A Q&A

The Benefits of GC Analysis for the Cannabis Industry

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As interest in medical and legal recreational cannabis grows, the need for robust and reliable testing is a necessity for consumer safety. Analytical laboratories are responsible for detecting the presence of numerous analytes (and quantifying them) such as cannabinoids, terpenes, residual solvents, pesticides, heavy metals, and microorganisms. In this discussion with *LCGC*, Bart Roelfsema, co-founder of Shamanics, and Avril House, sales director at Ellutia limited, reflect on the importance of such testing and how gas chromatography (GC) may be an especially useful technique for this kind of analysis.

LCGC: How do you think that analytical testing benefits the cannabis industry?

Roelfsema: Analytical testing benefits the cannabis industry on many fronts. It turns out that the only way to actually identify the chemotype of a variety of cannabis is with analytical testing. The physical appearance of the plant itself is not sufficient to identify any of its constituents. So, I think testing is a necessity.

House: I agree. Testing is also essential for safety. Consumers need to know what they're buying and then consuming, or smoking has been properly and rigorously tested. Such analytical testing provides assurance that the raw material or finished product contains the cannabinoid levels appropriate for the intended use be that medicinal or recreational. In addition, GC testing can be used to identify if there are other contaminants present such as residual solvents left over from the extraction processes or pesticides, which can be harmful.

Everyone in the cannabis industry benefits from analytical testing for safety—dispensaries, the growers, processors, and consumers. Testing right through the supply chain only helps bring more confidence and legitimacy to the industry.

LCGC: What led you to select gas chromatography for testing over other technologies such as high-performance liquid chromatography?

Roelfsema: Well, for long time, the focus was on actual cannabinoid content, but not long ago we discovered that the actual terpene constituents of the plant matter are a better identifier of the chemotypical variant within the cannabis plant, so the actual cannabinoid content is getting less and less important these days.

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House: GC instruments offer a number of advantages for analyzing cannabis over high-pressure liquid chromatography (HPLC) instruments. While both are well suited for testing cannabinoids (both acidic and neutral) and pesticides, HPLC instruments are not suited for terpene or residual solvent analysis. So, GC equipment can offer a lot more functionality when compared to HPLC.

LCGC: How easy was it to learn how to begin testing and what help did you receive in that area?

Roelfsema: Well, I received a lot of help. We didn't start as an analytical company. We are an extraction company and we do distillations and refining of crude extract, so it's very necessary to test what you're working with. Analytical testing is very cooperative, actually. Working together with an analytical company actually improves the quality of your products.

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House: We are actively involved in training people in the cannabis industry—many of whom are new to analytical equipment—about using gas chromatography for cannabis testing. We understand that there will be an extra level of assistance needed; we make them aware of the importance of doing the testing and hold their hand through their process, being their teacher and giving them the support and knowledge they need.

LCGC: Do you think other areas of the industry would benefit from in-house testing?

Roelfsema: Yes, definitely. I think whether you're a grower, a breeder, or you're making extracts or other products, in-house testing is becoming the norm in all areas of the cannabis industry. I mean, you cannot physically see what you're working with, so you have to test to see the constituents, and whether it's to create strains or to create medicine or to create other products. It's getting more and more important. So, for the whole cannabis scene, analytical testing is becoming an integral part.

House: I agree that right through the supply chain the industry can benefit from in-house testing. Without access to affordable, accurate equipment companies are often relying on external testing serviced that can be costly and slow to turn around results.

Growers can use gas chromatography to monitor the development of their crop for optimal harvest times and ensure that their product will comply with regulatory testing. Processors not only can use it as a tool to ensure to both check the quality of incoming materials, but also to ensure that any products they're making such as edibles, oils, and tinctures are safe and labeled correctly for regulatory purposes.

More and more people are starting to understand the importance of analytical GC testing for cannabis, and there's a lot more openness for people to talk about the industry, which I think is a great thing. Cannabis has medicinal properties from which real-life patients benefit. I met a conference speaker who has seen her daughter's brain tumors shrink to a management size after combining cannabis medication with her other treatments. Hearing people's real-life success stories makes you understand the passion in this industry and make everyone want to be more transparent and open about it. So, the more awareness and education about testing we can bring the industry, the more benefit it will have for patients.