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VENDOR SEMINAR:

Improved Confidence with Superior Qualitative and Quantitative Data Using LECO's GC×GC-TOFMS

Can LECO Pegasus BT 4D GC×GC-TOFMS help improve the analysis of pesticide residues in cannabis?

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The unique properties of cannabis (especially its great potential in medicine) are due to its complexity, in particular the content of multiple constituents contains a wide range of different compounds belonging to groups of phytocannabinoids, terpenes, flavonoids, stilbenoids, fatty acids, alkaloids, carbohydrates, and polyphenols. Therefore, a comprehensive implementation of analytical tools is necessary to obtain detailed information about its composition, medicinal properties, and bioactivity, as well as risk assessment including the analysis of solvent residues, heavy metals, and pesticides. The purpose of this study was to develop a sensitive and reliable analytical strategy to analyze pesticide residues in cannabis, including optimization of sample preparation and the GC×GC-TOFMS method. During the method development, emphasis was placed on the clean-up step; thus, five different sorbents were tested. Using an advantage of the separation of the target analytes in the second dimension, we achieved very good separation between the matrix and analytes. With regard to these facts, the LECO Pegasus BT4D GC×GC-TOFMS technique allows detection of significantly more pesticide residues at very low detection limits compared to the GC-MS/MS system routinely used for this purpose.

The characterization of recycled materials

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The average European citizen is producing approximately 33.5 kg plastic waste from packaging material, or 25 million tons in total annually [1]. So, the EU started several actions to reduce the produced waste. Recently the European Commission announced a strategy for reducing packaging waste [2]. This includes the following actions:

- improve packaging design to promote reuse and recycling
- increase recycled content in packaging
- tackle excessive packaging
- reduce packaging waste

So, a special focus must be put on point 2 (increase recycled content in packaging). It is clearly mentioned in the EU regulation 1935/2004 on materials and articles intended to come into contact with food, that materials and articles may not in foreseeable conditions release to food their constituents in amounts which could endanger human health or change the composition of the food in an unexpected way, or cause changes in the organoleptic characteristics of food, such as odour, taste or appearance. Due to the recycling process and due to various materials (pesticide formulations, mineral oils, hygienic products, medication...) there is the risk, that undesired compounds can be present in the recycled material and can be transferred to the packed goods. Unfortunately, there is a lack of official methods to verify the safety of the recycled materials. Several examples and strategies for the characterization and safety evaluation of the recycled materials by one- and two-dimensional separation will be discussed.

References:

- [1] <https://de.statista.com/statistik/daten/studie/786353/umfrage/plastikverpackungsabfall-in-ausgewaehlten-eu-laendern-je-einwohner/>
- [2] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12263-Reducing-packaging-waste-review-of-rules_en