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Infections, drug delivery and metabolites detectable in human exhaled breath

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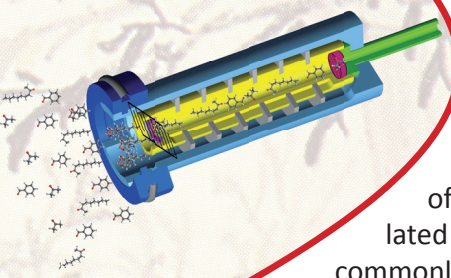
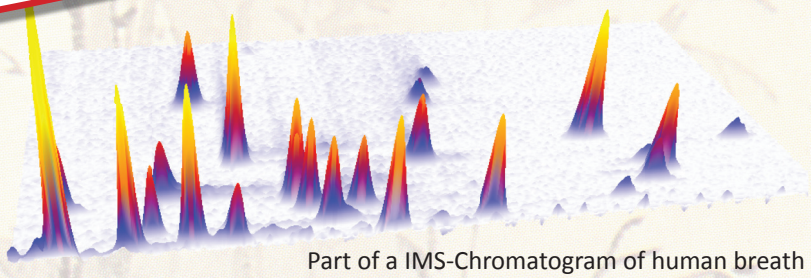
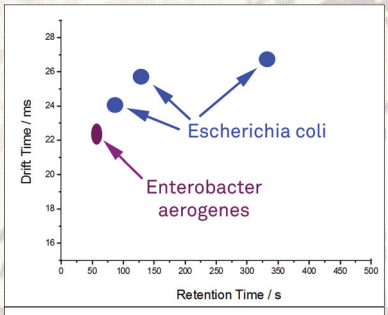
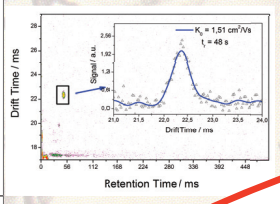


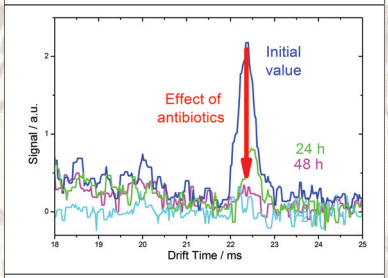
It is well known, that human breath acts as carrier of information on the metabolic processes in the human body. Using ion mobility spectrometry (IMS) ions are formed from the metabolites directly in air at ambient pressure and the drift time within the spectrometer is measured. About 10 mL of breath is necessary to carry out a full analysis, but no further preenrichment steps are needed. An IMS coupled to a MCC allows the identification and quantification of volatile metabolites occurring in human breath down to the ng/L- and pg/L-range of analytes within less than 500 s. The sampling was related to the end-tidal breath using a CO_2-sensor commonly applied for spirometric investigations in pneumology and intensive care units.

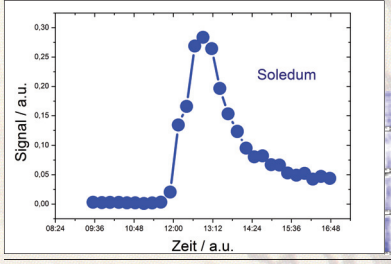


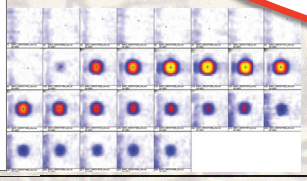
Part of a IMS-Chromatogram of human breath











Signals of bacteria in human breath within an IMS-Chromatogram, IMS-Chromatogram with the peak related to Enterobacter aerogenes and decrease of the signal related to Enterobacter aerogenes with time using pharmaceuticals.

Signals of Soledum in human breath at different time after use and time line of the corresponding signal intensity.

Acknowledgements

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