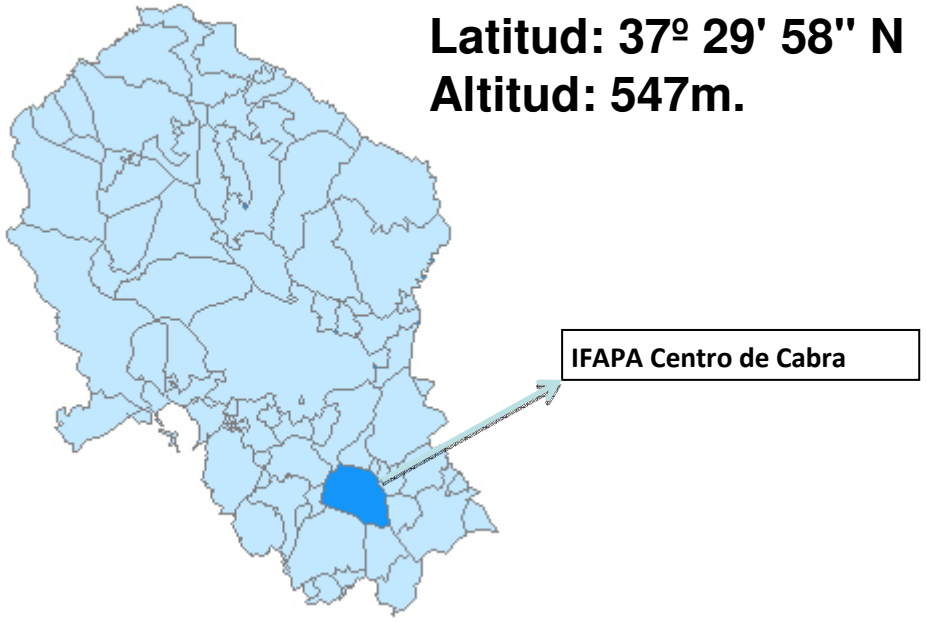
Finca “Las Minas”, en la localidad de Cabra (Córdoba)

Coordenadas UTM:

X: 373628.0 **Y: 4151309.0**

Latitud: 37º 29' 58'' N **Longitud: 04º 25' 46'' W**

Altitud: 547m.



Mapa de la Provincia de Córdoba

Diseño del ensayo

Octubre 2010

Domingo	Lunes	Martes	Miercoles	Jueves	Viernes	Sabado
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24 31		25	26	27	28	29	30

Noviembre 2010

Domingo	Lunes	Martes	Miercoles	Jueves	Viernes	Sabado
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Diciembre 2010

Domingo	Lunes	Martes	Miercoles	Jueves	Viernes	Sabado
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

- **MUESTRAS DE LAS VARIEDADES PICUAL, HOJIBLANCA, ARBEQUINA, PICUDA EN DIFERENTES ESTADOS DE MADURACIÓN**
- **A LAS MUESTRAS RECOGIDAS EN LAS FECHAS SEÑALADAS, SE LES ESTUDIÓ LOS SIGUIENTES PARÁMETROS:**

-Resistencia al desprendimiento.
- Índice de madurez de los frutos.
- Peso de los frutos
- Rendimiento graso y humedad.
- Índice de acidez.
- Índice de peróxidos.
- Absorbancia a la radiación
- Ultravioleta (K_{232}, K_{270}).
- K_{225} (Amargor)
- Polifenoles totales.
- Polifenoles individuales.
- Análisis sensorial.

HOJIBLANCA


25/10/2010
Puntuación organoléptica
10
8
6
4
2
0
Frutado
Amargo
Picante
Dulce
Verde hoja
Verde hierba
Manzana
Almendra
Alcachofa


01/11/2010
Puntuación organoléptica
10
8
6
4
2
0
Frutado
Amargo
Picante
Dulce
Verde hoja
Verde hierba
Manzana
Almendra
Alcachofa


08/11/2010
Puntuación organoléptica
10
8
6
4
2
0
Frutado
Amargo
Picante
Dulce
Verde hoja
Verde hierba
Manzana
Almendra
Alcachofa


15/11/2010
Puntuación organoléptica
10
8
6
4
2
0
Frutado
Amargo
Picante
Dulce
Verde hoja
Verde hierba
Manzana
Almendra
Alcachofa

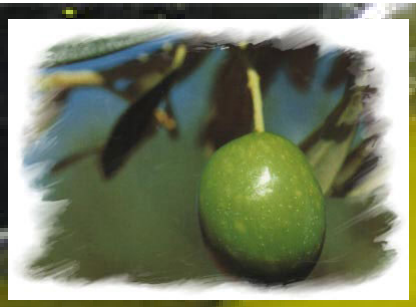

22/11/2010
Puntuación organoléptica
10
8
6
4
2
0
Frutado
Amargo
Picante
Dulce
Verde hoja
Verde hierba
Manzana
Almendra
Alcachofa


29/11/2010
Puntuación organoléptica
10
8
6
4
2
0
Frutado
Amargo
Picante
Dulce
Verde hoja
Verde hierba
Manzana
Almendra
Alcachofa


06/12/2010
Puntuación organoléptica
10
8
6
4
2
0
Frutado
Amargo
Picante
Dulce
Verde hoja
Verde hierba
Manzana
Almendra
Alcachofa


13/12/2010
Puntuación organoléptica
10
8
6
4
2
0
Frutado
Amargo
Picante
Dulce
Verde hoja
Verde hierba
Manzana
Almendra
Alcachofa


20/12/2010
Puntuación organoléptica
10
8
6
4
2
0
Frutado
Amargo
Picante
Dulce
Verde hoja
Verde hierba
Manzana
Almendra
Alcachofa



ACEITES VARIEDAD HOJIBLANCA

CONTENIDO TOTAL EN ACIDOS FENOLICOS	⟺	AMARGO (r=0.829, p=0.006) PICANTE (r=0.829, p=0.006)
ÁCIDO FERULICO	⟺	AMARGO (r=0.742, p=0.022) PICANTE (r=0.755, p=0.019)
ÁCIDO VANILICO	⟺	AMARGO (r=0.802, p=0.009)
P-COUMARICO	⟺	AMARGO (r=0.786, p=0.012)

Velsid
Gastronomía&Cía

CONCLUSION

AUNQUE LA RELACIÓN ENTRE EL CONTENIDO DE FENOLES TOTALES Y DEL GRUPO DE LOS SECOIRIOIDES Y LA CALIDAD ORGANOLEPTICA DEL ACEITE ES BIEN CONOCIDA, POCOS TRABAJOS SE HAN LLEVADO A CABO PARA ENCONTRAR LAS IMPLICACIONES ORGANOLEPTICAS DE OTRO TIPO DE COMPUESTOS FENOLICOS DEL AOV COMO LOS ACIDOS FENOLICOS Y LOS LIGNANOS. SE HACEN NECESARIOS MAS ESTUDIOS QUE INVESTIGUEN EN ESTE CAMPO.