

Meeting the Need for Accurate Cannabis Microbial Testing

Cannabis is increasingly becoming legal at the state level in the U.S., for medical or recreational use. A central question is how to ensure the safety of a new product that is not covered under any existing federal safety guidelines. In the absence of such guidance, regulators in each state have produced a unique set of rules and regulations (if they have produced any at all) that are not typically grounded in scientific research. The major safety threats to Cannabis products are bacterial pathogens such as *Salmonella* and Shiga toxin-producing *Escherichia coli* (STEC), fungal and bacterial spores, and toxins.



As a pioneer in Cannabis science, CW Analytical was one of the first laboratories of its kind to serve the Cannabis industry and tackle this lack of regulatory testing guidelines. The company was cofounded in 2009 by two scientists who noticed that the Cannabis industry in California was lacking the regulatory and quality assurance practices necessary to ensure the availability of clean, safe Cannabis products. CW Analytical's team of scientists and experts has been providing stakeholders in California with important information about the safety, quality, and potency of Cannabis products long before any state mandate. The company's commitment to continuous innovation and technical development has led to the achievement of ISO/IEC 17025:2005 accreditation, collaborative research, and the procurement of state-of-the-art analytical instruments to keep CW Analytical and their clients at the forefront of regulatory compliance.

CW Analytical's continued success is due to its commitment to providing clients with accurate, affordable data paired with unrivaled customer service. The company's mission is to enable clients to better serve its customers and compete in the Cannabis marketplace with the safest, cleanest, and most consistent Cannabis products in California.

When considering its testing needs, CW Analytical evaluated the California Cannabis requirements as well as additional quality assurance measures it felt important to offer in the industry. As the company was utilizing culture-based methods for all *Salmonella* and STEC screening, it soon realized that a faster, validated method was needed. The company decided to partner with Bio-Rad after evaluating different pathogen detection options based on their utilization of microbiological methodology (i.e., pre-enrichment for screening of pathogens), ease of use and throughput potential in the routine laboratory, cost, and publication of validated methods. Bio-Rad products fit all of these criteria for choosing a system to detect *Salmonella* and STEC in a routine laboratory.

Taking the Lead

Bio-Rad has taken a strong lead in pathogen testing, providing their full portfolio of detection systems, including commercial PCR kits (iQ-Check) and instrumentation which can provide results in 24 hours.

CW Analytical currently uses the iQ-Check *Salmonella* II and STEC VirX PCR kits, CFX96 Touch Deep Well thermal cycler, and CFX Manager IDE software to screen for *Salmonella* and STEC with not only confi-

dence but with ease as well. It has allowed the company to incorporate PCR into the microbiological methods used in the laboratory with assurance and efficiency.

These products are based on the fast, sensitive, and proven technology of real-time PCR. The kit is intended for detecting *Salmonella* spp. and pathogenic *E. coli* in a large variety of food products. The kit uses an optimized system of primers and probes to ensure high specificity and eliminate cross-reactions. It is designed as a multiplex reaction that includes an internal amplification control that is co-amplified in parallel with the target DNA for a reliable result. The iQ-Check protocol has been validated by several certification bodies. These validation studies have shown that the kit is equivalent to or better than the various reference methods evaluated and provides results in much less time.

A Perfect Partnership

When asked to describe the benefits of using Bio-Rad's products, Emily Savage, laboratory manager at CW Analytical, states that the products are easy to use, the developed protocols are sufficiently straightforward such that many individuals can be easily trained to perform them, the products are rapid and have incorporated accurate assays, and gold standard microbiological methodologies are utilized. She notes that Bio-Rad also provides excellent customer service.

"Bio-Rad has provided excellent customer service with us throughout the entire process. The training provided after we purchased the instrument was extremely helpful. Since then, all of our interactions with Bio-Rad have remained positive. The assays we utilize in our laboratory are effective and streamlined into our routine laboratory workflow with ease. Lastly, we have fostered a mutually beneficial and collaborative relationship with Bio-Rad that is appreciated by all at CW Analytical."

As molecular methods for pathogen detection continue to improve, emerging pathogens are being described around the world in molecular terms. The use of real-time PCR methods has the benefit of automation, high sensitivity, high precision, and accuracy, plus the flexibility to simultaneously test for more than one pathogen. With these advantages, CW Analytical can offer better laboratory services to the Cannabis industry.