Rapid QCanna™: A Rapid Point-of-Need Lateral Flow Assay for Presumptive Semi-Quantitative Detection of *Aspergillus* in Cannabis Flower and Laboratory Environmental Monitoring

ABSTRACT

Microbial contamination remains one of the leading causes of cannabis product failures, resulting in costly product holds, recalls, production delays, and manufacturing environment issues. While regulatory compliance relies on accredited third-party laboratory testing for final product release, manufacturers often lack a rapid tool to proactively assess contamination during production or monitor laboratory environments before contamination becomes established. Rapid QCanna™ was developed to address this unmet need by providing a rapid internal quality control (QC) screening assay for the presumptive semi-quantitative detection of *Aspergillus* in cannabis flower and laboratory environments.

The Rapid QCanna™ lateral flow immunoassay is intended for internal QC testing to monitor product and environment, enabling cultivators, processors, manufacturers, and testing laboratories to identify potential *Aspergillus* contamination prior to final release testing and before environmental contamination can proliferate. Results are available in less than 30 minutes, allowing immediate corrective actions without waiting days for traditional microbiological culture or molecular laboratory results.

Analytical performance was evaluated using two independent lots of ZeptoMetrix normalized *Aspergillus* standards (Catalog No. CMQC-031) to demonstrate assay reproducibility across industry-standard reference materials. Semi-quantitative analysis was performed using the Rapid QCanna™ Reader, providing objective digital interpretation and numerical results that minimize user subjectivity while generating data suitable for routine quality documentation.

Figure 1. Representative Rapid QCanna™ Aspergillus assay results — ZeptoMetrix Cannabis Standards, Lot LN250903 (Cat. No. CMQC-031).

Zeptometrix Cannabis Standards (PN CMQC-031 / LN250903)

Sample (cfu/mL)	#	TL	CL	App - TL	App - CL
Aspergillus-10^4	1			5.33	34.6
Aspergillus-10^4	2			5.7	39.6
Negative	3			0.64	30.7
Negative	4			0.66	32.5
Negative	5			0.64	33.4

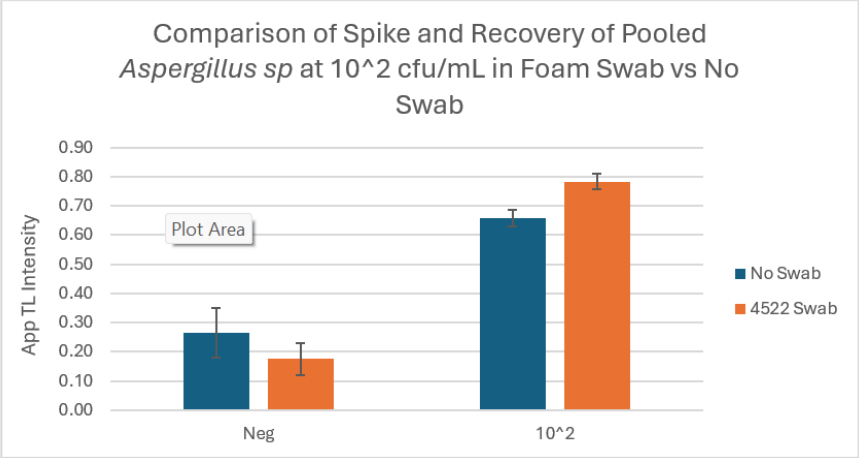
Figure 2. Representative Rapid QCanna™ Aspergillus assay results — ZeptoMetrix Cannabis Standards, Lot LN260318 (Cat. No. CMQC-031).

Zeptometrix Cannabis Standards (PN CMQC-031 / LN260318)

Sample (cfu/mL)	#	TL	CL	App - TL	App - CL
Negative	1			0.78	29.6
Aspergillus-10^4	2			4.40	31.13
Negative	3			0.50	33.54
Negative	4			0.75	31.84
Aspergillus-10^4	5			4.50	30.75

The assay demonstrated analytical detection of *Aspergillus flavus, A. fumigatus, A. niger,* and *A. terreus* in buffer with limits of detection down to 10^2 CFU/mL, while performance in cannabis flower demonstrated detection down to 1,000 CFU/g following rapid extraction. Laboratory environmental monitoring was evaluated using polyurethane foam swabs in spike-and-recovery studies, successfully detecting surface contamination at 10^2 CFU/mL, supporting routine monitoring of laboratory benches, equipment, processing areas, HVAC-accessible surfaces, and other environmental sampling locations.

Figure 3. Comparison of spike-and-recovery of pooled Aspergillus sp. at 10² CFU/mL in foam swab vs. no swab.



Beyond rapid screening, the Rapid QCanna™ Reader creates a digital record of each test, enabling facilities to trend microbial data over time, identify recurring contamination patterns, monitor sanitation effectiveness, evaluate process improvements, and establish facility-specific action thresholds. This data-driven approach supports continuous quality improvement while strengthening preventive quality management programs.

As an internal QC tool, Rapid QCanna™ is not intended to replace accredited confirmatory testing for regulatory product release; rather, it serves as an early-warning system that helps manufacturers reduce risk, improve operational efficiency, and make informed decisions before submitting samples for final compliance testing. Routine implementation of proactive product and environmental screening also demonstrates enhanced due diligence to regulatory agencies, auditors, and quality management programs, providing documented evidence of ongoing microbial surveillance and a commitment to preventive quality control.

By combining rapid results, standardized reference materials, objective reader-based analysis, and digital trend reporting, Rapid QCanna™ offers a practical solution for strengthening microbial quality assurance programs throughout the cannabis production lifecycle while helping organizations identify contamination earlier, reduce operational risk, and improve overall confidence in product quality.