

# Characterization of the chemical communication of the poultry red mite, *Dermanyssus gallinae* (Acari: Dermanyssidae) and its potential use in biological control

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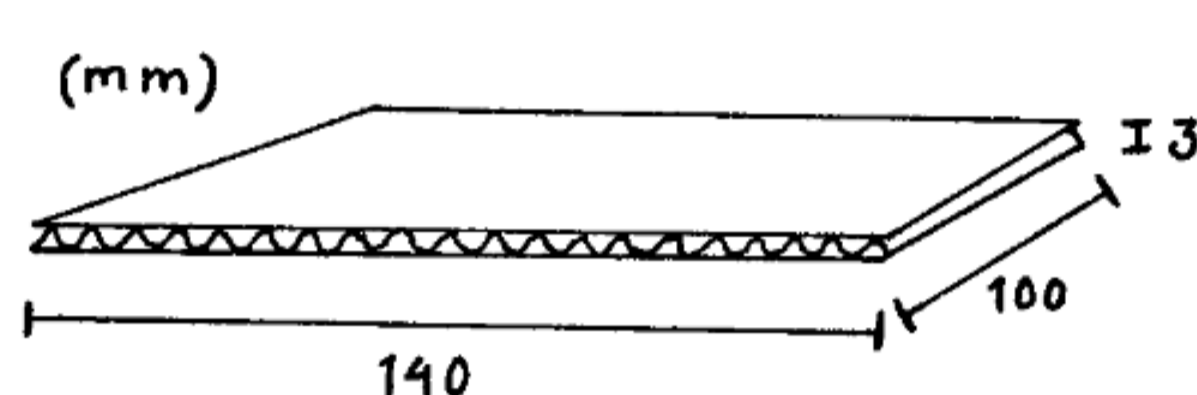
## Introduction

*Dermanyssus gallinae* (De Geer 1778), commonly named the poultry red mite (PRM), is considered to be the most harmful ectoparasite in poultry farms in Europe. It feeds on the blood of laying hens but spend most of its time hidden in cracks and crevices around hen nests. The aim of our project is to avoid the use of synthetic compounds to control PRM population by studying PRM chemical ecology. Our study focuses on the identification of attractive pheromones emitted by PRM such as sex pheromone.



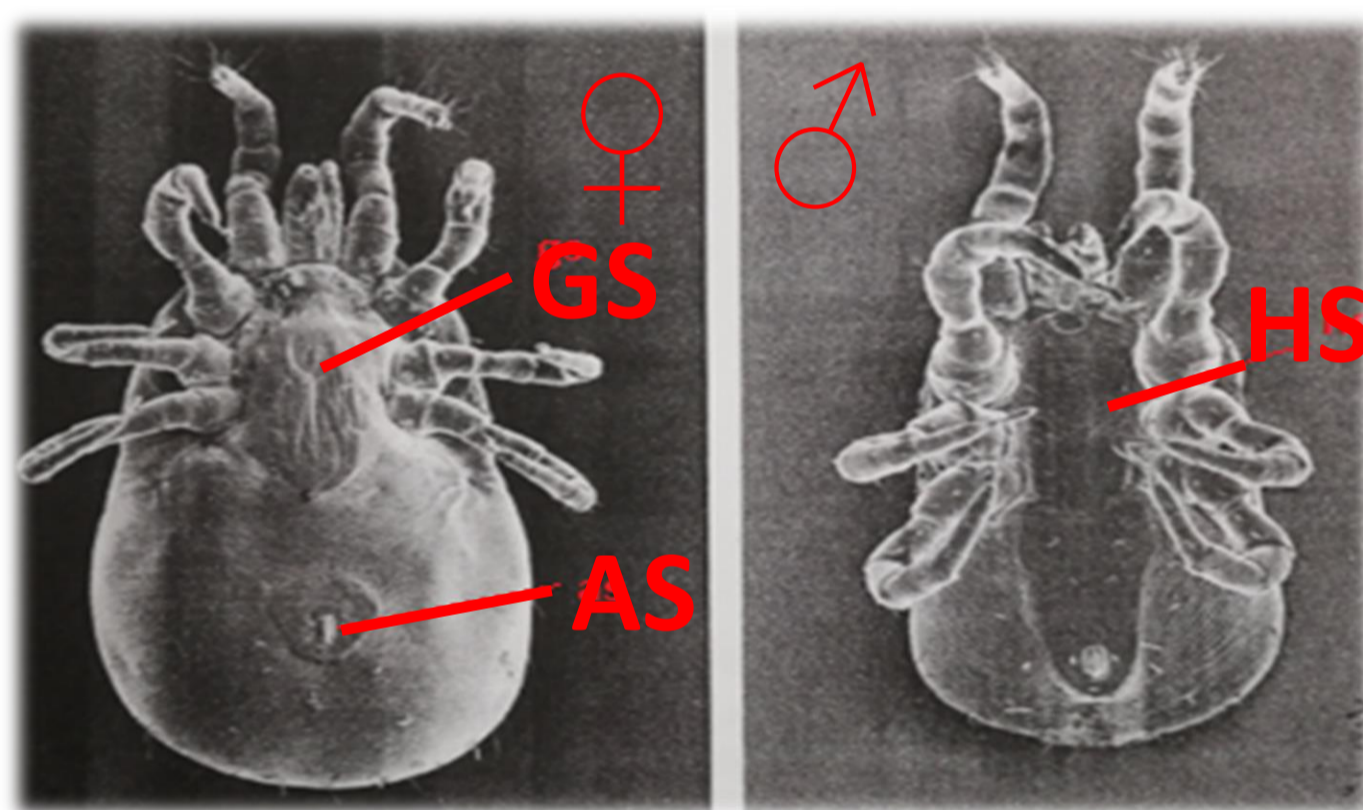
## Material & Methods

### Samplings of individuals



Cardboard traps (x6) placed in laying hens houses for 72h

### Identification of PRM



*Dermanyssus gallinae*  
adult

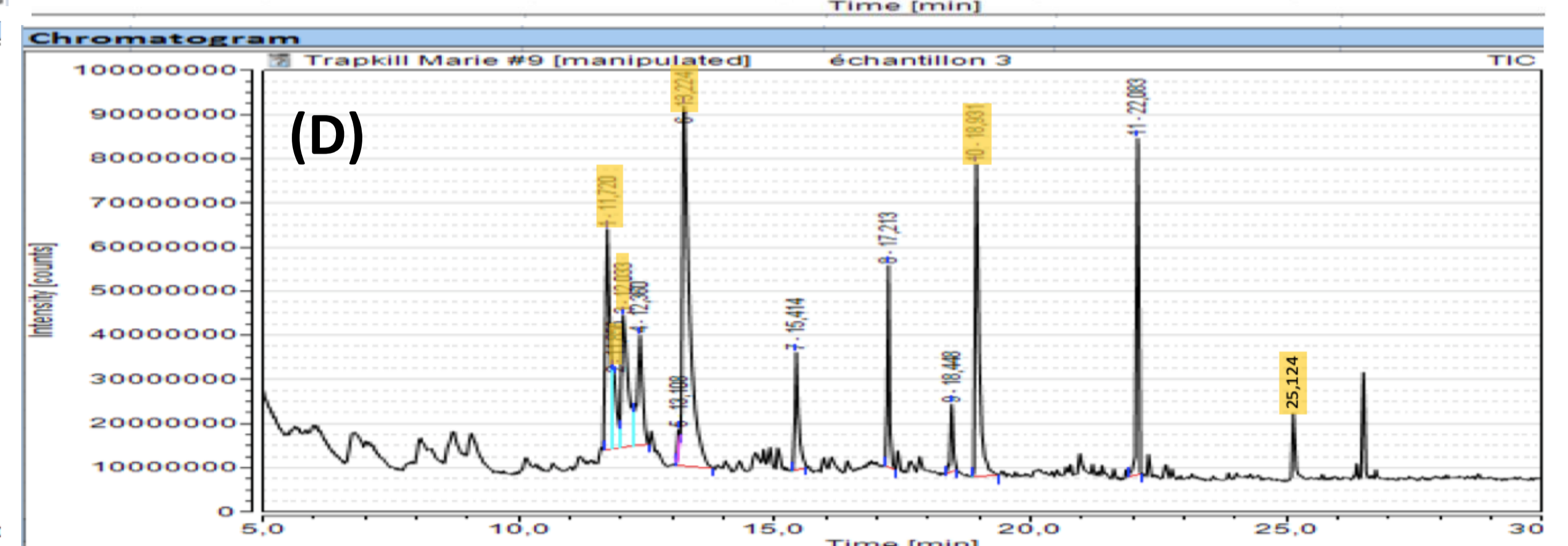
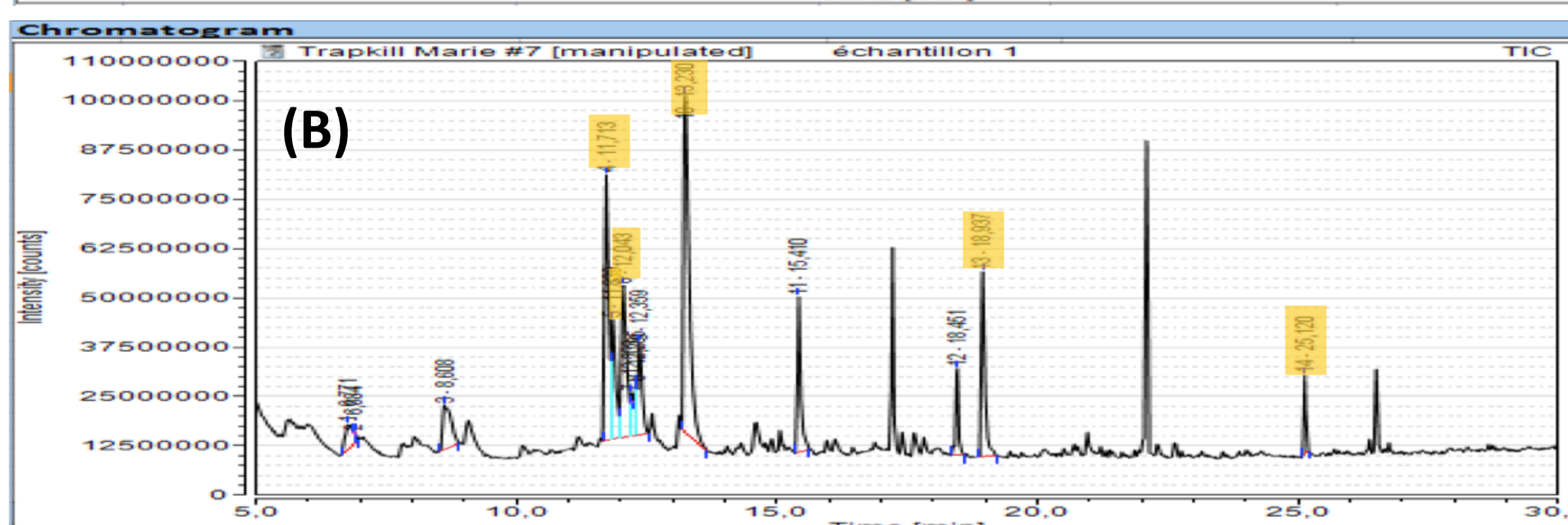
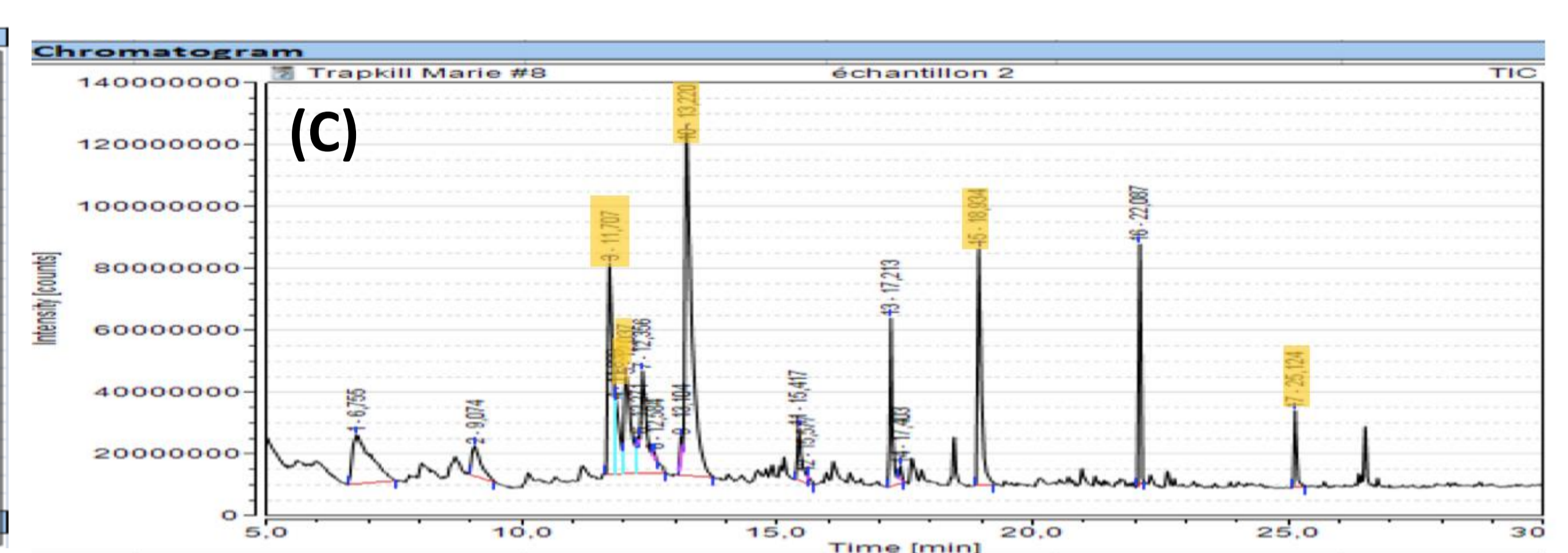
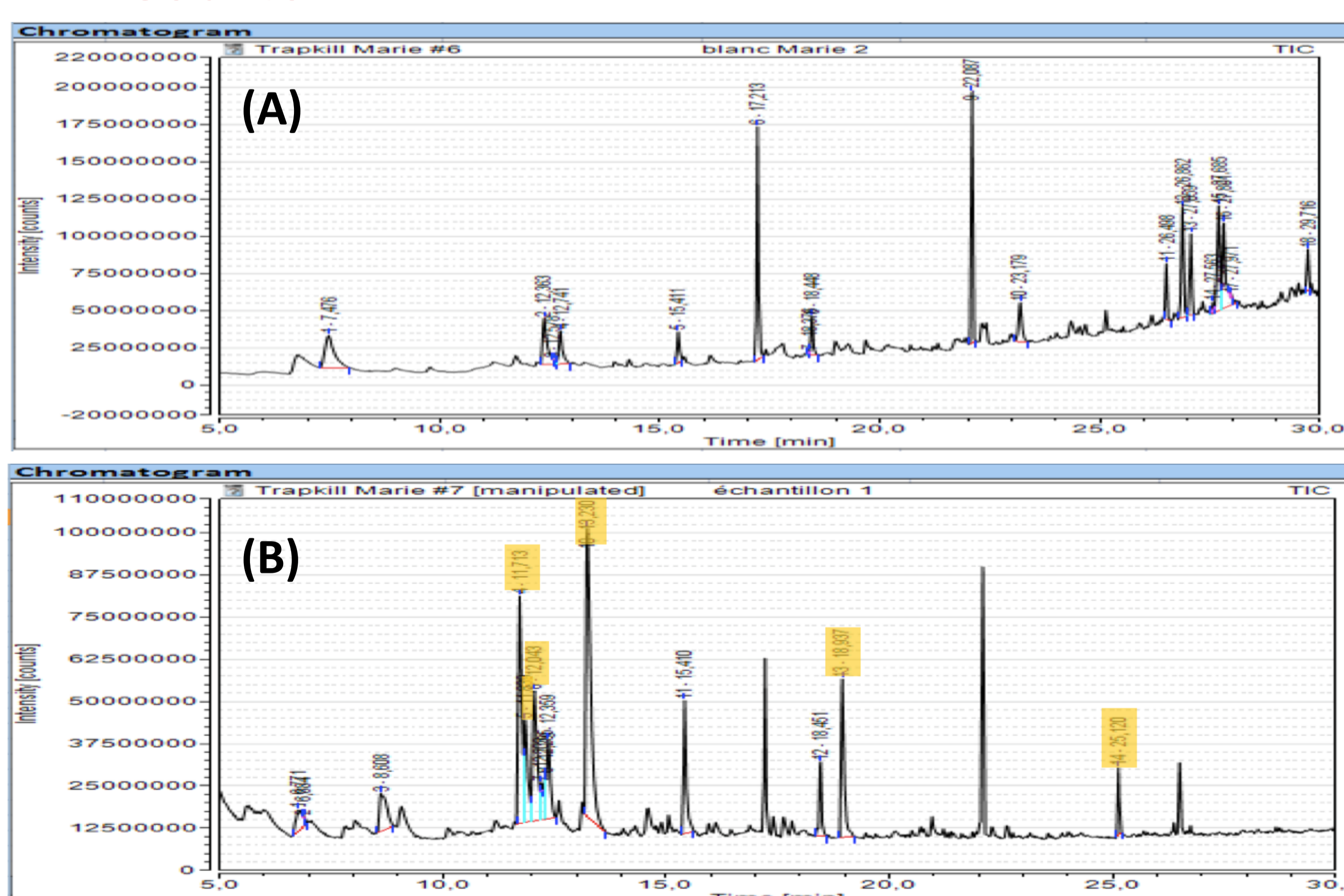
GS: Genitoventral Shield  
AS: anal shield  
HS: holoventral shield  
(Nordenfors et al., 1999)

### VOCs samplings: SPME & GC-MS

- VOC: Volatile Organic Compound
- 300 crushed unfed adult females / replicate
- 1 blank and 3 replicates
- SPME: Solid Phase Micro Extraction
- GC-MS: Gaz Chromatography – Mass Spectroscopy



## Results



Chromatogram of blank (A), replicate 1 (B), replicate 2 (C) and replicate 3 (D). Yellow pics are the different compounds found in the 3 replicates

## Identified compounds

Compounds		
Number	R.T. average (min)	Name
1	11.779	5-Hepten-2-one, 6-methyl-
2	12.038	5-Hepten-2-ol, 6-methyl-
3	13.225	2-Propyl-1-pentanol
4	18.934	Dodecylbenzenesulfonic acid
5	25.123	5,9-Undecadien-2-one, 6,10-dimethyl-, (E)-

## Conclusion/Perspectives

- 5 compounds identified never sampled in VOCs extracts of Acarian species
- 2-Propyl-1-Pentanol found in feces extracts of Bedbug *Cimex hemipterus* (Fabricius 1803) (Menki et al., 2014)
- Next step: VOCs samplings on living PRM via a dynamic technic (i.e. thermodesorption)