SHIMADZU
Excellence in Science

Cannabis Testing Laboratory Solutions

We are the cannabis testing instrument experts.

When purchasing analytical equipment, it is important to know that you are not just buying an instrument but investing in your lab's future.

Shimadzu not only provides the instrumentation but also the technical knowledge and support to help your lab be successful. We can assist with method development, instrument training, and many other areas of support like maintenance to ensure your systems are constantly operating at an exceptional level.

From seed to sale, from accurate cannabis potency profiles to reliable, highly sensitive pesticide screening, let us deliver scalable, turnkey solutions to meet your testing needs for today and tomorrow.

Cannabis growers benefit tremendously from cannabis testing. Whether meeting state requirements or certifying a product, laboratory testing reduces your risk and ensures delivery of a quality product. Routine cannabis testing services include potency, screening/determination of terpenes, and analysis of heavy metals, pesticides and residual solvents.

Shimadzu provides you with the leading cannabis testing analytical instrumentation. Our scientifically validated methods, expansive platforms and expert team of scientists are readily available to help your cannabis testing laboratory succeed. Talk to us today about your analytical testing needs.

As medicinal and recreational cannabis markets continue to grow, analytical testing will ensure that consumers are receiving accurately labeled products that are free from contamination. Shimadzu is ready to assist you as you grow your laboratory. We also offer instrument research platforms and a variety of leasing programs to meet evolving requirements.

Delivering total cannabis lab testing solutions for:

Potency Testing

See Page 4

Terpene Profiling

See Page 5

Pesticide Screening

See Page 6

Residual Solvents

See Page 7

Heavy Metals

See Page 8

Moisture Content

See Page 9

Mycotoxins Analysis

See Page 10

Research Platforms

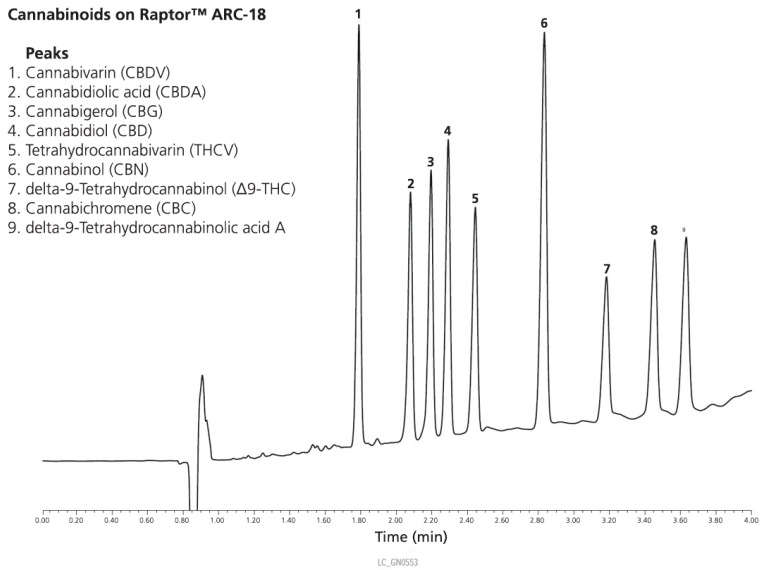
See Page 11

Information on the following pages reflects recommended platforms for each analysis/test. Some techniques, such as LC-MS/MS or GC-MS/MS, may be applicable for multiple analyses. Please contact your salesperson for more details.

Potency Testing

Accurate determination of cannabinoid concentrations in cannabis samples is the most important component of cannabis testing. Shimadzu liquid chromatograph solutions deliver high accuracy for not only THC, but also a wide variety of other cannabinoids such as CBD, CBG, CBN and CBC.

Shimadzu is your partner for potency profiling. We provide the instrumentation and methods necessary to determine cannabinoid potencies in every sample, ranging from dry products to oils, waxes and edibles.



The Shimadzu i-Series family of liquid chromatographs (above, left) delivers maximum reliability and stability, automating cannabis potency profiles with exceptional ease. The Shimadzu i-Series can be paired with RESTEK Raptor LC columns (above, right) for ultrafast, accurate determinations.

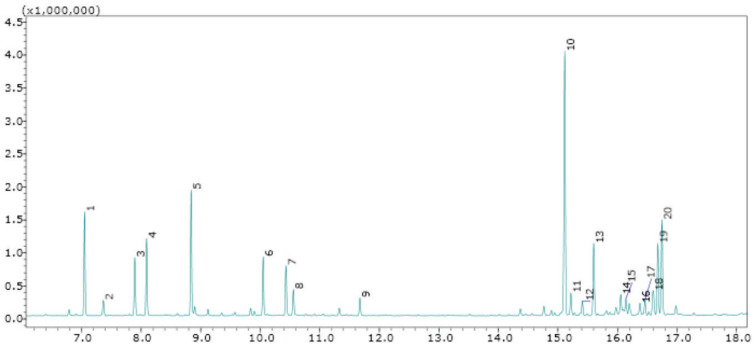
Potency is measured in a wide variety of recreational and medicinal marijuana products ranging from dry products and beverages to edibles.

Please contact us for sample prep protocols.

Terpene Profiling

Terpenes are produced in trichromes (where THC is produced) and give cannabis its distinctive flavor and aroma. Terpenes also act as essential, medicinal hydrocarbon building blocks, influencing the overall homeopathic effect. From the pine odor of pinene to the citrus-like smell of limonene, the characterization of terpenes and their synergistic effect with cannabinoids is easily achieved using Shimadzu gas chromatography.

The Shimadzu GCMS-QP2020 with HS-20 Head Space Sampler and NIST spectral library is the ultimate platform for terpene analysis. It easily identifies more than 3,000 flavor and fragrance compounds to meet your terpene profiling needs.



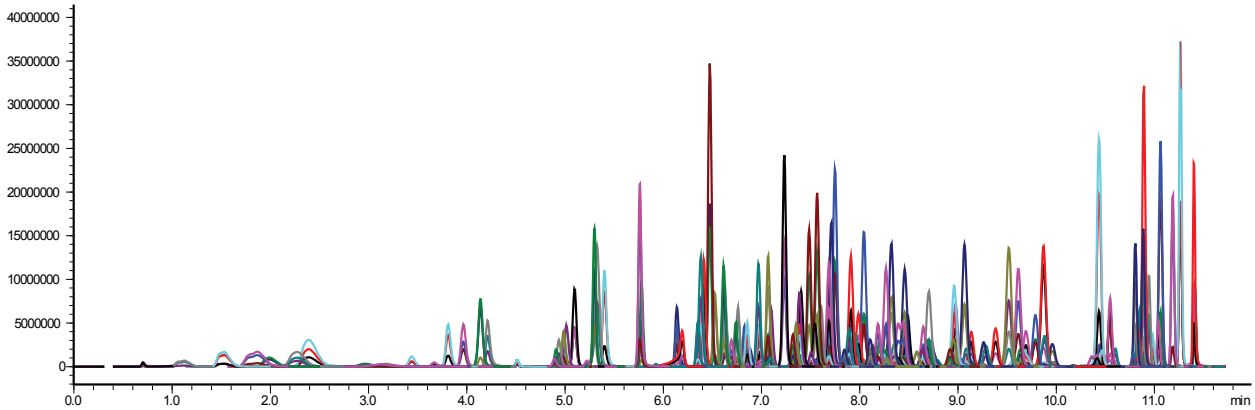
Terpenes in Butane Hash Oil (BHO)

GCMS-QP2020 Gas Chromatograph Mass Spectrometer

Pesticide Screening

Pesticides are used in commercial cannabis grow operations to kill insects and spiders that thrive on cannabis plants. Pesticides are carcinogenic and mutagenic, causing serious harm to cannabis consumers, especially immuno-compromised medicinal cannabis users. Shimadzu offers the most sensitive and comprehensive pesticide screening and confirmation available utilizing Liquid Chromatograph-Mass Spectrometry (LC-MS).

Offering excellent sensitivity and throughput, the ultra-low detection limits provided by Shimadzu LC-MS make this technique ideal for the analysis of pesticides commonly employed during cannabis cultivation.



High--sensitivity LC-MS/MS analysis of 211 pesticides in cannabis dry product in less than 12 minutes using a Shimadzu LCMS-8050 triple quadruple mass spectrometer

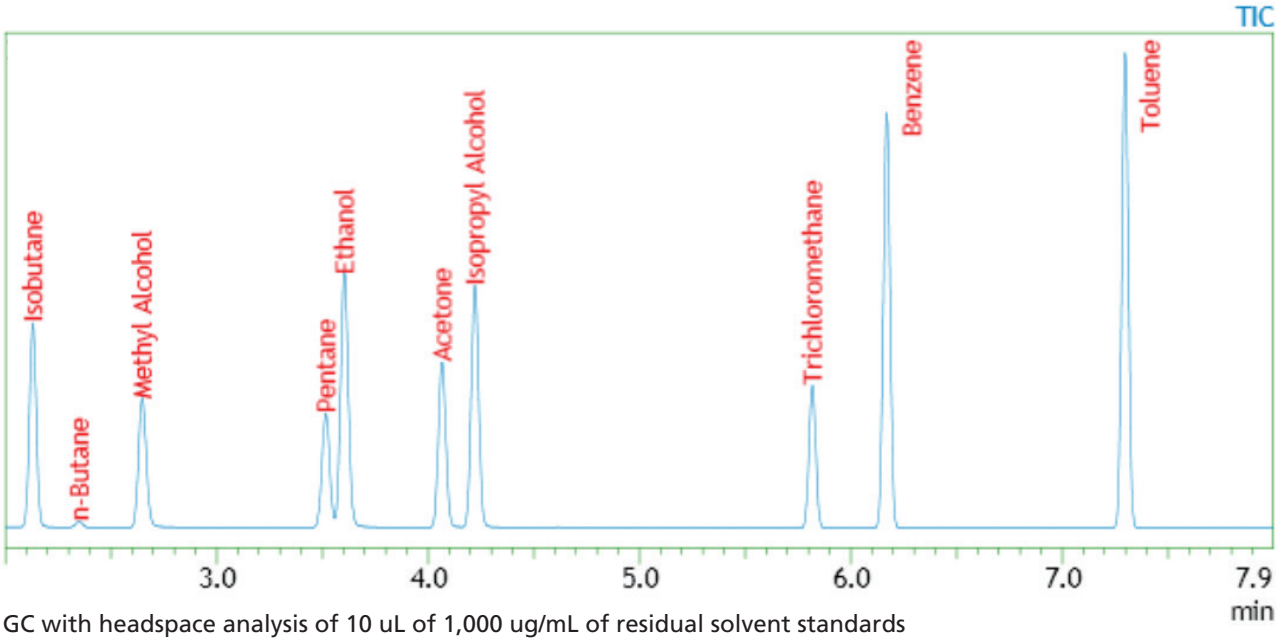
LCMS-8050 Triple Quadrupole Mass Spectrometer

Choose the triple quadrupole GCMS-TQ8040 with an AOC-6000 autosampler for volatile pesticides analysis.

Residual Solvents

Residual solvents are leftover chemicals from the process used to extract cannabinoids and terpenes from the plant. The solvents are evaporated to prepare high-concentration oils and waxes. Sometimes, the evaporation process does not remove all of the solvent. Since these solvents are not safe for human consumption, it is important to verify their absence so you can guarantee you are providing a safe, chemical-free product.

The Shimadzu GC-2010 Plus with a HS-20 headspace unit enables rapid identification and quantitation of very low concentrations of residual solvents.



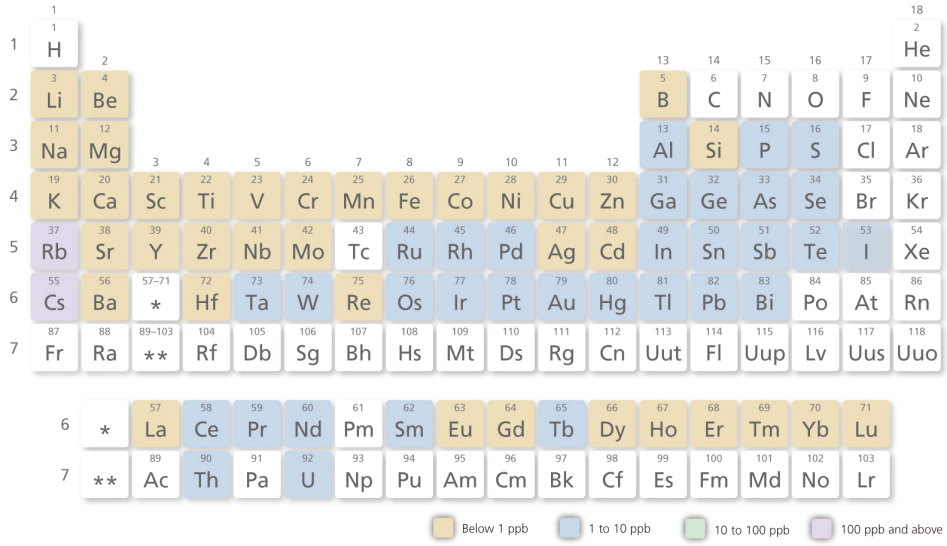
GC with headspace analysis of 10 uL of 1,000 ug/mL of residual solvent standards

GC-2010 Plus with HS-20 Headspace Sampler

Heavy Metals Testing

Metals can be found in soil and fertilizer. As cannabis plants grow, they take up metals from the soil. 'Heavy metals' are a group of metals considered to be toxic and include lead, cadmium, arsenic and mercury. Laboratory testing helps to ensure that your products are free from toxic concentrations of these hazardous metals.

There are several ways to determine trace metals in plant material, all requiring a preliminary acid digestion. Ultrasonic Nebulizer Inductively Coupled Plasma Optical Emission Spectrometry (USN-ICP-OES) or Mass Spectrometry (ICP-MS) methods are capable of rapidly analyzing all heavy metals. State requirements will determine which instrument you need. USN-ICP-AES is the easiest to use, while ICP-MS is the most sensitive.



ICPMS-2030 Inductively Coupled Plasma Mass Spectrometer

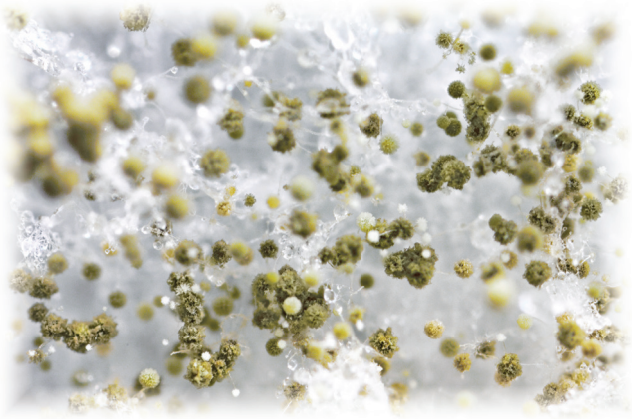
Moisture Content & Precision Weighing

Moisture can be extremely detrimental to the quality of stored cannabis products. Dried cannabis typically has a moisture content of 10-12%. A moisture content above 12% is prone to mold growth.

The moisture content of a variety of cannabis samples can be measured using Shimadzu MOC63u (and MOC-120H) balances. The MOC63u is applicable to a variety of cannabis products and its' long-life and high-power halogen heater provides quick and accurate measurement.

We offer a complete line of balances, from top-loading to analytical.

Mycotoxins Analysis



Since cannabis has a high moisture content, long term storage of the material can allow for fungal growth known as mold. Mycotoxins are a toxic secondary metabolite of mold. Aflatoxins are a subset of mycotoxins which are found in soils and decaying vegetation. Regulatory bodies have placed restrictions on the allowable limits present in food.

An LCMS-8050 offers the cannabis lab the ability to rapidly test for mycotoxins achieving the ultralow levels of detection needed.

LCMS-8050 Triple Quadrupole Mass Spectrometer

Research Platforms

Does your facility need capabilities beyond the standard quality control lab? Shimadzu offers a wide variety of research instrumentation that allows you to be at the forefront of cannabis research. Having these advanced tools at your fingertips gives you access to the most advanced technology available.

Online SFE-SFC-LC-MS/MS

Nexera UC (Integrated Chromatography) integrated Supercritical Fluid Extraction-Chromatography Mass Spectrometry reduces sample preparation steps, simplifies detection of isomeric and chiral compounds, and enables simultaneous analysis of various compounds in cannabis products.

MALDI-TOF MS

Cannabis can be home to a host of different microorganisms. MALDI instrumentation is the primary research tool for microbial identification utilizing the iD^{plus} database software.

Preferred testing techniques and applicable laboratory instrumentation.

Potency Testing – HPLC

Terpene Profiling – GCMS

Pesticide Screening – LCMS or GCMS

Residual Solvents – GC or GCMS

Heavy Metals – ICPMS

Moisture Content – Moisture Balance

Mycotoxins Analysis – LCMS

Research Platforms – Variety of Platforms

www.GrowYourLab.com

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