Olio extra vergine ‘di alta qualità nutrizionale’: produzione, certificazione e qualità sensoriale

Raffaele Sacchi

Università di Napoli Federico II, Dipartimento di Agraria (Portici, Napoli)

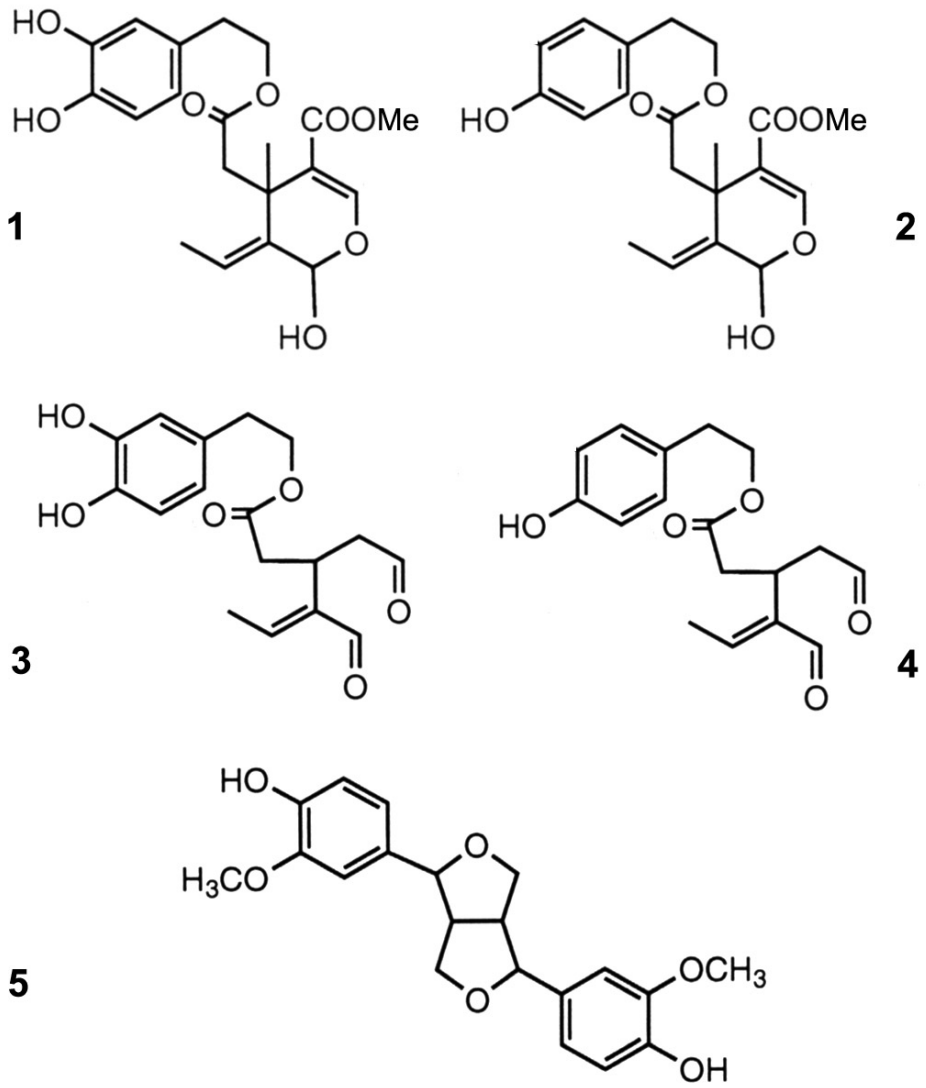
COMPETITIVE
Claims for Olive oil to iMProvE The markeT ValuE of the products

PROGETTO Ager AGROALIMENTARE E RICERCA

FONDAZIONI IN RETE PER LA RICERCA AGROALIMENTARE

Conferenza Nazionale ARISTOIL: ‘Strategie Innovative per la produzione di Oli Salutistici’, Ragusa, 14 gennaio 2020

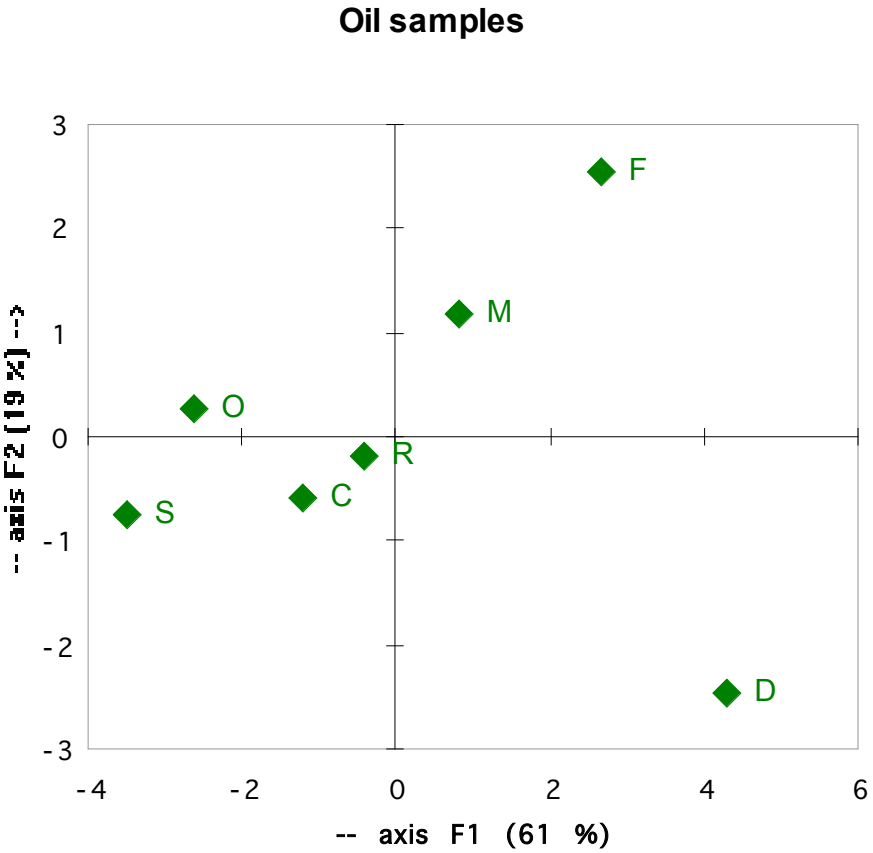
Alta ‘qualità nutrizionale’?

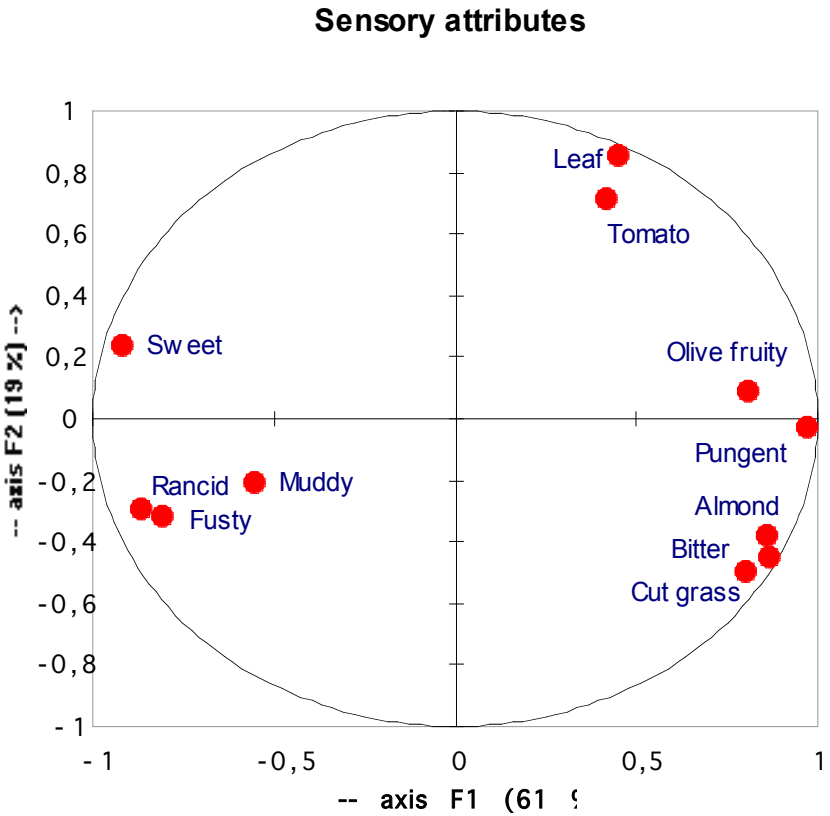


I **composti biofenolici** dell’olio extravergine di oliva:

nutraceutici …
… **amari!**

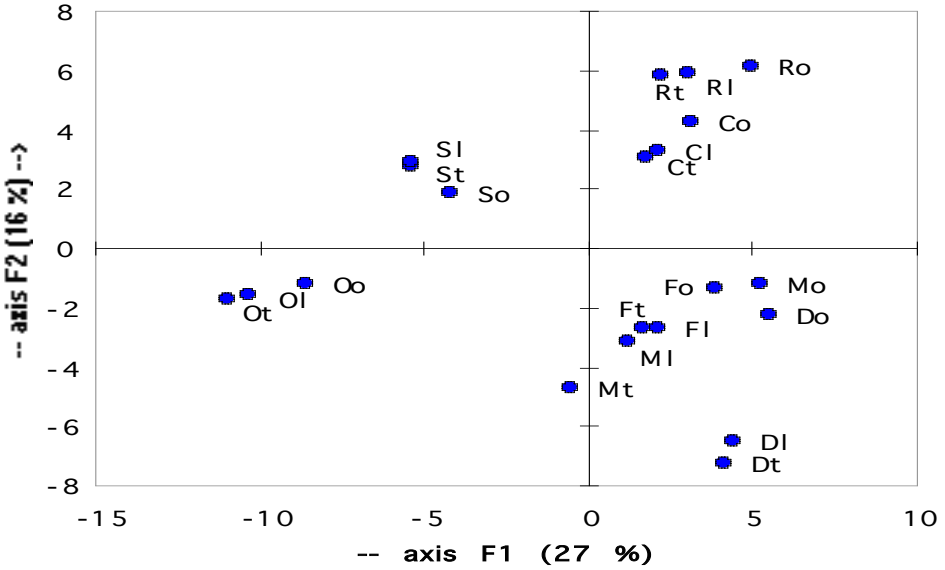
7 EVOO scelti per un 'preference test' (Napoli, 2005).



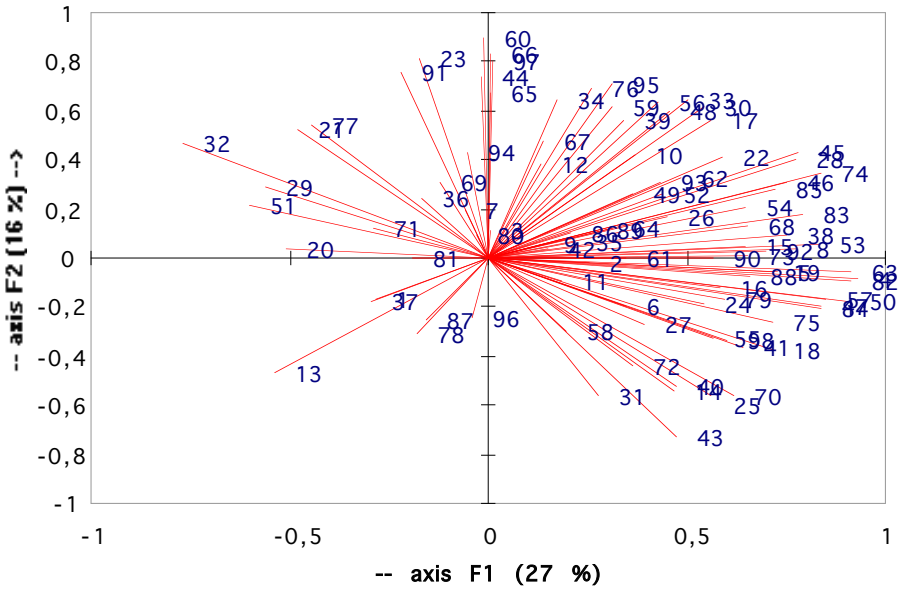


Consumer preferences **before** nutritional information

Oil samples



98 consumers

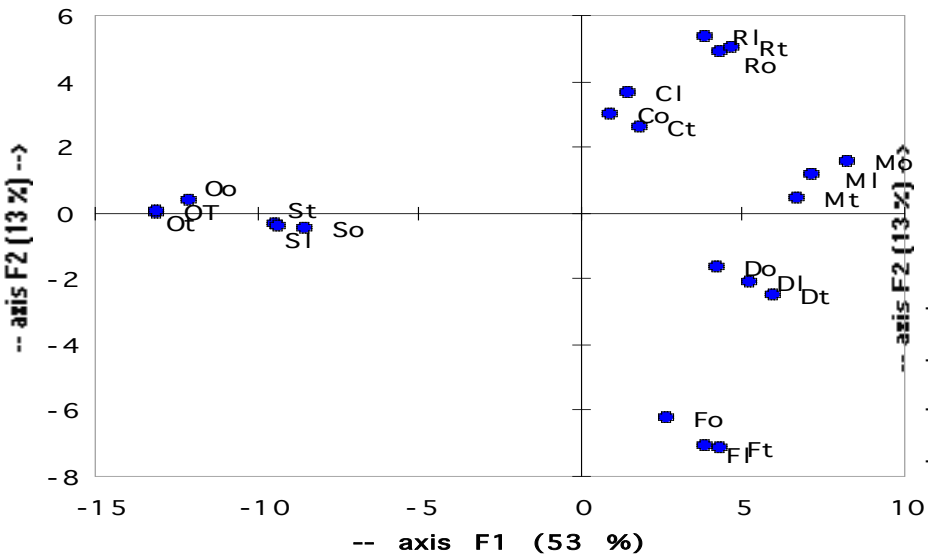


More than 50% consumers prefer low-quality virgin olive oil

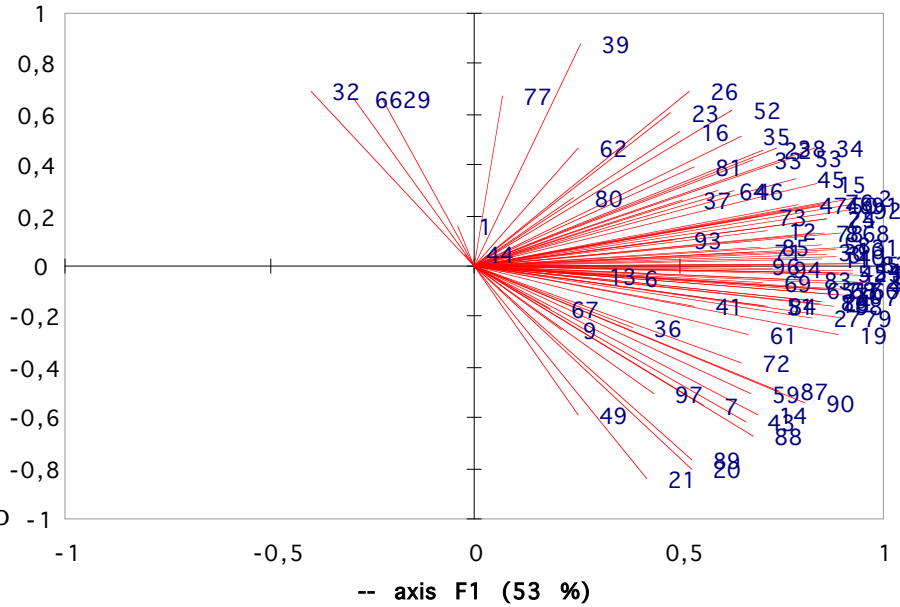
R.SACCHI, *EU Olive sector: driving innovation and sustainability*, Brussels, March 7th, 2018

After the nutritional information (without any sensory training)

Oil Samples



98 consumers



The majority (70%) of the consumers changes the preference after a simple information on the positive effect of bitter compounds of olive oil!

R.SACCHI, *EU Olive sector: driving innovation and sustainability*, Brussels, March 7th, 2018

European Food Safety Authority

EFSA health claim on olive oil polyphenols (Commission Regulation (EU) 432/2012):

Olive oil polyphenols contribute to the protection of blood lipids from oxidative stress.

The claim may be used only for olive oil, containing at least 5 mg of hydroxytyrosol and its derivatives (e.g. oleuropein complex and tyrosol) per 20 g of olive oil (250 mg/kg).

In order to bear the claim information shall be given to the consumer that the beneficial effect is obtained with a daily intake of 20 g of olive oil.

Progetto AGER 2 “COMPETiTiVE”

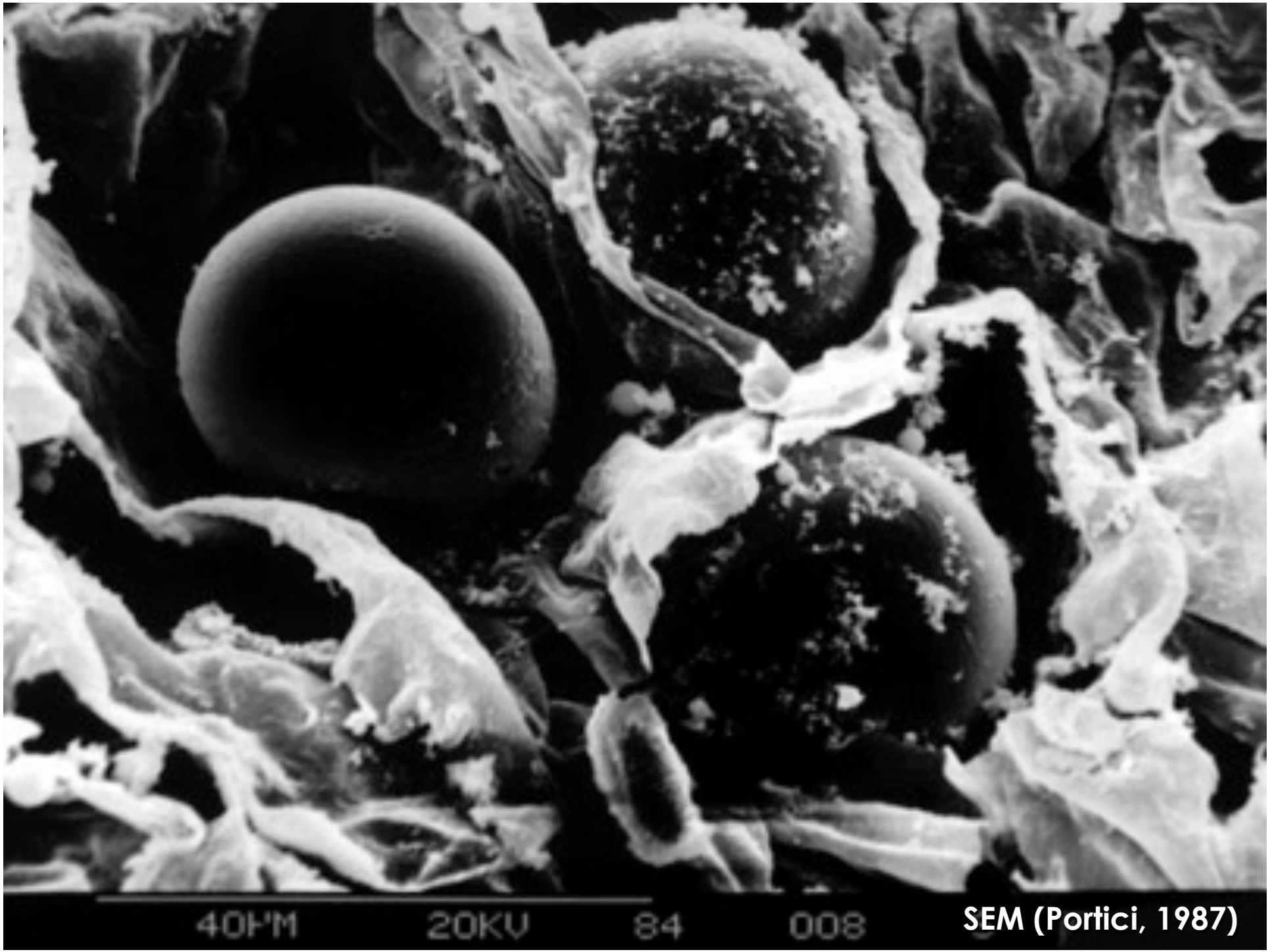
Claims of Olive oil to iMProvE iTs markeT ValuE

Capofila: Università di Napoli Federico II, *Partner*: Università di Bari Aldo Moro, Politecnico di Bari, Università di Milano, Università di Firenze, Università di Torino, Università del Salento (Lecce), Istituto di Scienza dell’Alimentazione del CNR (Avellino)

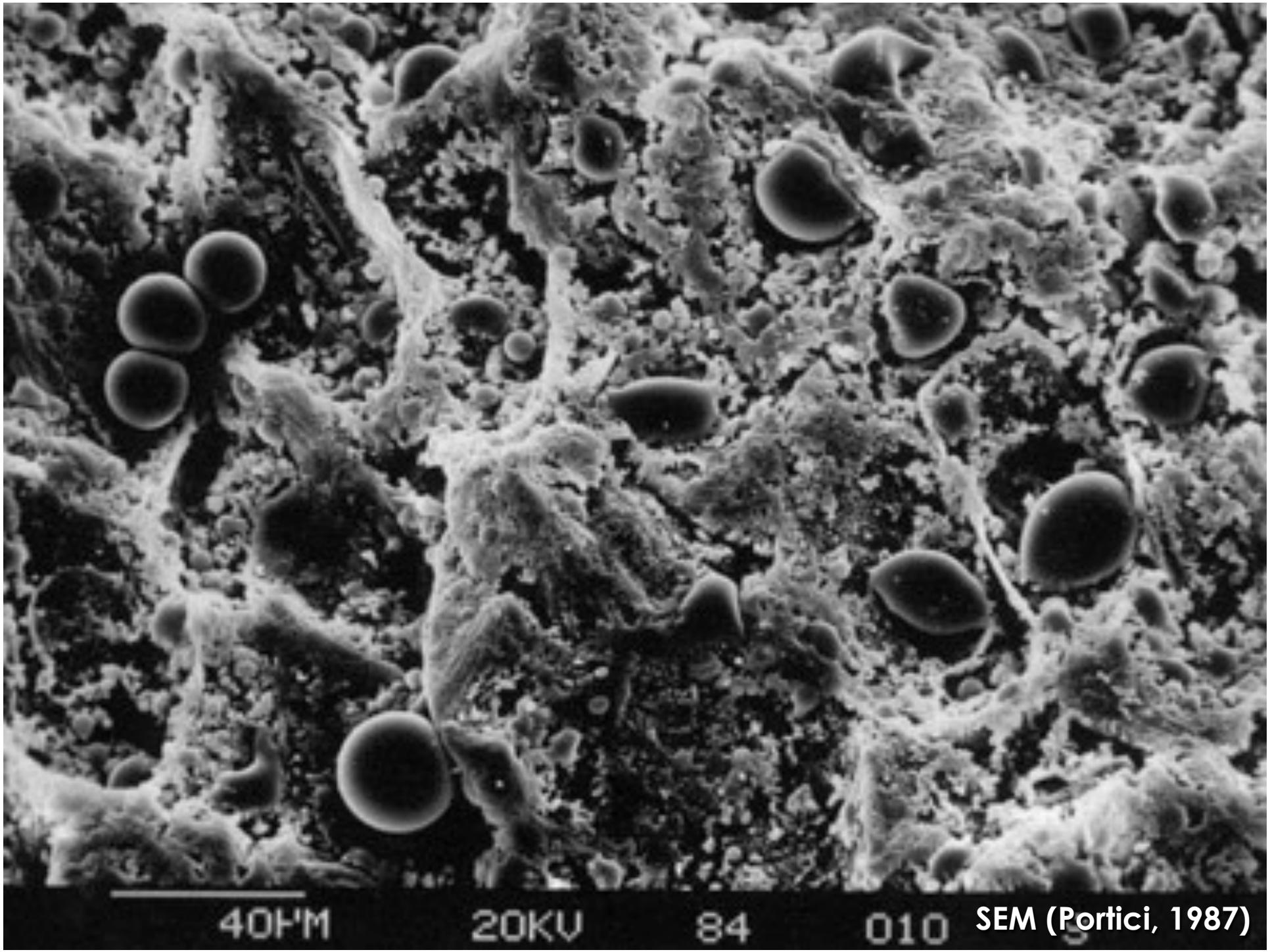
COMPETiTiVE

Claims for Olive oil to iMProvE The markeT ValuE of the product

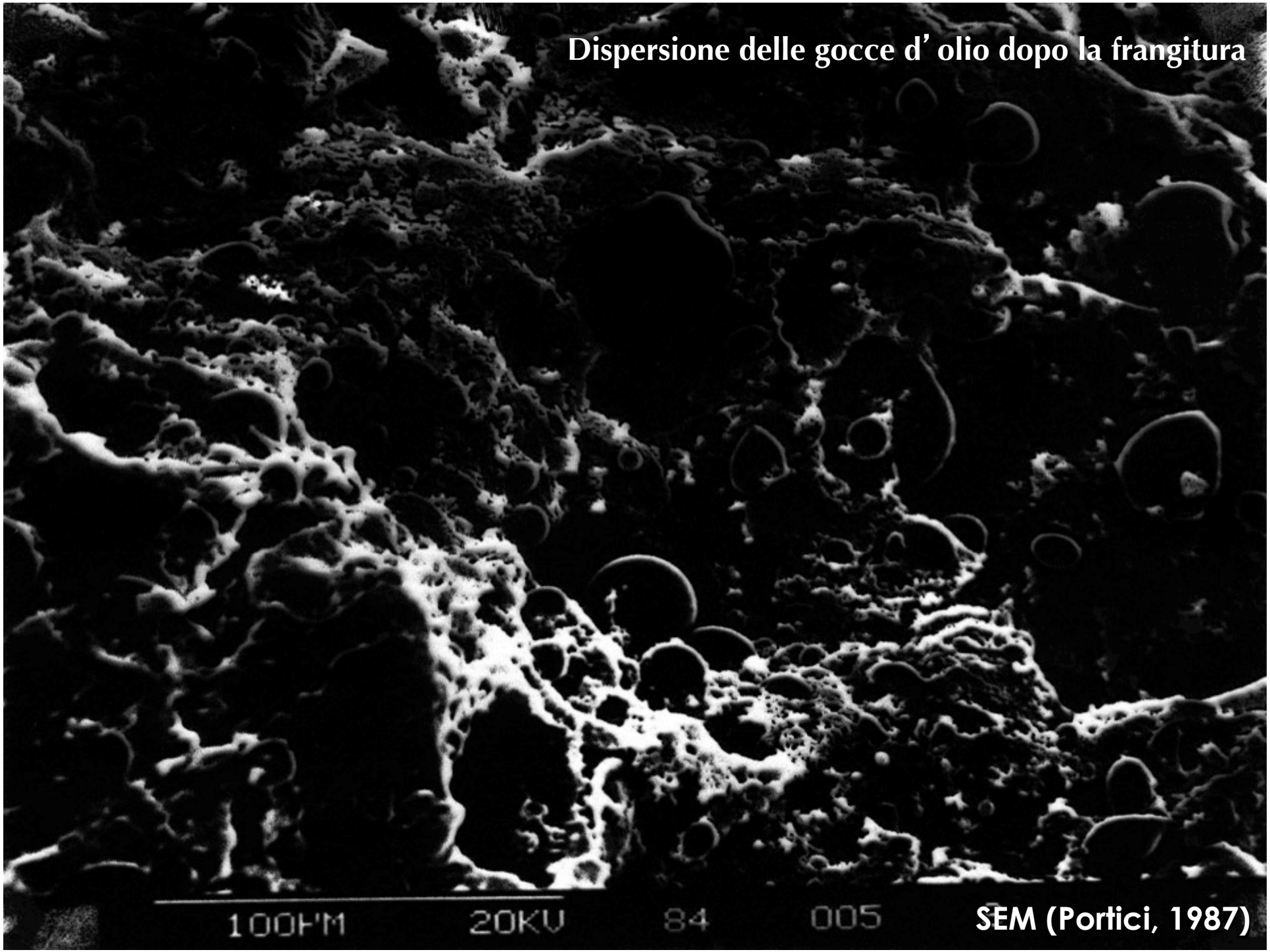
(2016) 2017-2021

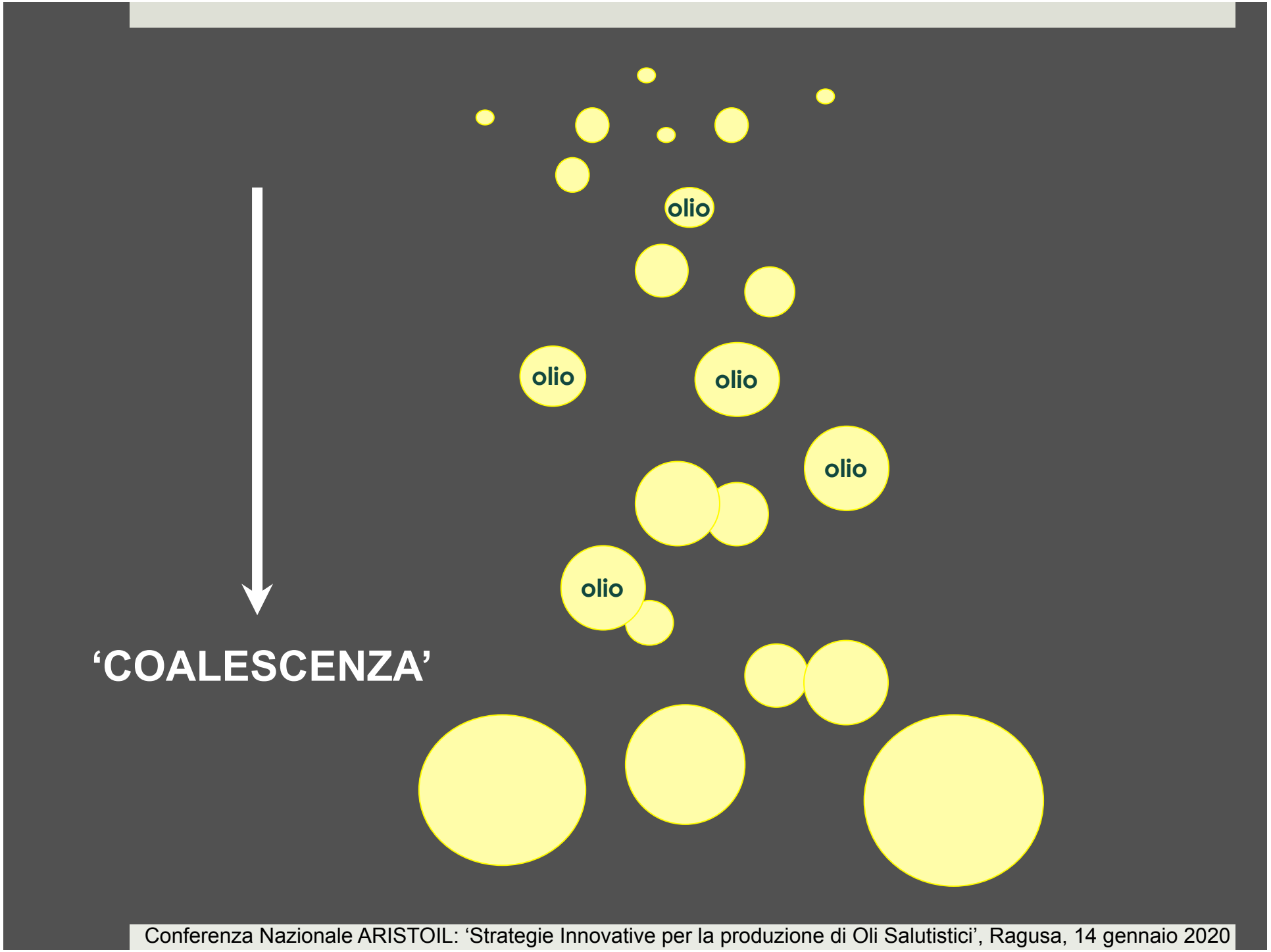


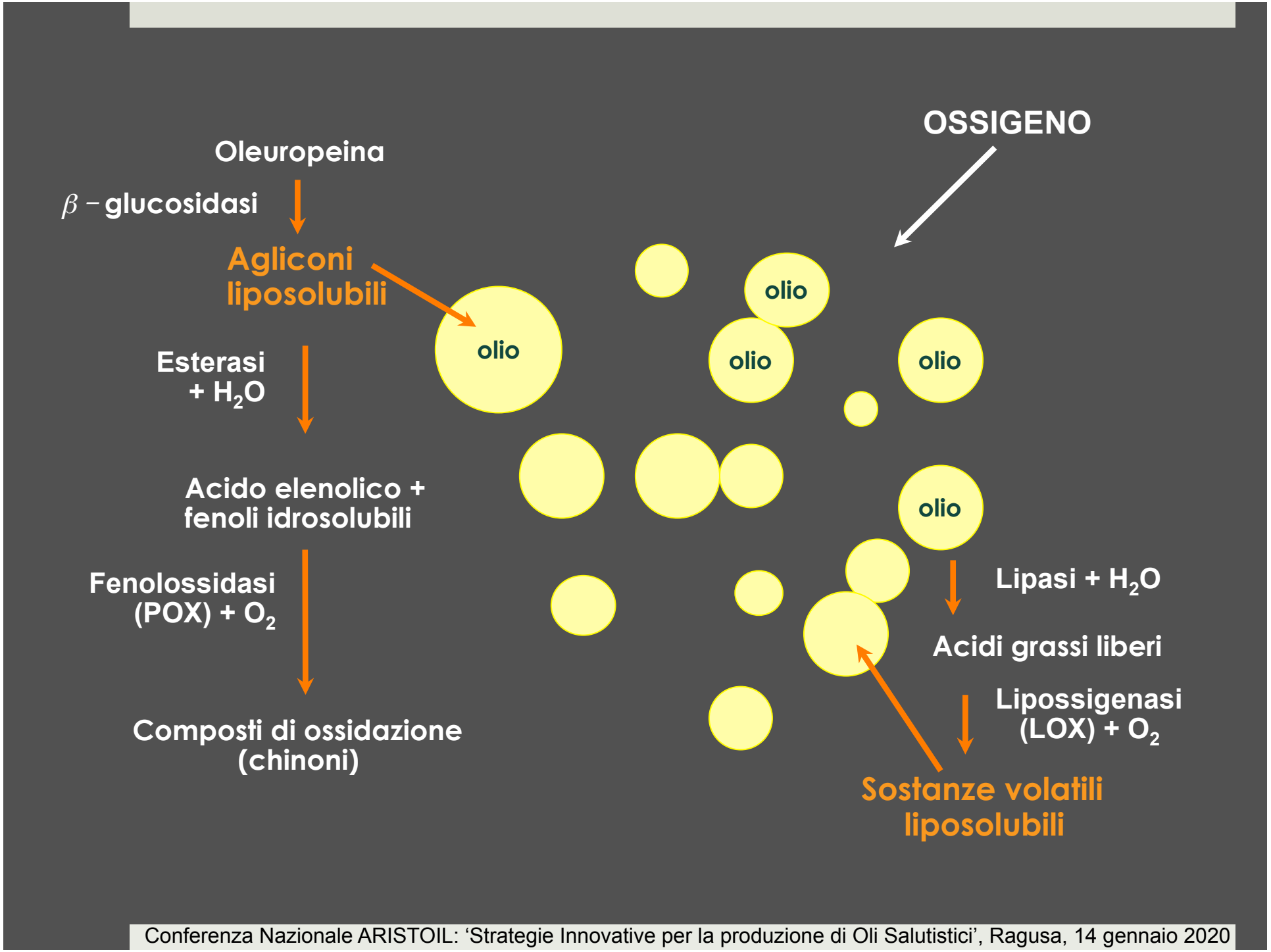
SEM (Portici, 1987)

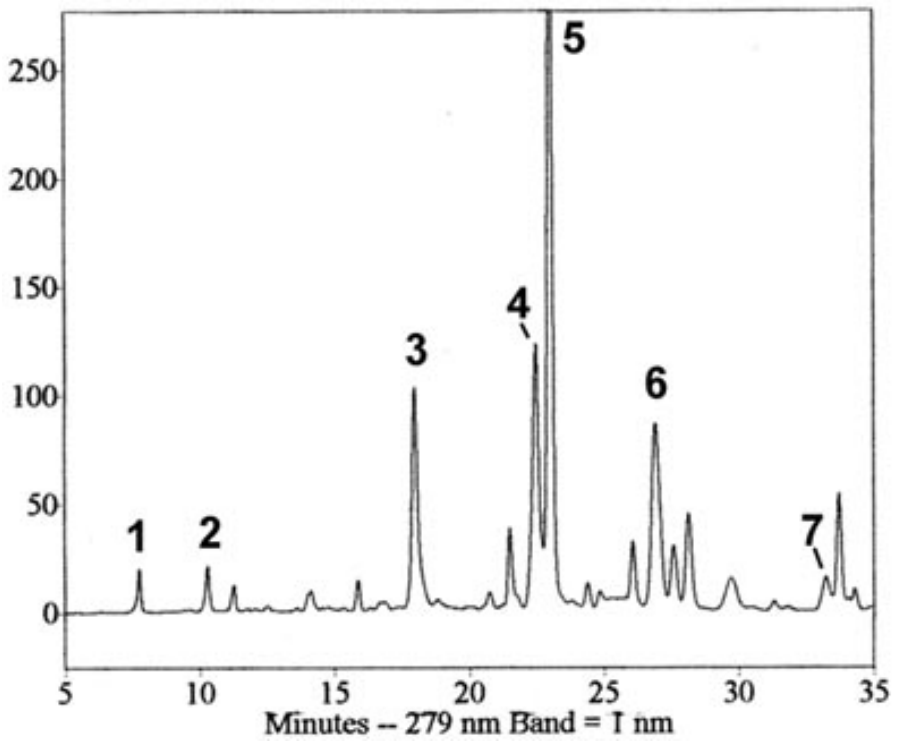


SEM (Portici, 1987)


Dispersione delle gocce d' olio dopo la frangitura
100µM
20KV
84
005
SEM (Portici, 1987)


olio
olio
olio
olio
olio
‘COALESCENZA’


Oleuropeina
β – glucosidasi
Agliconi liposolubili
Esterasi + H2O
Acido elenolico + fenoli idrosolubili
Fenolossidasi (POX) + O2
Composti di ossidazione (chinoni)
OSSIGENO
olio
olio
olio
olio
olio
Lipasi + H2O
Acidi grassi liberi
Lipossigenasi (LOX) + O2
Sostanze volatili liposolubili



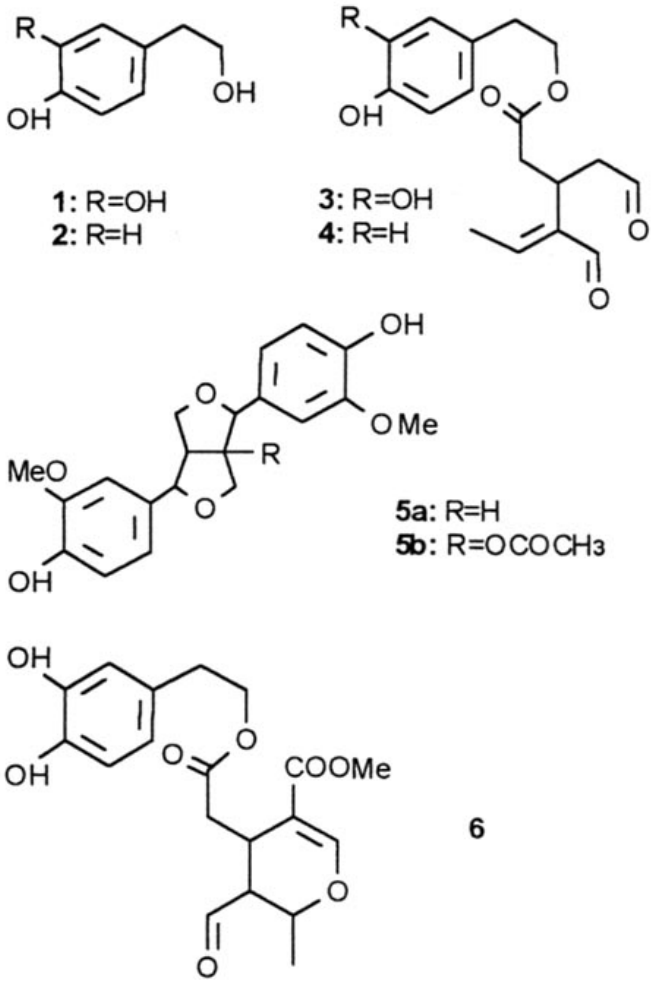
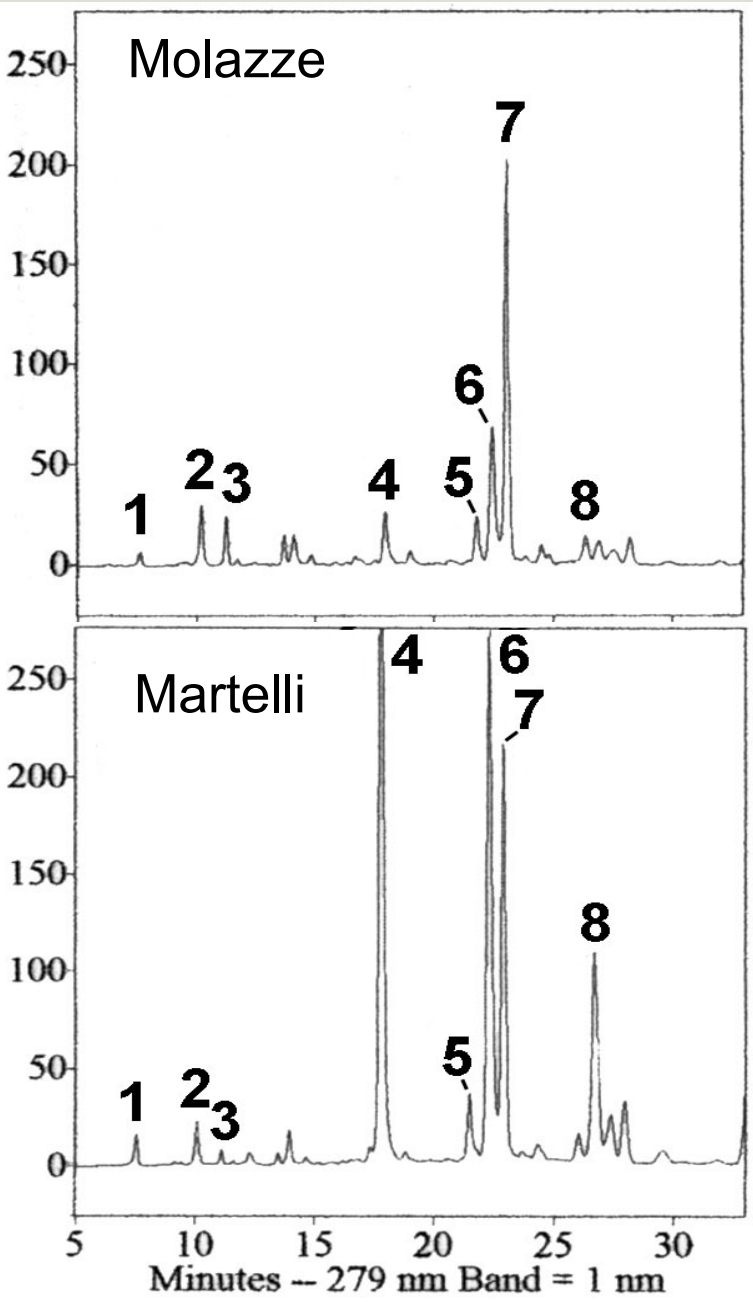


Figure 1. Chemical structures of the main phenolic compounds of virgin olive oil followed by HPLC: hydroxytyrosol (**1**), tyrosol (**2**), dialdehydic form of decarboxymethyl oleuropein aglycon (**3**), dialdehydic form of decarboxymethyl ligstroside aglycon (**4**), pinoresinol (**5a**), 1-acetoxypinoresinol (**5b**), and oleuropein aglycon (**6**).

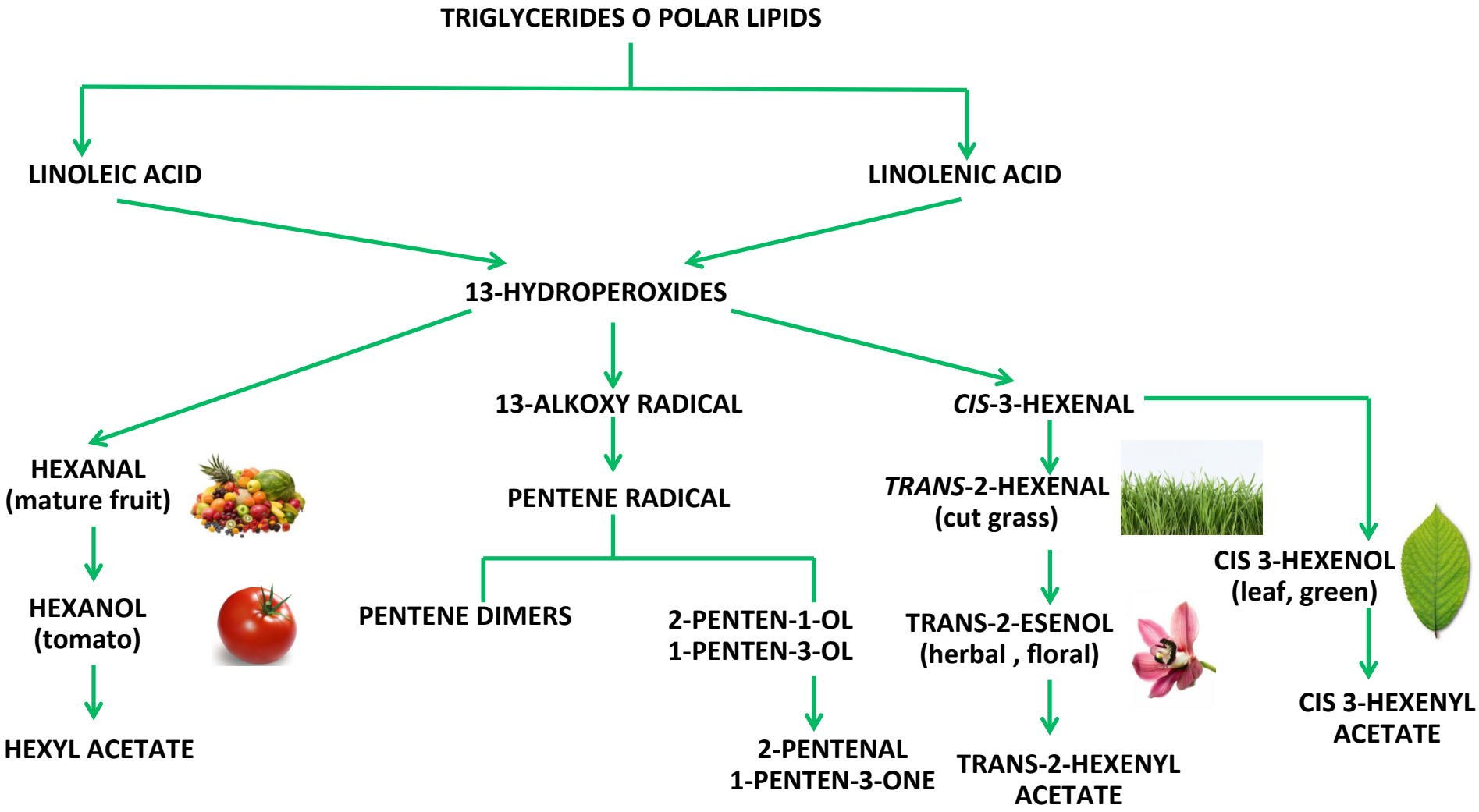


Profili fenolici di oli ottenuti con diverso sistema di frangitura (molazze in granito *vs* frangitore a martelli) (1998)

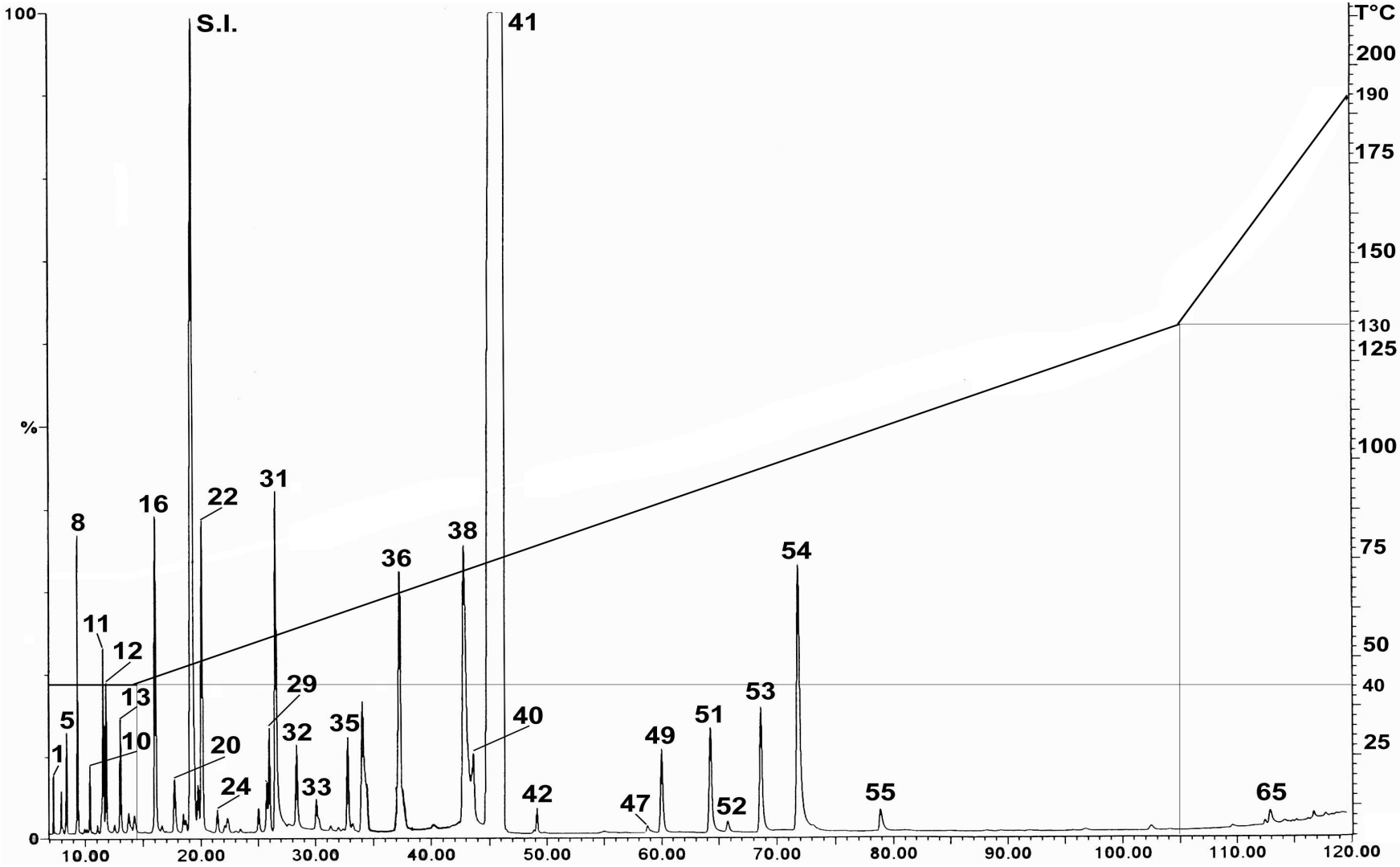
L'olio extravergine è un **alimento funzionale** ed un **profumo alimentare**

R.SACCHI, Sorrento, Sirena d'Oro, 2008
(Un extravergine in cucina, i segreti di un protagonista della gastronomia mediterranea
www.regionecampania.it)

The origin of virgin olive oil fruity flavour: the Lipoxygenase (LOX) Pathway



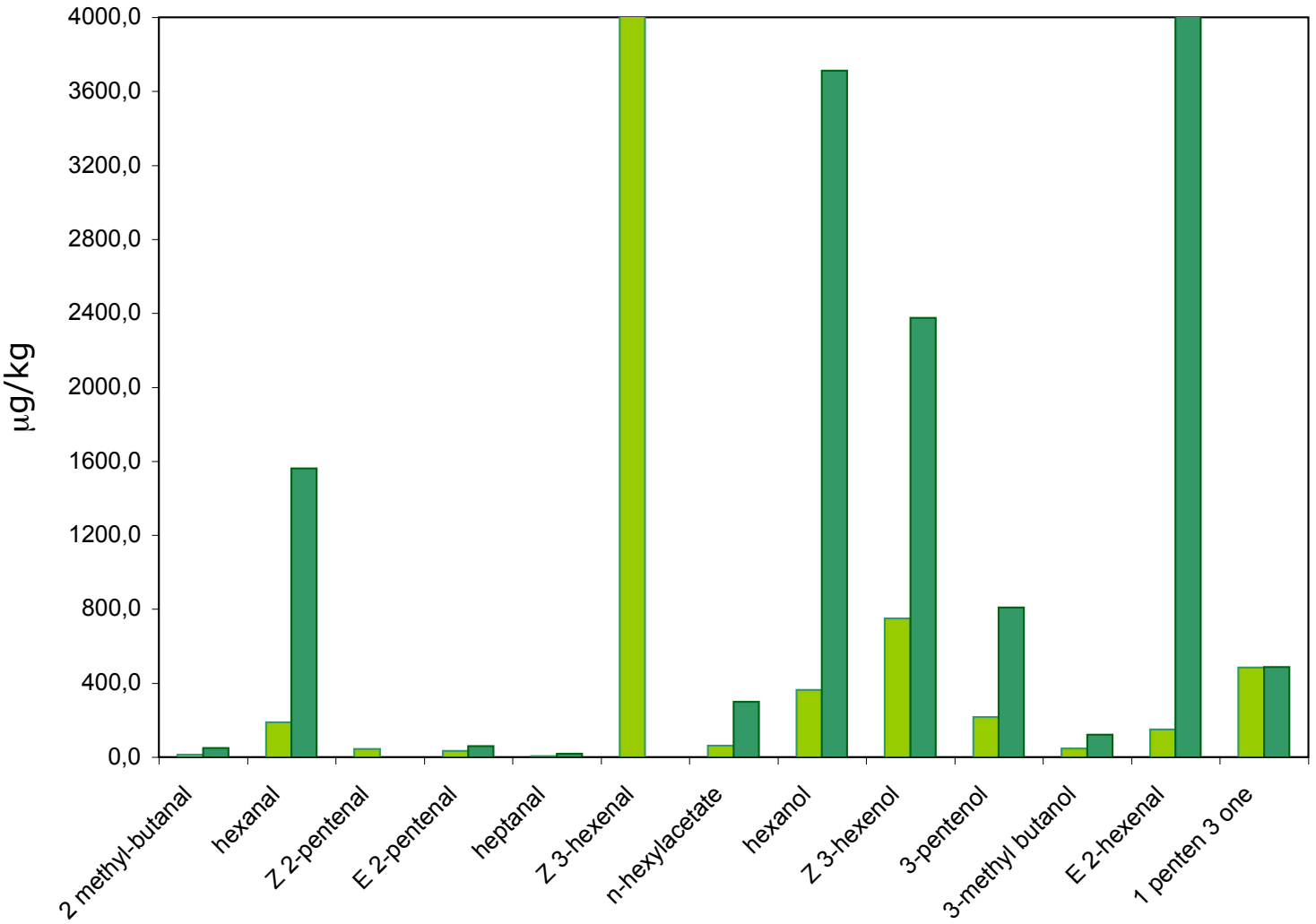
I composti volatili dell'olio (DHS-GC/MS)



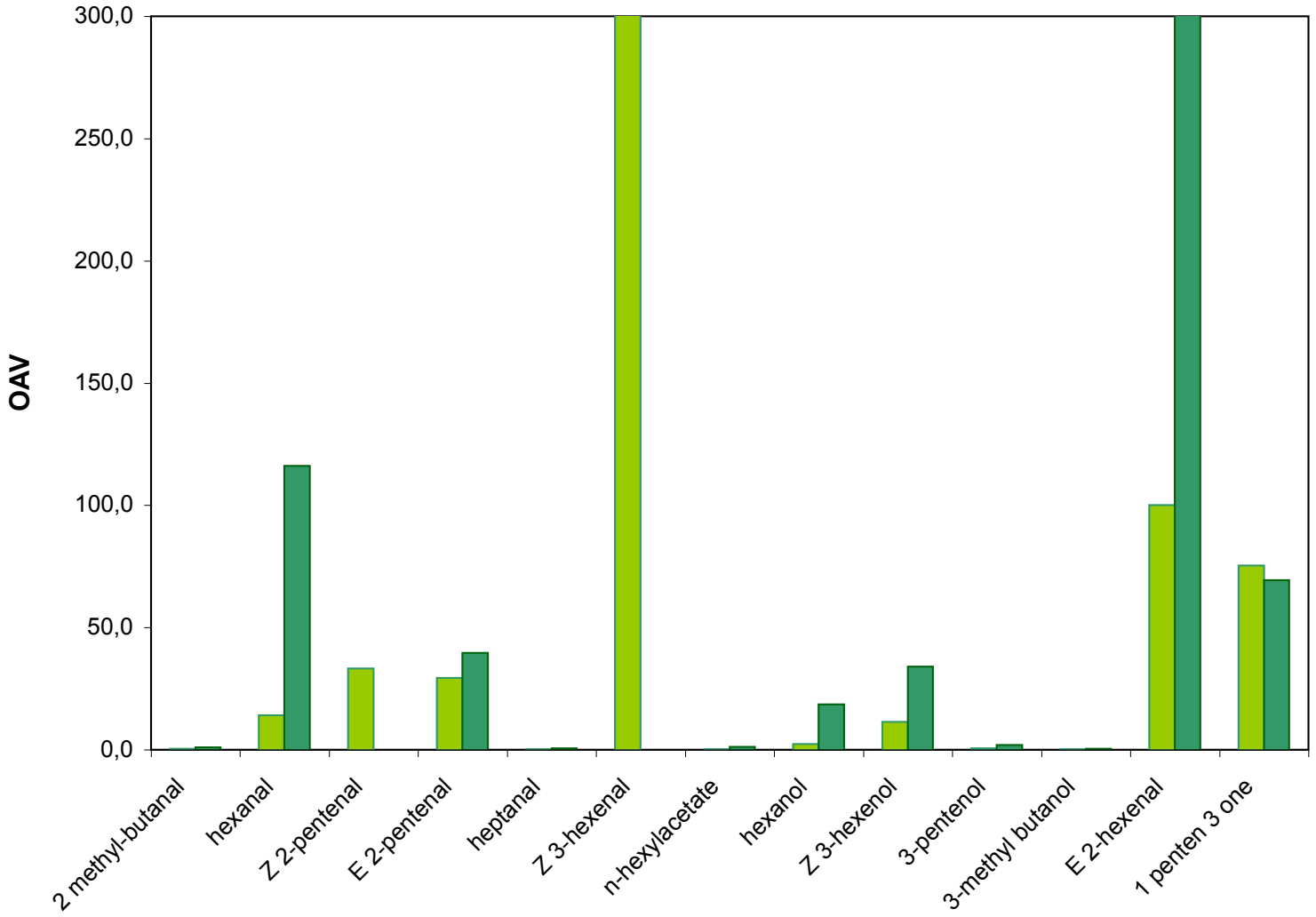
Alcuni composti responsabili delle note verdi (LOX)

Picco	Composto	Descrittore (letteratura)
16	1-pentenil acetato	fruttato
31	esanale	mela, frutta
33	pentil acetato	frutta,banana,pera
38	*cis*-3-esenale	carciofo, verde, floreale
42	*trans*,2-esenale	mandorla amara, erba
43	esil acetato	frutta dolce
49	2-penten,1-olo	verde
51	esanolo	frutta, banana
52	*trans*,3-esen,1-olo	erba, verde
53	*cis*,3-esen,1-olo	foglia, verde
54	*cis*,2-esen,1-olo	erba, verde

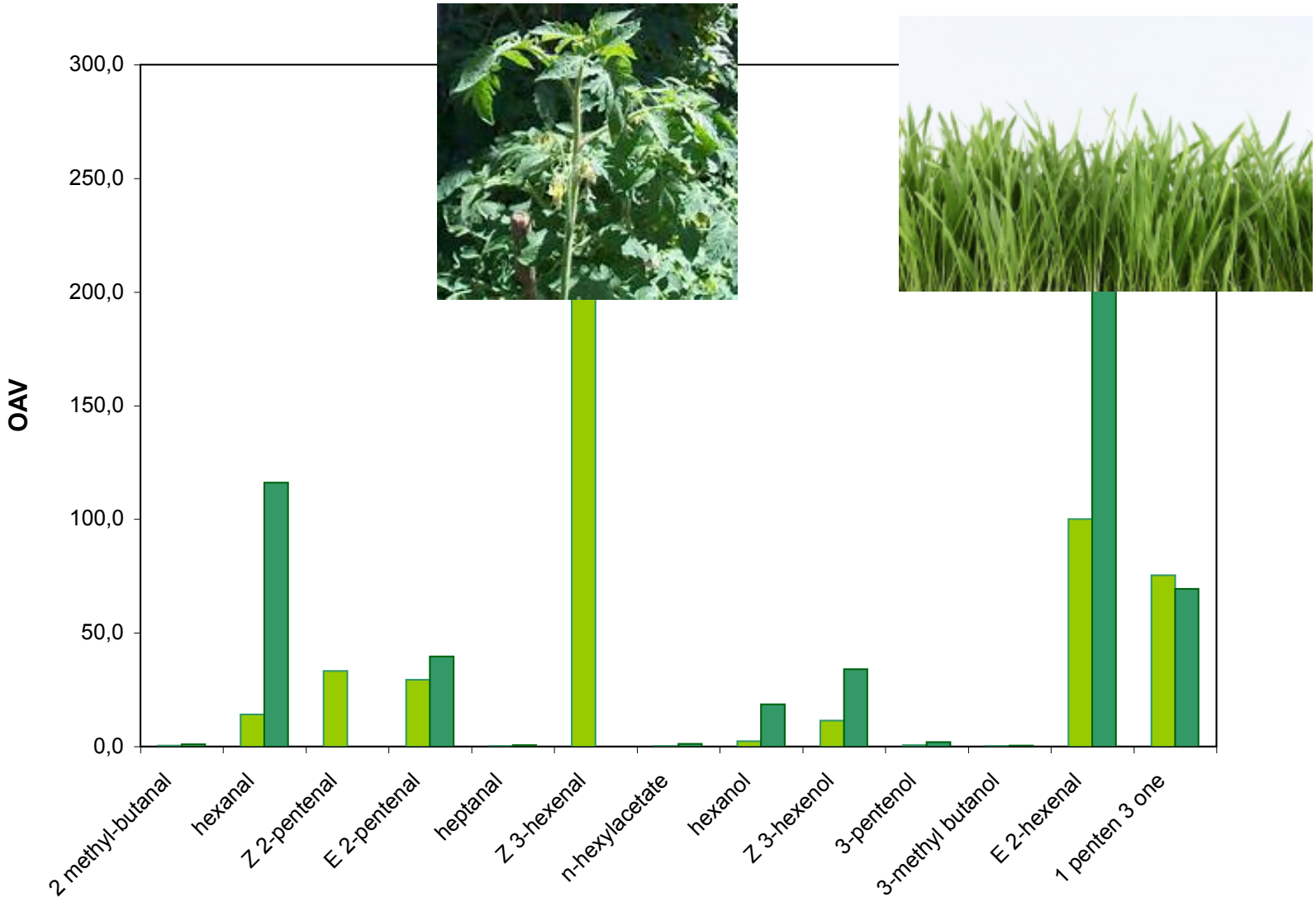
Ravece ( ) vs Coratina ( )



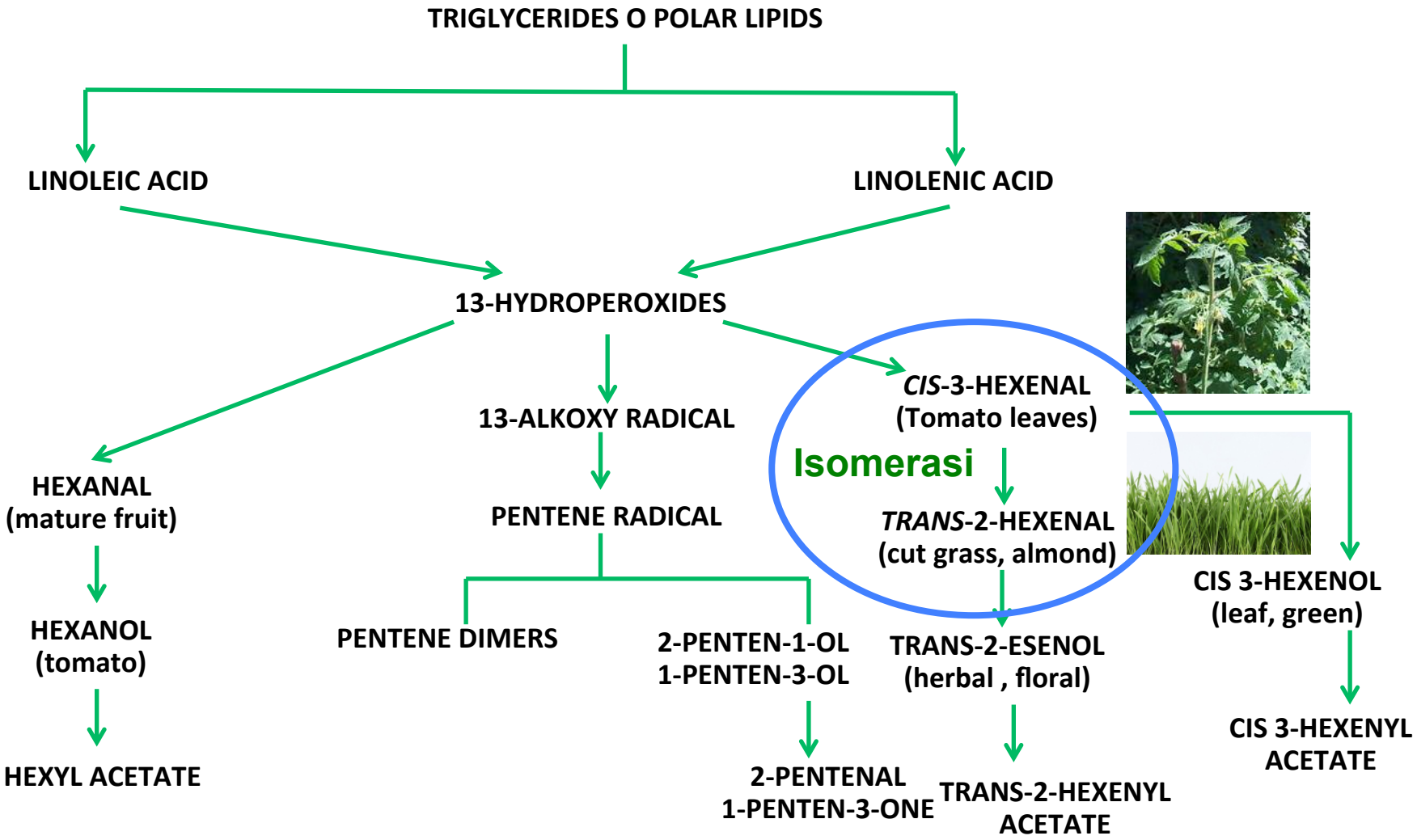
OAV, Ravece ( ) vs Coratina ( )



OAV, Ravece ( ) vs Coratina ( )



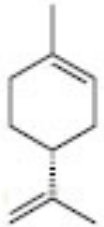
Cis-3-hexenal and tomato leaf green flavour (molecole 'soliste' e 'orchestre di odori')



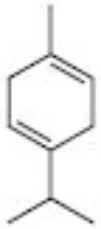
Cv. Minucciola (DOP Penisola Sorrentina): terpeni marcatori molecolari delle note aromatiche di erbe balsamiche (rosmarino, salvia, origano) (DHS-GC/MS)

20. α-pinene

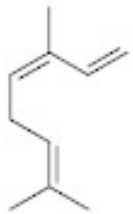
29. β-pinene



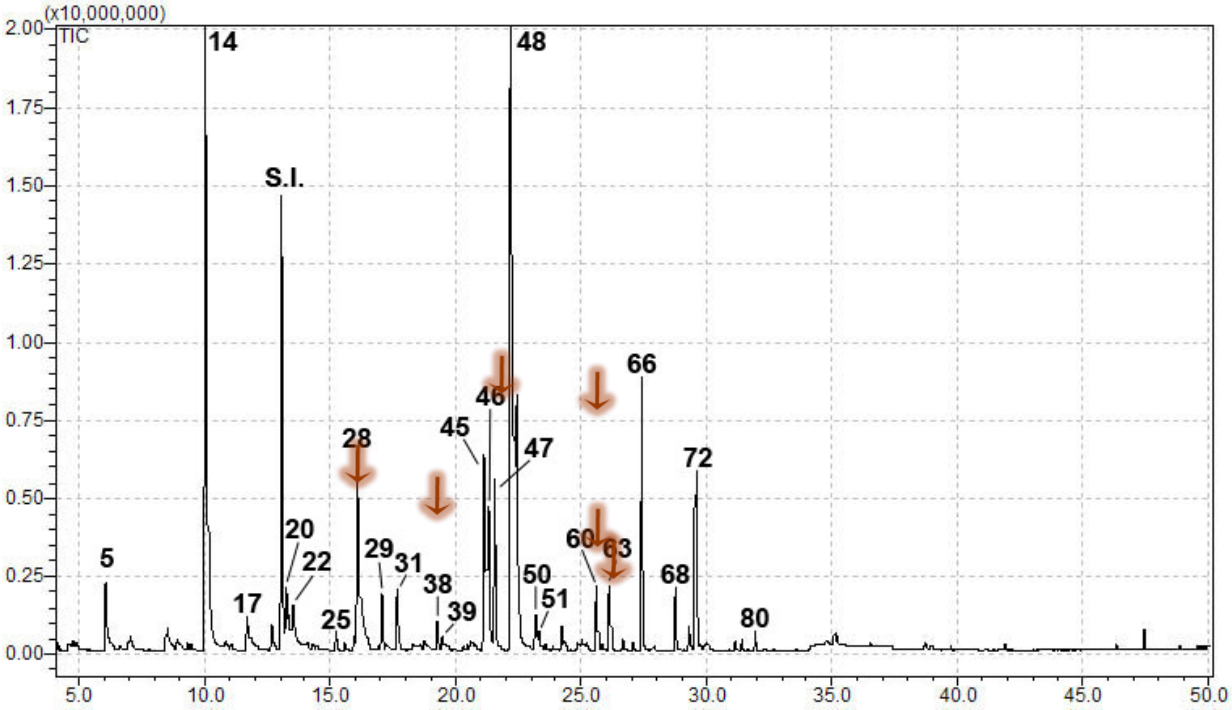
45. D-limonene

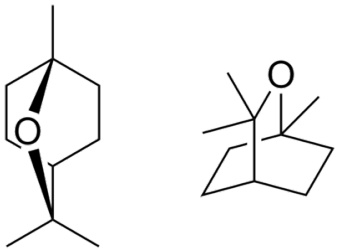


50. γ-terpinene



51. (Z)-β-ocimene





47. Eucaliptolo

www.iteocilento.com

PSR Campania, Misura 124, 2014-2016

Fondo europeo agricolo
per lo sviluppo rurale:
l'Europa investe nelle zone rurali

UNIONE EUROPEA

REGIONE CAMPANIA
Assessorato Agricoltur

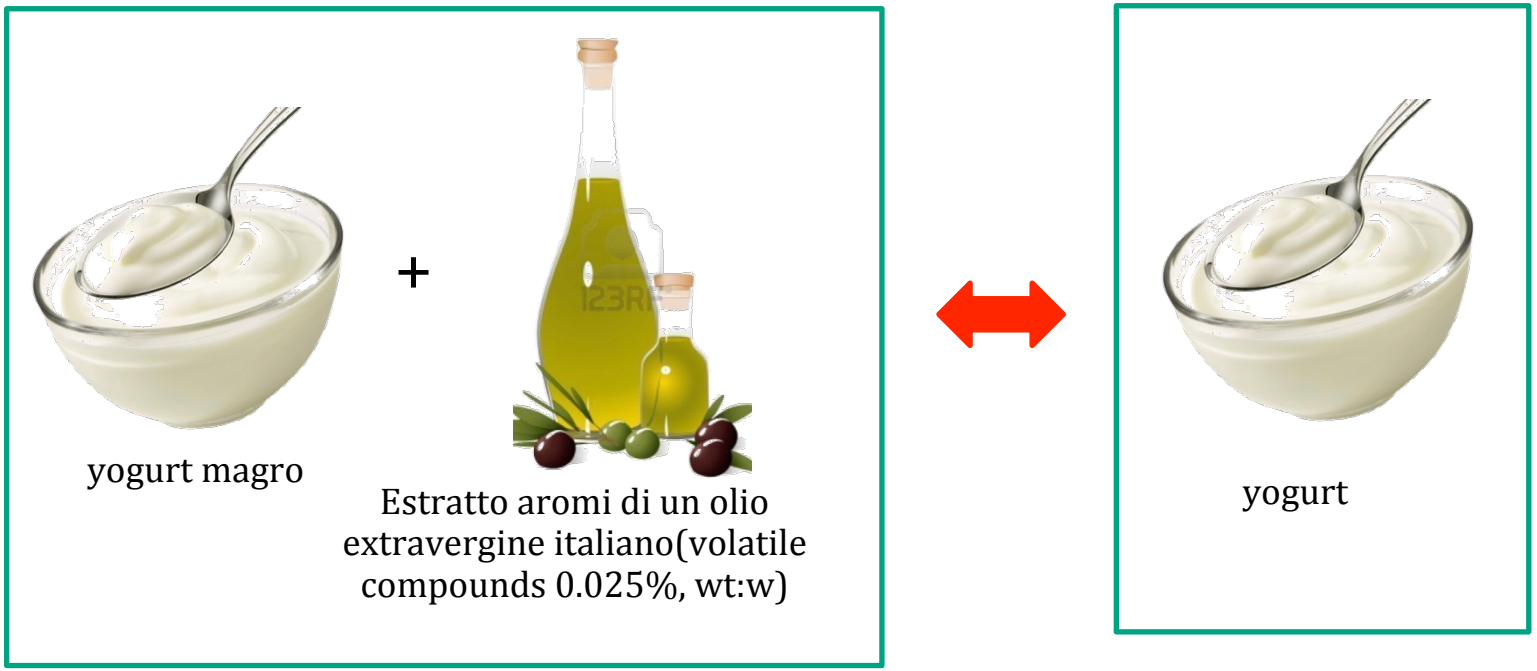
LEADER+

Progr
di Svi
PSR
2007

gal casacastra

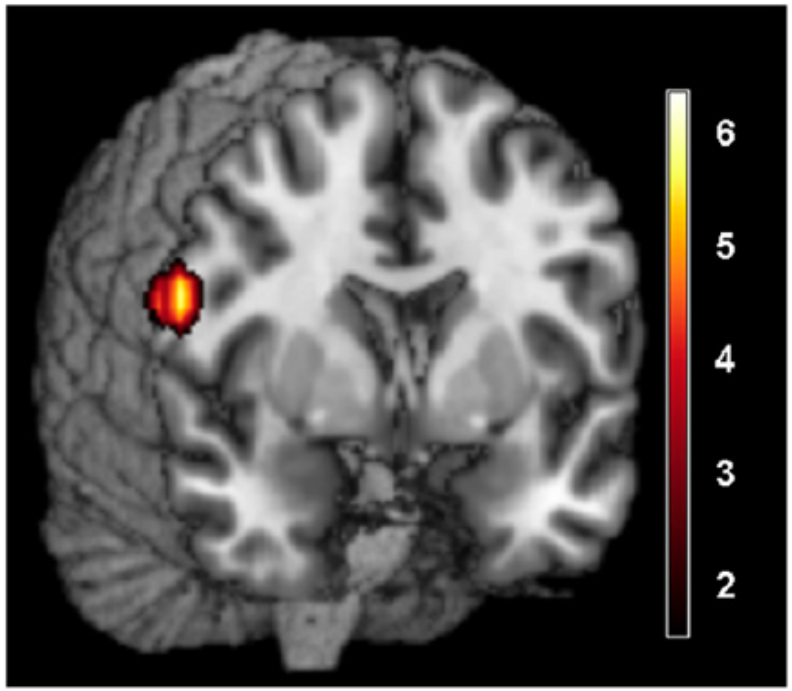
Dipartimento di AGRARIA

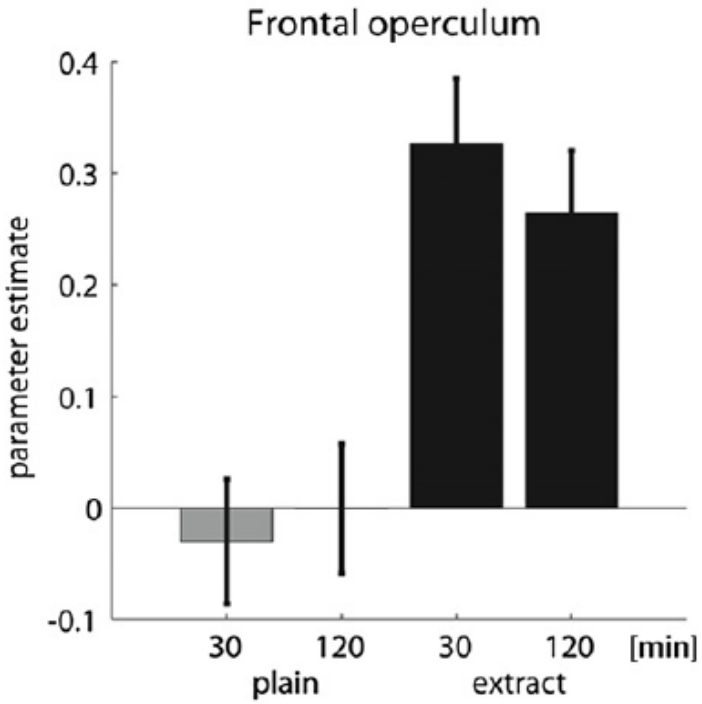
Estratto aromatico dell'olio extravergine aggiunto allo yogurt (aroma non percepito in bocca)



(Età 28.82 ±1.04; BMI 24.6 ± 0.56)

Frank et al., 2013 – Am. J. Clin. Nutr., 98, 1360–1366.





L'estratto aromatico dell'Olio Extravergine influenza il flusso sanguino **nell'area gustativa** del cervello umano!

Frank et al (2013). Olive oil aroma extract modulates cerebral blood flow in gustatory brain areas in humans. *The American Journal of Clinical Nutrition*, 98, 1360–1366.

An artisanal ice-cream functionalized by substitution of milk cream with EVOO

R.Sacchi *et al.*, (2019)

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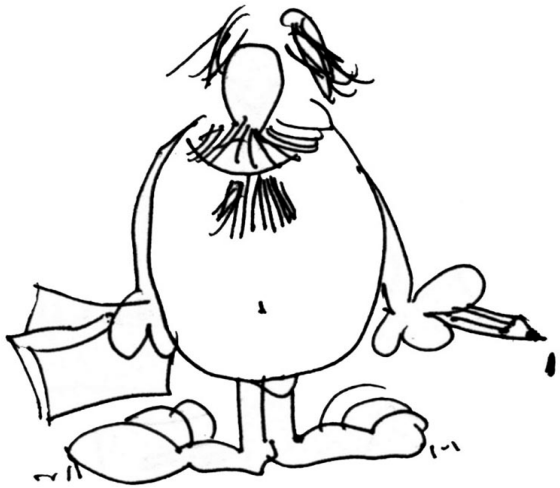
SCIENZE **GASTRONOMICHE** MEDITERRANEE



sacchi@unina.it

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