

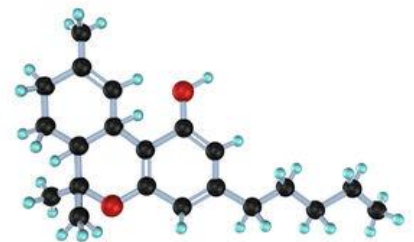


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Milford, MA - ProVerde Laboratories (www.proverdelabs.com) has participated in the fall 2017 version of the Emerald Test® for analyzing key contaminants and target analytes within cannabis regulatory testing protocols. ProVerde took part in four individual proficiency programs to analyze cannabinoid, pesticide, heavy metals, and terpene concentrations in cannabis matrices to prove reliability of ProVerde advanced analytical techniques. ProVerde measures important biologically active, and potentially toxic compounds found on the plant or in plant extracts. "The best science in the business," has earned ProVerde three new Emerald Test® badges for competency and accuracy in measuring cannabinoid potency levels, heavy metals levels, and pesticide concentrations. Emerald badges for terpene analysis were not issued to any lab during this round of proficiency testing.

Data analysis was carried out by the American Oil Chemists' Society (AOCS). After calculating average scores, mean deviations and a few other parameters, AOCS assigns each lab an absolute Z score ($|Z|$) for each component measured. An absolute Z score below ± 3.0 shows that the lab is statistically producing quality data and accurately measuring the target components in comparison to competitor laboratories. The samples for analysis were prepared by an ISO 17043 accredited proficiency test provider and data analysis was conducted to ISO 13528:2015 standards.

The main cannabinoids analyzed included $\Delta 9$ -THC, THCA, total THC, CBD, CBDA, total CBD, and CBN from a sample spiked with an unknown concentration. The cannabinoid test samples were prepared in a range between 10-100 $\mu\text{g}/\text{mL}$. ProVerde measured the analytes between 98.5 - 102.0% recovery with $|Z|$ scores between 0.111 and 0.632 for each cannabinoid measured.



Many laboratories across the country and throughout the world have varying degrees of difficulty measuring pesticide contamination on cannabis. ProVerde has shown that previous methods of analyzing pesticides in the agricultural industry for items including corn, hops, other vegetables, and leafy greens do not translate to accurately measuring those same pesticide contaminants on cannabis. ProVerde used an ultra-performance liquid chromatography method along with new and creative processing techniques to analyze and quantify Abamectin, Azoxystrobin, Bifenazate, Etoxazole, Imazail, Imidacloprid, Malathion, Myclobutanil, Spinosad, Spiromesifen, Spirotretsamat, Tebuconazole, Bifenthrin, Daminazide, Fenoxycarb, Paclobutrazol, Pyrethrins, Thiamethoxam, and Trifloxystrobin. ProVerde |Z| scores for analyzing each pesticide ranged from 0.054 to 2.025. ProVerde labs goes a step beyond the rest to measure and quantitate more harmful pesticides than required by state regulation and keep patients safe.

ProVerde uses gas chromatography solutions such as GC-FID and GC-MS to accurately measure terpene concentrations in cannabis flower and cannabis concentrates. As cannabis science is explored, many researchers believe terpenes function similarly to cannabinoids and modulate the effect a user feels when consuming medicine. Hemp oil with a combination of ten (10) terpenes was analyzed to satisfy proficiency testing. Badges were not issued by Emerald/AOCS due to wide spread in data compared to target reference values. ProVerde performed very well with this assay compared to nationwide labs and maintained z-score values between 0.016 and 2.1.

Contact ProVerde Laboratories with questions and inquiries about analytical testing services, extraction, and consulting services.

