INVESTIGATING THE VOLATILE PROFILE OF LUNG CANCER CELL CULTURES

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According to the American Cancer Society, lung cancer is the most lethal [1], mainly due to late diagnostic. There is therefore a need for sensitive and non-invasive diagnostic methods for population screening.

A large number of diseases appear to have a volatile signature present in the breath air exhaled by patients. Indeed, analytical breath profiling offers possible solutions for early detection of different kind of lung infections [2]. For example, cystic fibrosis patients show a different volatile organic compound (VOC) profile because of the bacterial colonization that localizes in their lungs [3]. A similar behavior is observed for patient suffering from lung cancer [4]. However, the list of recognized volatile biomarkers of lung cancer is still scarce and could be improved. Indeed, the biological variability of exhaled air profile makes the biomarkers identification challenging. In the hope of contributing to a better understanding, we used GC×GC-TOFMS to investigate the VOC profile of lung cancer cells.

A SPME procedure has been developed to sample the headspace of cell cultures. After proper alignment of chromatograms, univariate and multivariate mathematical approaches were compared for isolation of potential lung cancer biomarkers and further tentative identification by GC×GC-HRTOFMS.

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