



HAL
open science

Identification of volatile sulphur compounds of cooked ham by GCxGC-TOFMS, GC-MS/80 AND GC-GC-MS/O

Caroline Thomas, Frederic Mercier, Pascal Tournayre, Jérémy Ratel,
Jean-Louis Berdagué

► To cite this version:

Caroline Thomas, Frederic Mercier, Pascal Tournayre, Jérémy Ratel, Jean-Louis Berdagué. Identification of volatile sulphur compounds of cooked ham by GCxGC-TOFMS, GC-MS/80 AND GC-GC-MS/O. 38. International Symposium on Capillary Chromatography and 11. GCxGC Symposium, May 2014, Riva del Garda, Italy. 2014, 38. International Symposium on Capillary Chromatography and 11. GCxGC Symposium. hal-02742164

HAL Id: hal-02742164

<https://hal.inrae.fr/hal-02742164v1>

Submitted on 3 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Identification of volatile sulphur compounds of cooked ham by GCxGC-TOFMS, GC-MS/80 and GC-GC-MS/O

Caroline Thomas, Frédéric Mercier, Pascal Tournayre, Jérémy Ratel, Jean-Louis Berdagué

MASS Group - UR370 QuaPA - INRA, , 63122 Saint-Genes-Champanelle, France

The role of sulfur compounds in the aroma of cooked meat is well-known, yet volatile sulfur compounds (VSC) in cooked ham are poorly described in the literature. These compounds are difficult to analyze, especially in this complex matrix where they are present at trace levels. Furthermore, VSC are very difficult to extract and to detect due to a strong retention by the matrix and a high chemical reactivity during all analytical steps. Hams were investigated using different types of extraction and detection methods in order to achieve the most exhaustive identification of VSC. These methods were: solid phase micro-extraction coupled to the comprehensive bidimensional gas chromatography-time of flight mass spectrometry (SPME-GCxGC-TOFMS), dynamic headspace coupled to gas chromatography-mass spectrometry (DH-GC-MS) or a specific extraction of thiols with mercury salts prior to GCxGC-TOFMS analysis. The different analytical approaches have led to a reliable identification of 39 VSC [1]. The most efficient method of detection and identification was SPME-GCxGC-TOFMS. In addition, olfactometry analyses [2] were performed using an eight way olfactometer (GC-80/MS) and a home-made heart-cut GC-GC-O/MS device was used to resolve the co-eluting odor zones. These analyses revealed that 7 out of 39 VSC identified by mass spectrometry were perceived during olfactometry. The study demonstrated the key role of VSC in cooked ham aroma, especially 2-methyl-3-furanthiol and methyl 2-methyl-3-furyl disulfide that possess a strong “meaty” odor similar to the odor of cooked ham.

References

- [1]. Thomas, C.; Mercier, F.; Tournayre, P.; Martin, JL.; Berdagué, JL. Food Chemistry 155 (2014) 207-213.
- [2]. Thomas, C.; Mercier, F.; Tournayre, P.; Martin, JL.; Berdagué, JL. Food Chemistry 139 (2013) 1-4.