In innovative and rapid detection of marihuana consumption from direct breath analysis, ion mobility spectrometry (IMS) coupled to rapid gas chromatography (GC) has been used for comprehensive analysis of human breath. This method enables medical diagnosis and therapy control, especially in nephrology or diabetes, by quantifying various remedies with sufficient correlation to plasma concentrations, such as anaesthetics like propofol or fluranes. The method was validated successfully with regard to false-positives caused by hemp products and plant-based commodities.

Encouraged by these findings, we developed a method for on-site quantification of cannabis consumption, which can provide a tool for regulatory authorities to control if a driver's vigilance is affected. A characteristic pattern of metabolites exclusively caused by cannabis consumption was developed and quantified for the correlation with THC plasma concentration, which is a measure for the effects of the drug. Presently, the method enables on-site non-invasive detection of marihuana consumption even after 3-4 hours, which is in the range required by the authorities.

Keywords: Drugs, Forensics, Metabolomics, Metabonomics

Application Code: Safety

Methodology Code: Chemical Methods