

# Targeted and untargeted investigation in food analysis thanks to comprehensive chromatographic techniques

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Damien Eggermont, Steven Mascrez, Giorgia Purcaro



Targeted and untargeted  
investigation in food analysis  
thanks to comprehensive  
chromatographic techniques

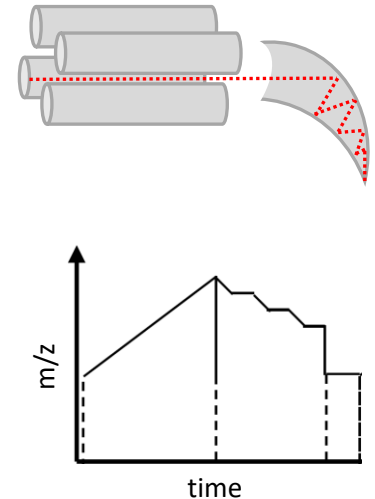
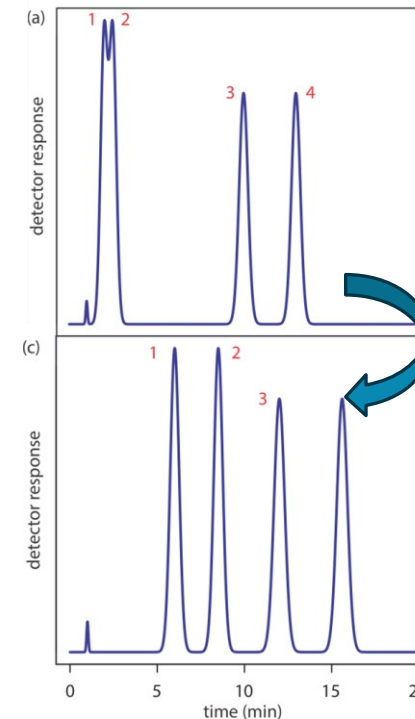
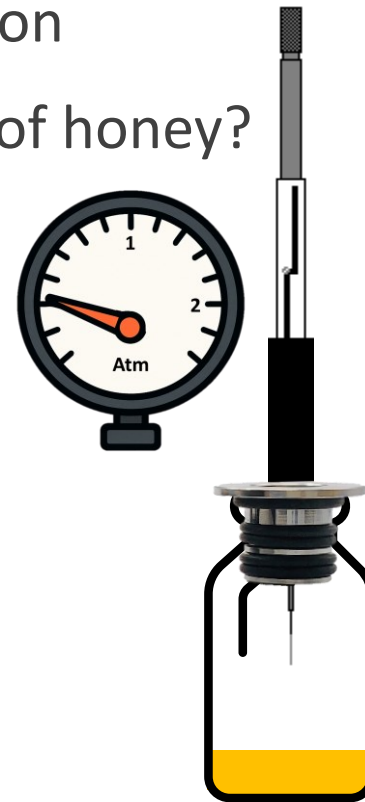
Targeted **and** **untargeted**  
investigation in food analysis  
thanks to **comprehensive**  
chromatographic techniques

# Targeted investigation in food analysis thanks to chromatographic techniques

# Targeted investigation in food analysis thanks to chromatographic techniques

- **Problem:** Honey freshness determination
- **Reflexion:** What defines the freshness of honey?
  - Enzymatic activity
  - 5-HMF content
- **Finding method + optimisation**
  - Vac-HS-SPME-GC-qMS

} **Targets**



# Targeted investigation in food analysis thanks to chromatographic techniques

- **Problem:** Honey freshness determination

- **Reflexion:** What defines the freshness

- Enzymatic activity

- 5-HMF content

Target

- **Finding method**

- Vac-HS-SP

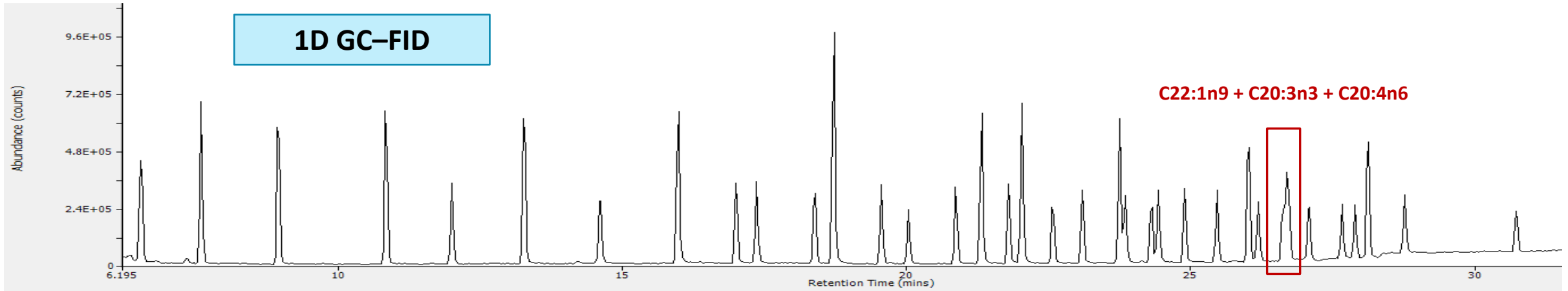
- **Mis-identification**

Co-elution ?

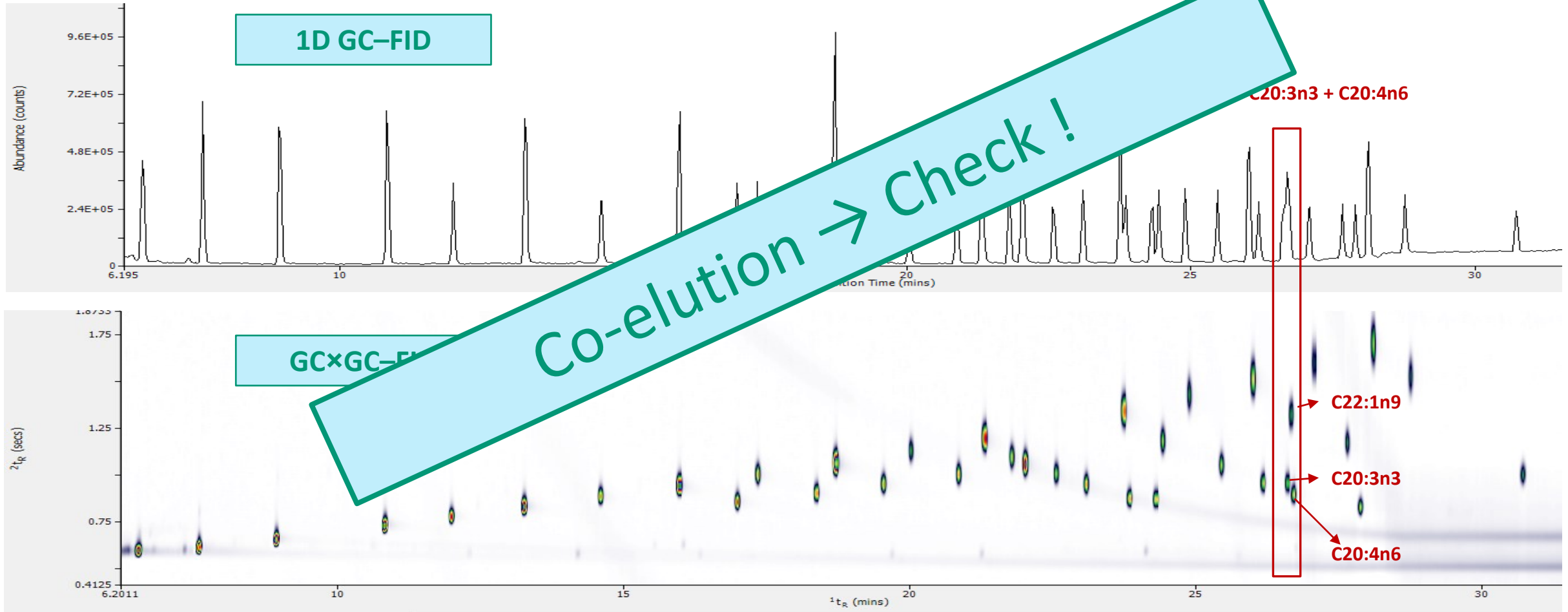
Mis-identification ?



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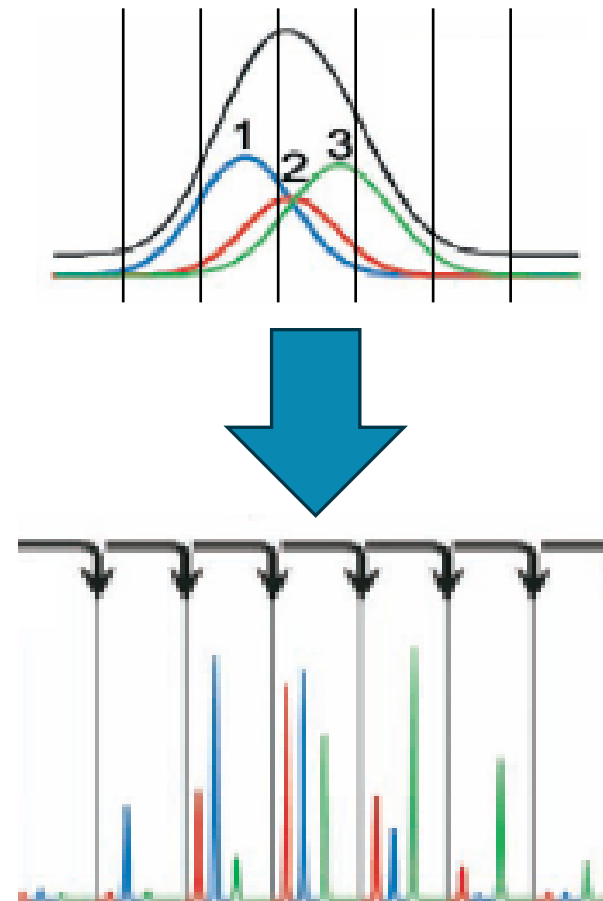
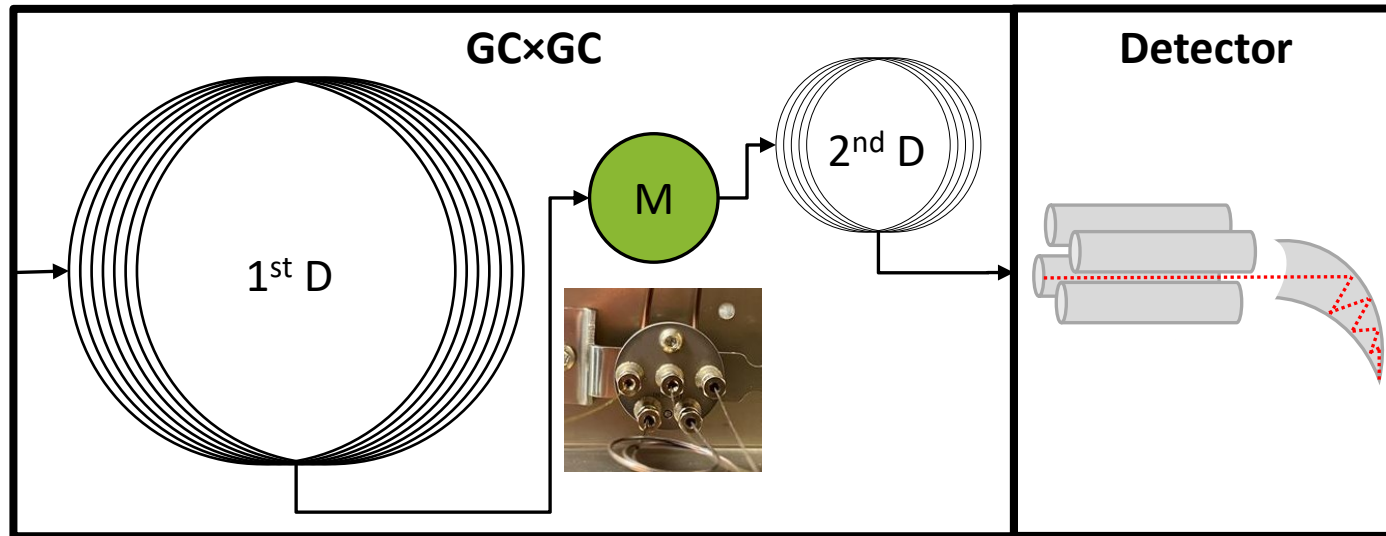




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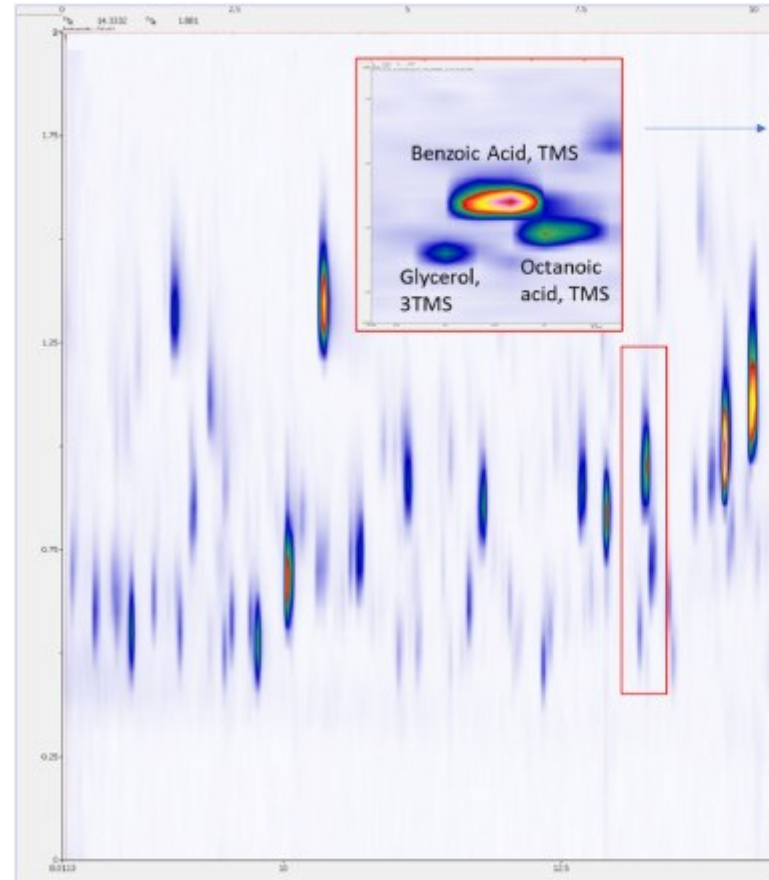
Targeted investigation  
in food analysis thanks to  
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# Targeted investigation in food analysis thanks to comprehensive chromatographic techniques



# Targeted investigation in food analysis thanks to comprehensive chromatographic techniques

- ✓ Coelution
- ✓ Mis-identification



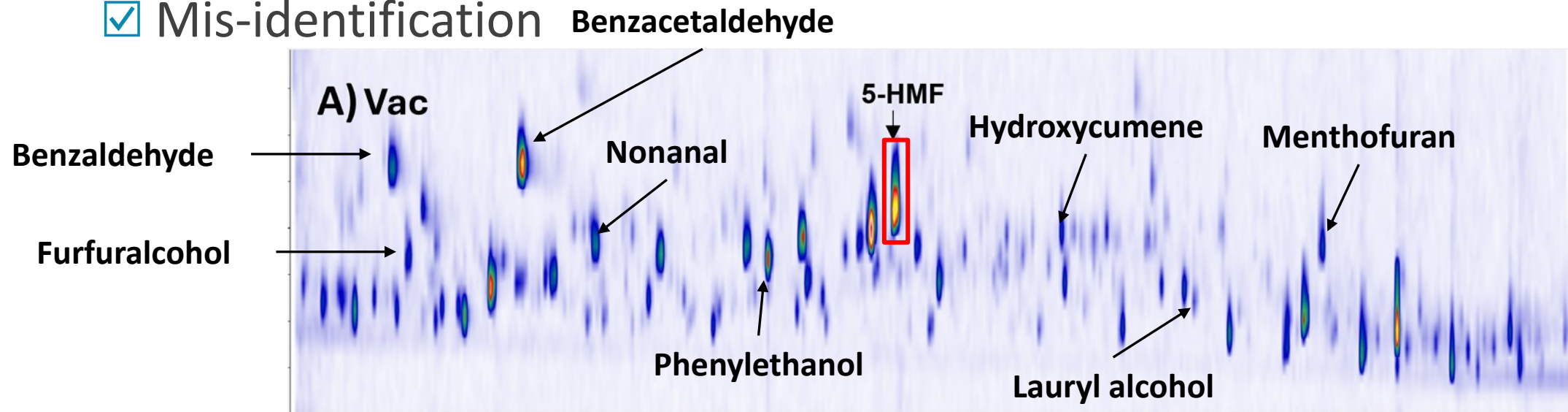
1D  
Peak

2D  
Peaks

# Targeted investigation in food analysis thanks to comprehensive chromatographic techniques

✓ Coelution

✓ Mis-identification



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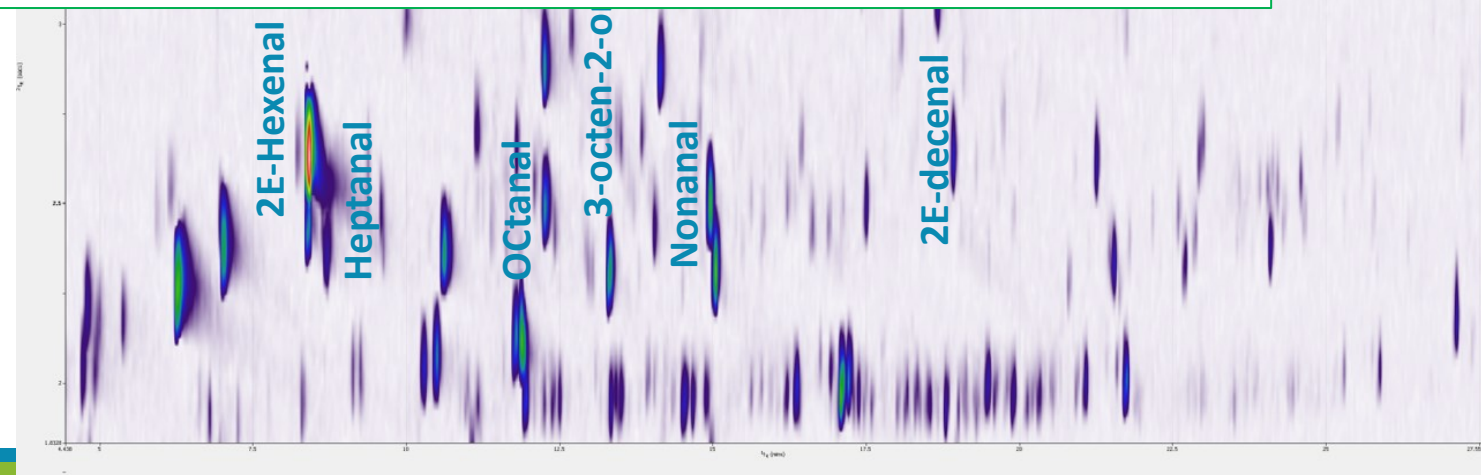
- **Problem:** Olive oil quality assessment
- **Reflexion:** What defines olive oil quality?

15:20 H - 15:35 H

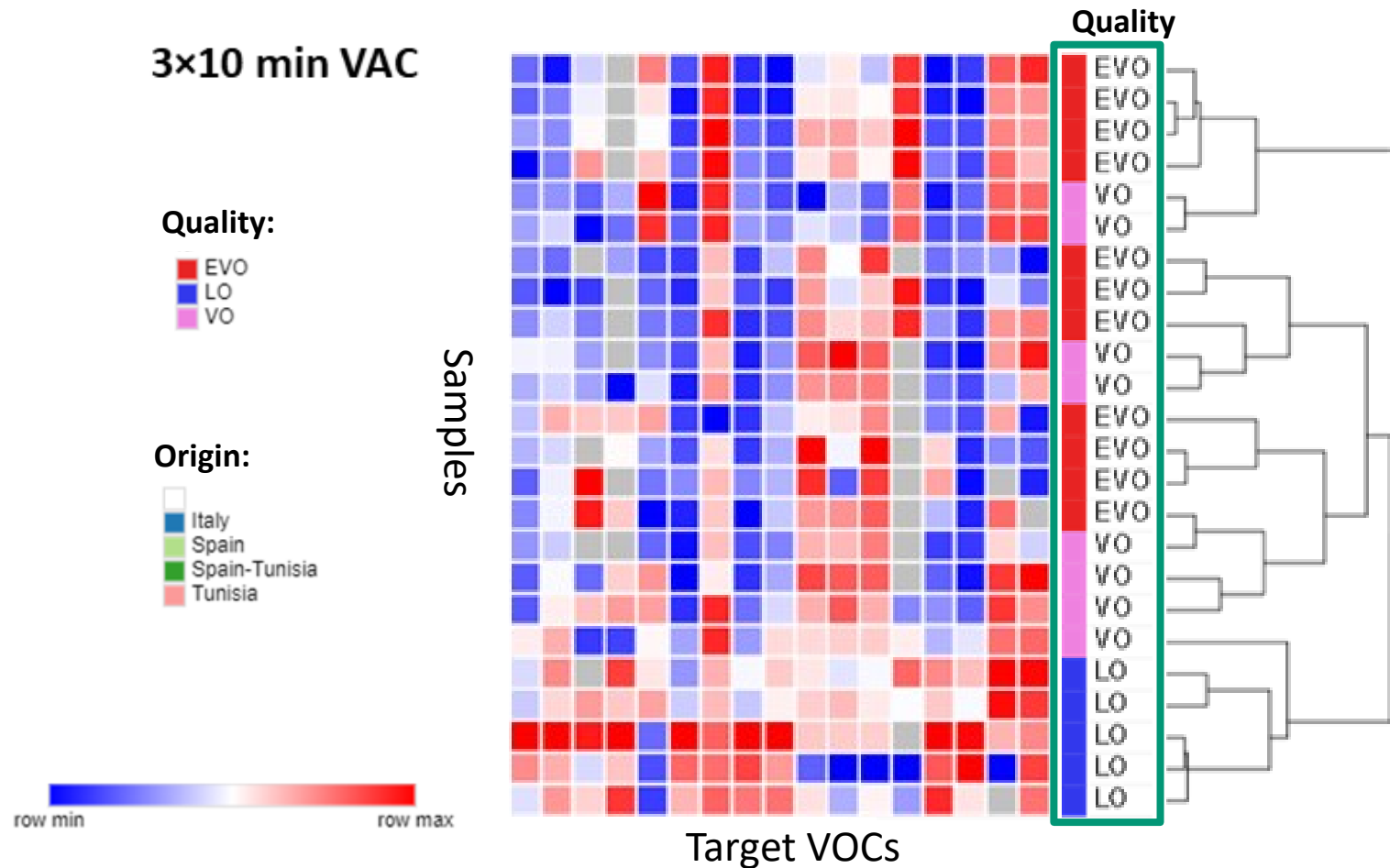
**L-10 :Comparison of headspace pre-concentration techniques for volatile profiling of extra virgin olive oil by comprehensive two-dimensional chromatography**

Irene Digiglio, University of Firenze, Italy

- **Method validation**
- **Results**



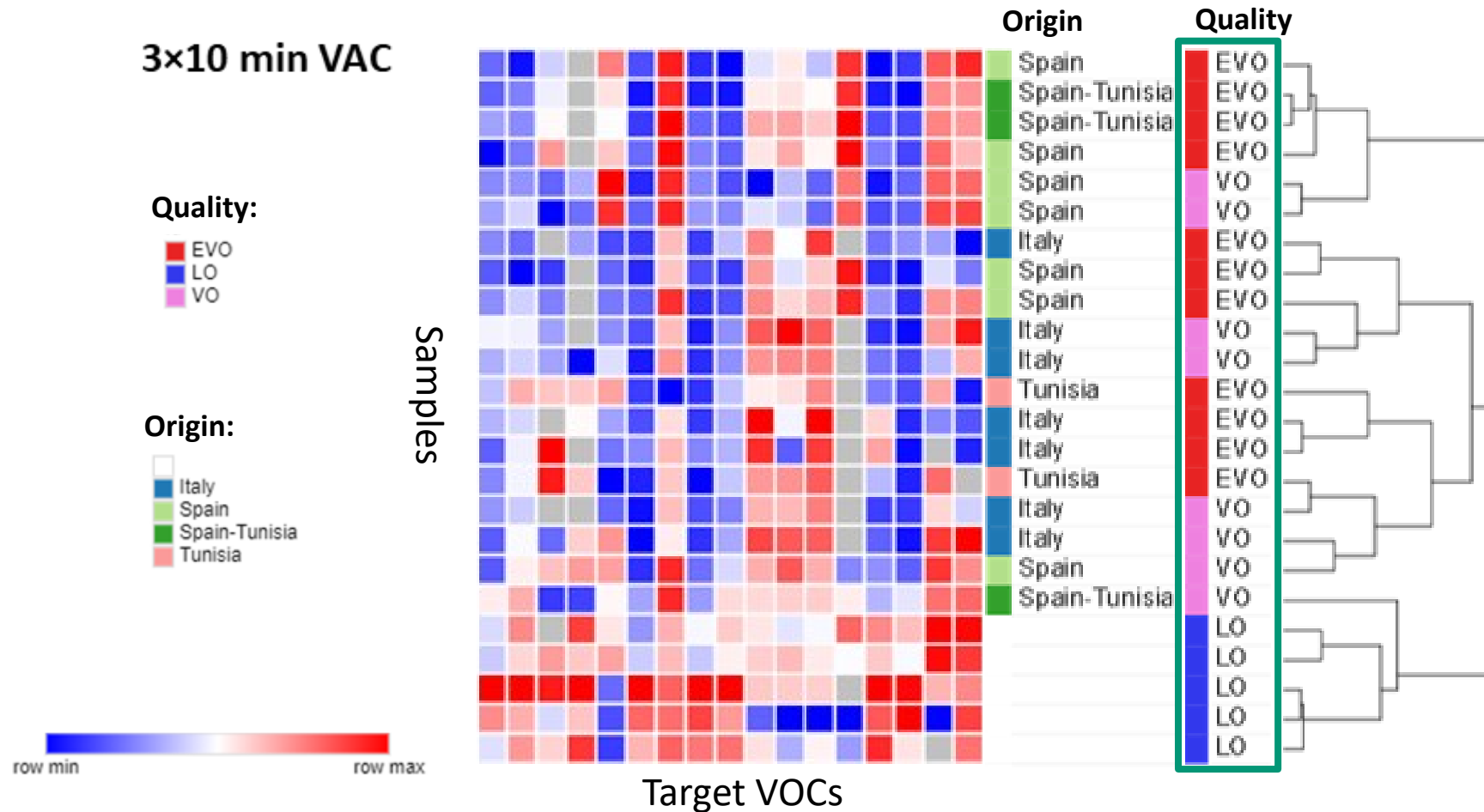
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- Not perfect clustering



# Targeted investigation in food analysis thanks to comprehensive chromatographic techniques



- Not perfect clustering
- Target VOCs linked to geographical origin

**Targeted method**

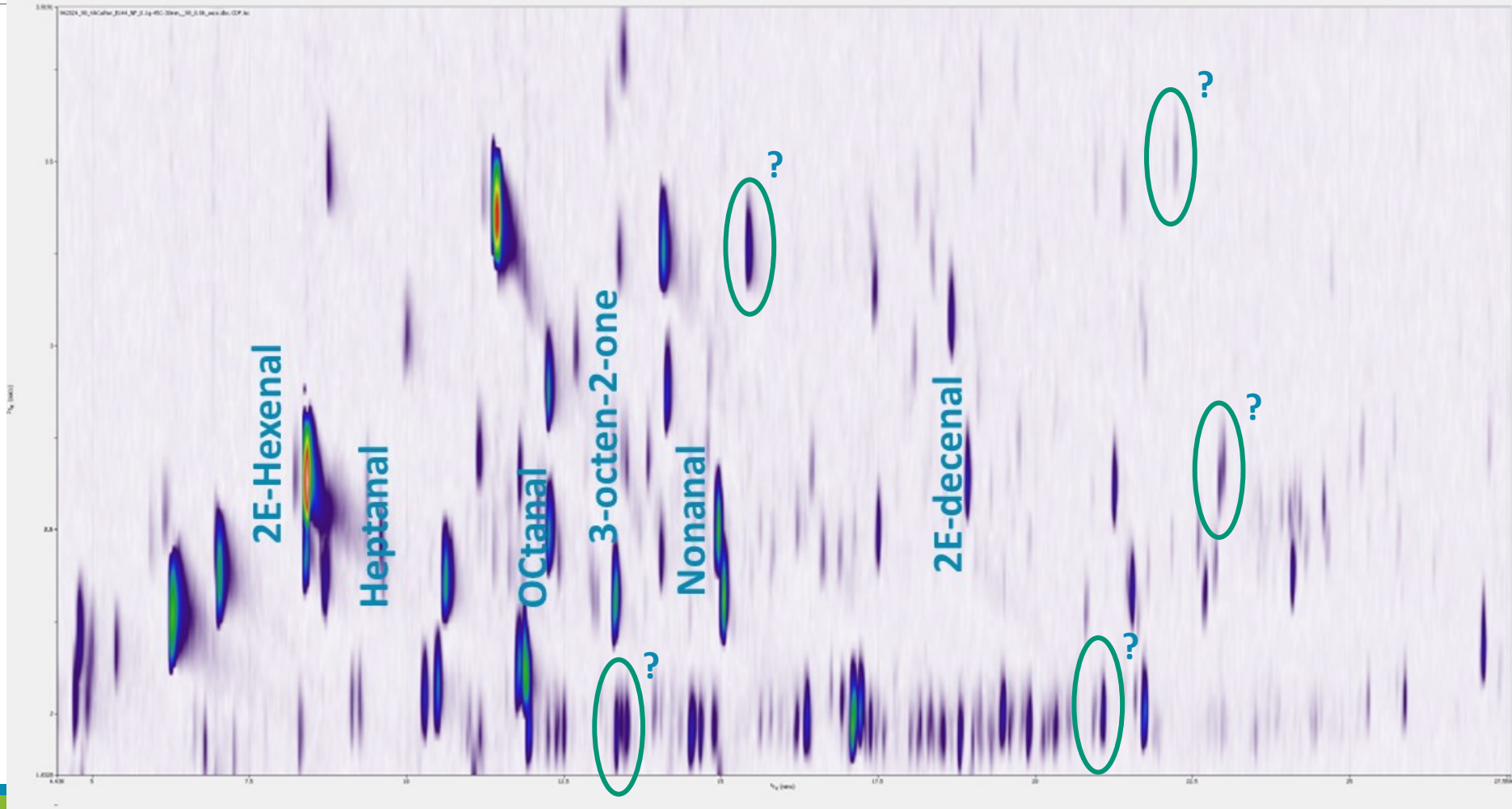


**Risk of bias**

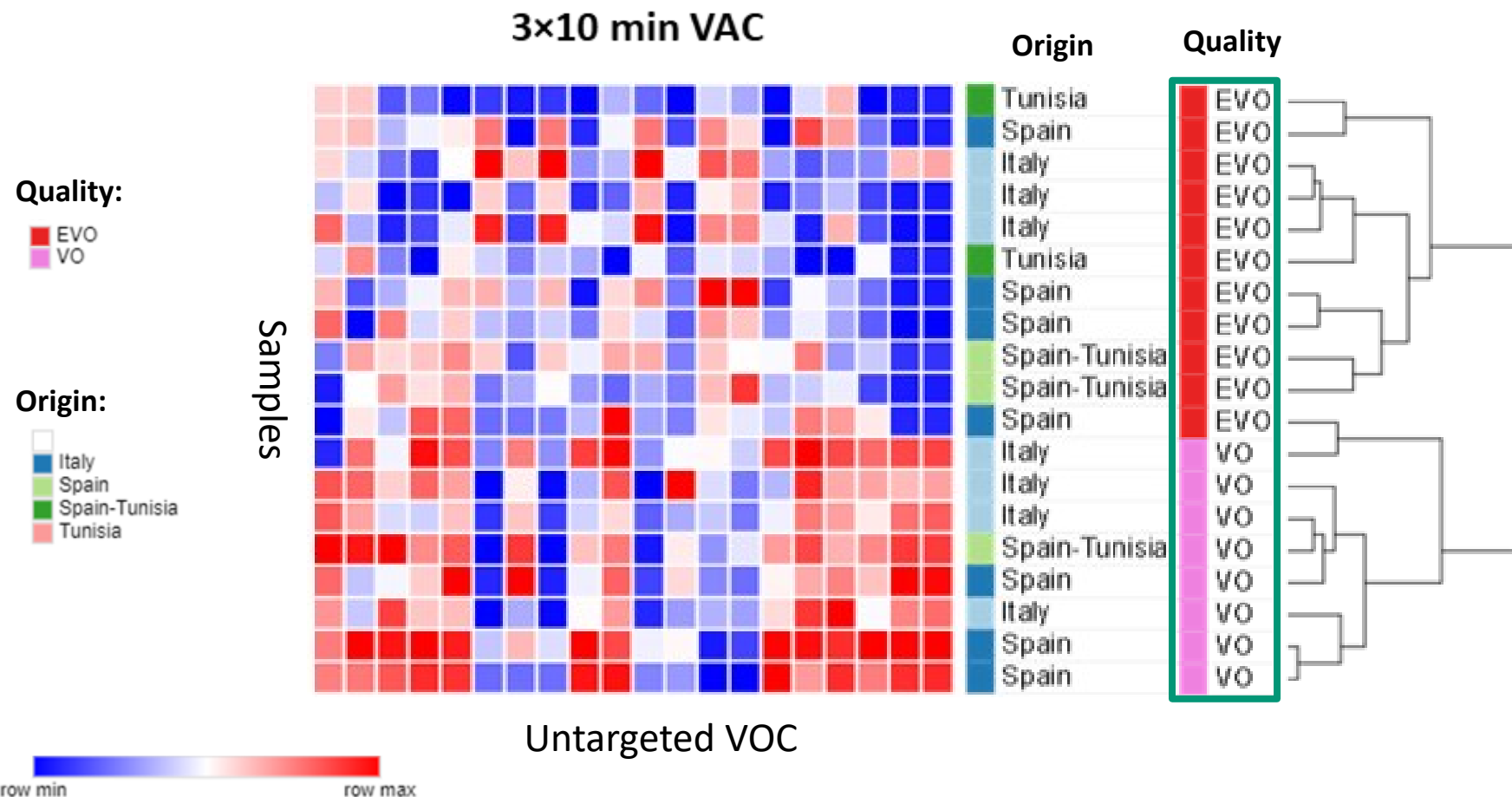




# Targeted investigation in food analysis thanks to comprehensive chromatographic techniques



# Untargeted investigation in food analysis thanks to comprehensive chromatographic techniques



Perfect clustering!

- Ethyl acetate,
- Acetic acid,
- Penten-3-one,
- 2-Penten-1-ol ,
- Pentanal
- 2-butoxyethanol
- .....



# Take-home message

- GC×GC:
  - Better representativity
  - Limits co-elution
  - Help identification
  - Multi answering question

# Thank you for your attention !



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