



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, diluted appropriately and analyzed by HPLC/MS/MS. Results are reported on an as-received basis (not corrected for moisture content) unless otherwise requested by the client.	Yes	Yes	Not Applicable
Cannabinoid Profile	A dried and homogenized portion of cannabis or an aliquot of cannabis oil is extracted with methanol, diluted appropriately and analyzed by HPLC/MS/MS. Results are reported on an as-received basis (not corrected for moisture content) unless otherwise requested by the client.	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

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Microbial Analysis	The cannabis oil or a dried cannabis sample is collected in a clean container. A specific amount of this sample is cultured in media. Microbial counts are determined via presence/absence or dilute-to-specification methods by adding aliquots of this sample solution to organism-specific test vials. Additional confirmation analyses are performed for positive samples.	No, end of June 2020	No, end of June 2020	*USP-2023
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
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	Yes	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, which correlates to the Water Activity.	Yes	Not Applicable	Not Applicable
Loss on Drying (Moisure)	Gravimetric: The difference in weight between the material as received and after drying it at 105° C.	Yes	Not Applicable	Not Applicable

Residual Solvents	Cannabis oil or concentrate is diluted with N,N-dimethylacetamide and measured into a headspace vial. The vial is then heated and agitated. A portion of the headspace is subsequently analyzed by GC/MS/FID.	Not Applicable	Yes	Not Applicable
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
Rancidity	Peroxide value gives the measure of rancidity in oils and fats. It is determined using Iodometric Titration. Anisidine value (AV) is a measure of the aldehyde levels in an oil or fat. It is determined by reacting a solution of oil or fat in iso-octane with p-anisidine in glacial acetic acid to form yellowish reaction products and then analyzed for absorbance at 350 nm.	Not Applicable	Yes	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/MS: Gas Chromatography, mass spectrometry
- GC/FID: Gas Chromatography, Flame Ionization Detector
- ICP-MS: Inductively Coupled Plasma Mass Spectrometry
- qPCR: quantitative Polymerase Chain Reaction
- Potency analysis includes THC, THCA, CBD, CBDA, Total THC, Total CBD
- Cannabinoid Profile analysis includes THC, THCA, CBD, CBDA, CBC, CBCA, CBDV, CBG, CBGA, CBN, THCV, THCA, Δ8-THC, Total THC, Total CBD, Total CBG
- Pesticides analysis includes all 96 Health Canada regulated pesticides
- Metals analysis includes just the heavy metals (As, Cd, Pb, Hg) or the full metals scan

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- Microbial analysis includes Gram-negative bacteria, E. coli, Salmonella spp., Total Aerobic Bacteria, Total Yeast and Mold, P. aeruginosa and S. aureus
 - * Analysis method follows USP-2023 (10 grams of sample analyzed) unless otherwise specified by the client
- Aflatoxins analysis includes B1, B2, G1, G2, Total Aflatoxins
- Terpene profile analysis includes a list of 22 terpenes
- There are two analysis packages available for residual solvent:
 - Package 1 includes 1,2 dichloroethane, 2-propanol, acetone, acetonitrile, benzene, chloroform, cyclohexane, ethanol, ethyl acetate, ethyl ether, heptane, hexane, xylenes, methylene chloride, pentane, toluene, trichloroethane
 - Package 2 includes propane, iso-butane, n-butane, butane (sum of n- and iso-)
- Rancidity analysis includes anisidine value, peroxide value and Total Oxidation (Totox)
- 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/cannabis oil, cannabinoids (including potency) on cannabis/cannabis oil, pesticides on cannabis/cannabis oil, microbial analysis (excluding P. aeruginosa and S. aureus) on cannabis
- The laboratory is not GMP certified but is working on obtaining GMP certification
- The laboratory reports against USP criteria unless otherwise specified (e.g., Health Canada Pesticide Active Ingredients List and Limits)

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