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Room 5.2 Session 461 14:45-16:45

16:30

OP Oral Presentation : Innovative diagnostic methods for lung cancer

4507

A step towards easier diagnosis of lung cancer: Detection of volatile organic compounds in air releasing tumour samples with ion- and differential mobility spectrometry

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Introduction:

Lung cancer is the tumour with the highest mortality rate in the western world.

Unfortunately, the diagnostic process is still extensive.

The detection of Volatile Organic Compounds (VOCs) in air releasing tumour samples might be a method to accelerate the process of gaining first results.

Objectives:

The goal in this study was to develop a method using VOCs in the detection of characteristic peaks to determine tumour containing tissue and to specify tumour entities with air samples.

Methods:

Employing an Ion Mobility Spectrometer (IMS) and a Differential Mobility Spectrometer (DMS), 30 tumour and lung samples were placed into an aluminium lung simulator and analysed by the DMS and IMS via side-stream Teflon tube.

Tumour containing samples were compared to non-tumour samples from the same individual in order to distinguish between characteristic peaks. Furthermore the peaks were statistically analysed.

Results:

The results showed various characteristic peaks and clusters in both measuring devices. These were able to differentiate between tumour and non-tumour samples (e.g. peak "P38", $p=0,0003$ in adeno carcinoma samples), as well as between the tumour entities. In addition certain peaks (e.g. "EES" in the squamous cell carcinoma samples) were lower in the tumour group.

Conclusion:

VOCs are able to discriminate between tumour entities and also to detect tumour containing tissue. In future research projects IMS and DMS should be compared with a closer view on standardizing peaks in order to and gain further opportunities for more precise tumour detection.