

Seeking for organ-specific VOC signatures in human cadaveric decomposition

P.-H. Stefanuto¹, L. Dubois¹, R. Loyd², G. Delporte³, P. Delvenne³, J.-F. Focant¹

¹ CART, Organic and Biological Analytical Chemistry, Department of Chemistry - University of Liège, Allée du 6 aout B6C, B-4000 Liège, Belgium

² Department of Chemistry, University of Leicester, University Road, Leicester LE1 7RH, United Kingdom

³ Pathological Anatomy and Cytology Laboratory, University of Liège, CHU B23, B-4000 Liège, Belgium

In the line of our previous work to better understand and characterize human cadaveric decomposition, we used our TD-GC×GC-TOFMS methods to study organ-specific VOC signatures. A method has been developed to monitor the headspace of various human organs during the decomposition process. Five different organs, from five different bodies, were used: heart, lung, liver, kidney, and blood. Each organs were sampled in triplicates and let to decompose in glass jar. Regularly, the headspace of the jar was sampled by dynamic pumping to sorbent tubes that were further be desorbed on a GC×GC system. The development of this in vitro approach for decomposition monitoring not only allows to highlight possible organ-specific signatures, but also easily allows the consideration of multiple replicates, which is always an issue when studying complete bodies in real environment. Intra and inter corpse comparison were conducted using advanced chemometric methods (Fisher ratio, PCA, hierarchical analysis...) that will potentially contribute to better tune key parameters of rescue the dog training.