



Cannabis Testing Methods and Specifications

Test	Method	Validated on Cannabis	Validated on Cannabis oil	Specification or Limit
Potency	A dried and homogenized portion of cannabis or an aliquot of cannabis oil is extracted with methanol and diluted appropriately and analyzed by HPLC/MS/MS.	Yes	Yes	Not Applicable
Cannabinoid Profile	A dried and homogenized portion of cannabis or an aliquot of cannabis oil is extracted with methanol and diluted appropriately and analyzed by HPLC/MS/MS.	Yes	Yes	Not Applicable
Pesticides	A homogenized portion of cannabis or an aliquot of cannabis oil is extracted with acetonitrile and diluted appropriately and analyzed using both HPLC/MS/MS and GC/MS/MS.	Yes	Yes	Health Canada
Metals	A dried and homogenized portion of cannabis or an aliquot of cannabis oil is digested with nitric and hydrochloric acids in a closed vessel microwave digestion system to completely dissolve the material in an aqueous matrix. The digested material is diluted appropriately and analyzed by ICP-MS.	Yes	Yes	USP-232

Microbial analysis	The cannabis oil or a dried and homogenized sample of cannabis is collected in a sterile container. An aliquot of this sample is lysed with DNA extraction buffer to release the total genomic DNA. Probe-based qPCR is used to detect and quantify the presence of microbes from the extracted DNA.	Yes	Yes	USP-2023
Mycotoxins/aflatoxins	A homogenized portion of cannabis or an aliquot of cannabis oil is extracted with acetonitrile, diluted appropriately and analyzed by HPLC/MS/MS.	Yes	December 2019	USP-561
Terpene Profile	A homogenized portion of cannabis as received by the client or an aliquot of cannabis oil is extracted with methanol, diluted appropriately and analyzed GC/MS.	Yes	Yes	Not applicable
Water Activity	A portion of the plant material as received by the client is added to a sealed chamber in which a laser determines the vapor pressure in the headspace that correlates to the Water Activity.	Yes	Not applicable	Not applicable
Moisture (loss on drying)	Gravimetric: The difference in weight after drying material at 105 C or freeze-drying.	Yes	Not applicable	Not applicable

Residual Solvents	An aliquot of cannabis oil is added to a septum sealed vial and air in the vial headspace is analyzed by GC/MS and GC/FID.	Not applicable	Validated for pentane, ethanol, ethyl acetate, isopropanol, acetone, ethyl ether and heptane. December 2019 - butane and propane	Health Canada
Foreign Material	The sample is visually examined for any foreign material. Any foreign material identified is photographed. Result is reported as <5% or >5%.	Yes	Not Applicable	Not applicable
Plant Gender	A leaflet (cotyledon) is collected from seedling as early as the formation of the second set of true leaves. The leaf is lysed with DNA extraction buffer to release the total genomic DNA. Probe-based qPCR is used to detect the presence of any male plants from the extracted DNA.	Yes	Not Applicable	Not Applicable

Notes:

- HPLC/MS/MS: High Performance Liquid Chromatography, tandem mass spectrometry
- GC/MS/MS: Gas Chromatography, tandem mass spectrometry
- GC/FID: Gas Chromatography, Flame Ionization Detector
- ICP-MS: Inductively Coupled Plasma Mass Spectrometry
- qPCR: quantitative Polymerase Chain Reaction
- Microbial analysis includes Gram-negative bacteria, E. coli, Salmonella spp., Total Aerobic Bacteria, Yeast and Mold. Testing for P. aeruginosa and S. aureus are not yet validated.
- The laboratory is ISO 17025 accredited by the Canadian Association for Laboratory Accreditation (CALA) for specific tests as listed on the CALA website. Currently this includes metals on cannabis and metals on cannabis oil. Tests for potency, cannabinoid profile, pesticides and microbials (excluding P. aeruginosa and S. aureus) have been assessed and should be accredited by the end of 2019.
- The laboratory is not GMP certified but is looking to obtain GMP certification. GMP certification is anticipated in 2020.
- The laboratory reports against USP criteria unless otherwise specified (e.g., Health Canada Pesticide Active Ingredients List and Limits).