The First MDPI–Lincoln University International Conference On Foods

NON-DESTRUCTIVE AROMA PRODUCTION OF A CLIMACTERIC NEAR-ISOGENIC LINE OF MELON OBTAINED BY HEADSPACE STIR-BAR SORPTIVE EXTRACTION

J.P. FERNÁNDEZ-TRUJILLO
R. MARTÍNEZ-ALCARAZ
I. LE BLEIS
N. DOS-SANTOS

TECHNICAL UNIVERSITY OF CARTAGENA (UPCT)

SPAIN

10-12 April 2013

NON-DESTRUCTIVE AROMA PRODUCTION OF A CLIMACTERIC NEAR-ISOGENIC LINE OF MELON OBTAINED BY HEADSPACE STIR-BAR SORPTIVE EXTRACTION

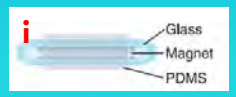


Figure 2. Material for sampling aromas in whole fruit melon. a) hermetic containers, b) hermetic seal, c) metalic cover, d) gloves, e) tweezers, f) ziplock bags, g) vials box, h) detail of a vial with a bar (twister), i) detail of a bar (twister) Picture provided by GERSTEL, Inc.

The aromatic profile was constituted **by 66 aroma volatiles** (18 acetate esters, 16 non-acetate esters, 6 thioesters, 6 organic acids, 5 aldehydes, 5 ketones, 1 alcohol, 5 terpenes, 4 compounds of other chemical groups) with predominance of esters, particularly acetate:

- 2-methylbutyl acetate
- 2-methylpropyl acetate
- hexyl acetate
- phenylmethyl acetate

BEHAVIOUR AT HARVEST

- **2-methylpropyl hexanoate**
- **n-hexadecanoic acid**

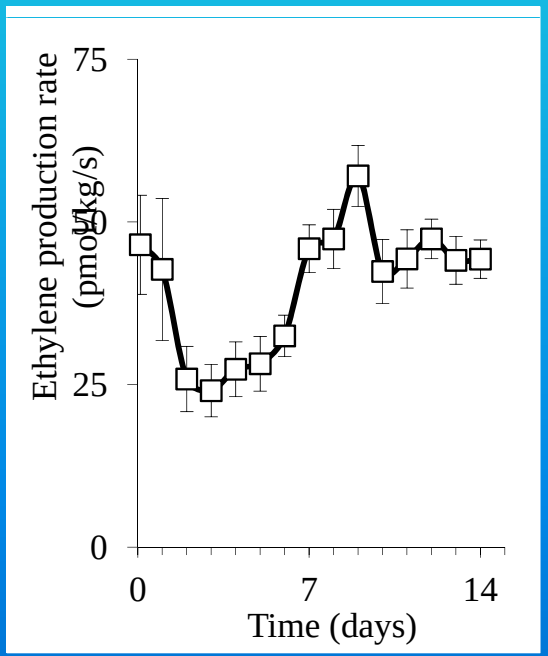


Figure 1. Ethylene production (EP) during ripening at 21±1.1oc and 93±3% RH of intact fruit of near-isogenic line SC3-5-1 (mean±se, n=4).

BEHAVIOUR AT SENESCENCE

- **propyl ethanoate**

typical from the melon senescence, with similar levels at harvest

BEHAVIOUR WITH RIPENING

Acetate esters

- **3-methylbutyl acetate**
- **butan-2-yl acetate**
- **phenylmethyl acetate**

- **2-methylbutyl acetate**

Sulfur-derived compounds

- **S-methyl butanethioate**
- **S-methyl 3-methylbutanethioate**

Non-Acetate esters

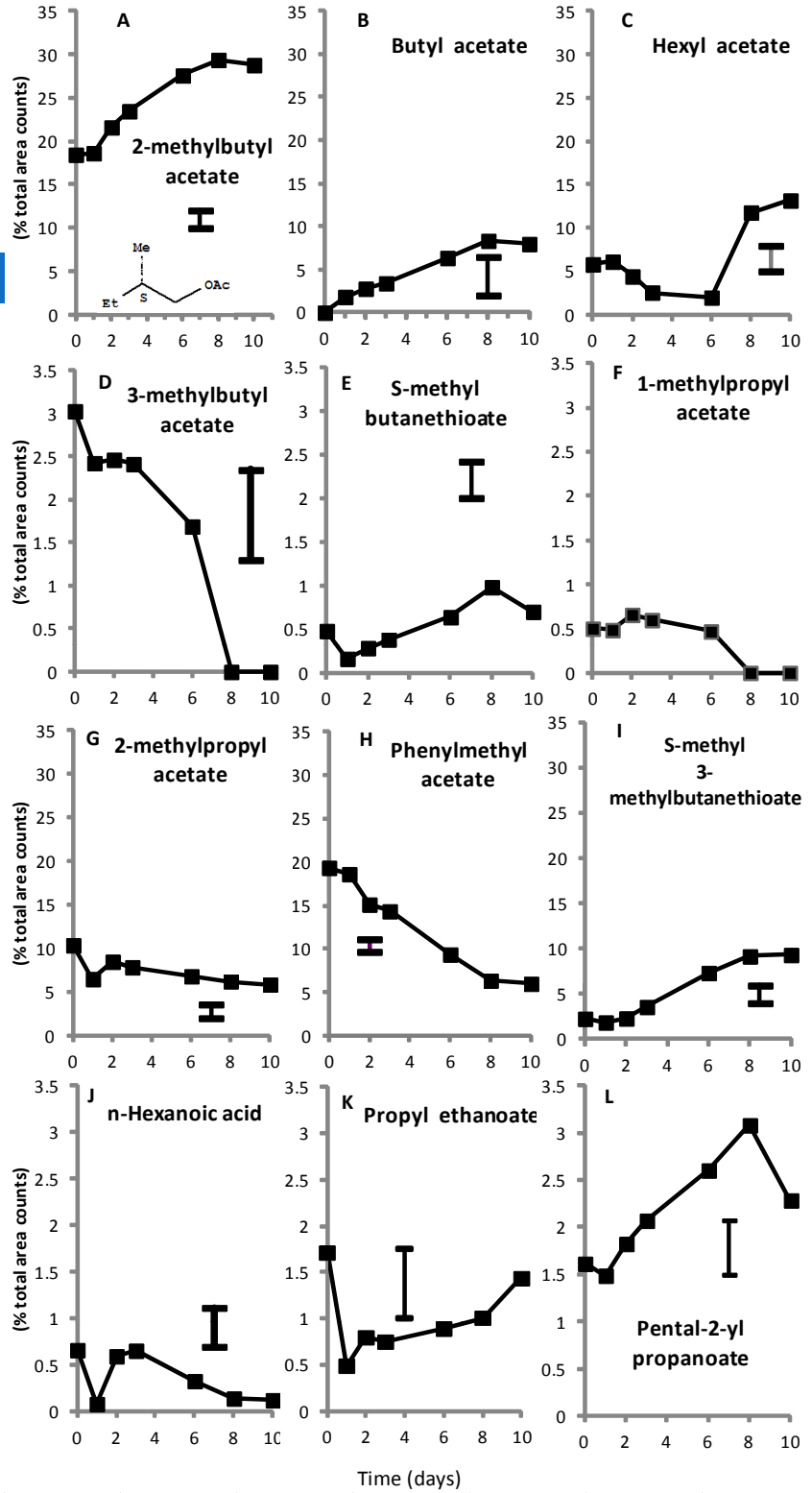
- **ethyl butanoate**

CONCLUSION

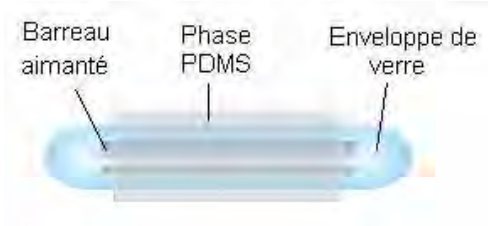
The acetate and thioesters predominated in the aroma profile of the intact fruit of the NIL SC3-5-1 particularly 2-methylbutyl acetate. Aroma volatiles identified during ripening of the climacteric NIL SC3-5-1 followed different patterns though during ripening but apparently following an ethylene-dependent pattern due to their biosynthesis or degradation..

J.P. Fernández-Trujillo, R. Martínez-Alcaraz, I. Le Bleis, N. Dos-Santos

Fig. 2. Individual aroma volatiles expressed as mean percentage of total area counts of the compounds identified per chromatogram during ripening at 21± 1°C and 93±3% RH of intact fruit of near-isogenic line SC3-5-1 (mean±SE, n=4). →



Stir-bar sorptive extraction of aroma volatiles (1 h extraction)



NON-DESTRUCTIVE AROMA PRODUCTION OF A CLIMACTERIC NEAR-ISOGENIC LINE OF MELON OBTAINED BY HEADSPACE STIR-BAR SORPTIVE EXTRACTION

J.P. Fernández-Trujillo, R. Martínez-Alcaraz, I. Le Bleis, N. Dos-Santos