



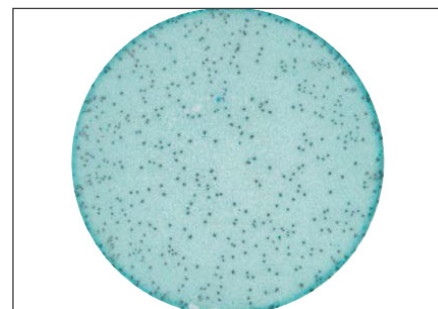
Microbial Testing for CBD Products

EMSL Analytical, Inc. has a team of highly experienced laboratory professionals including microbiologists, chemists and materials testing experts that can analyze a wide variety of food, consumer products, cosmetics, and pharmaceutical samples. Cannabidiol (CBD) Oil is currently being used in a variety of food, vitamins, and personal care products. EMSL offers a wide range of microbial analysis options suitable for testing CBD products. Below is an overview of some of the more common microbial tests that follow AOAC International Methods.

Aerobic Plate Count (APC)

This test results in an enumeration of the total aerobic bacterial population of a sample. No bacterial identifications are made, however, the resulting CFU (colony forming unit) count can be applied to internal acceptance criteria for a product or environmental samples. This is also a useful test to gauge freshness of a product or validate sanitation procedures.

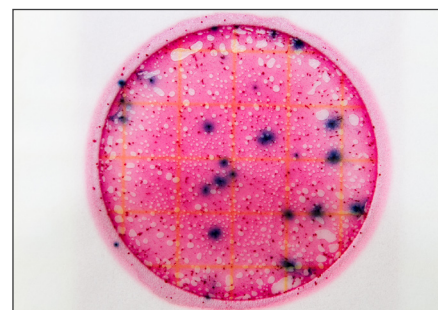
AOAC Method: 990.12 – Petrifilm
EMSL Test Code: F102 – Quantification
Minimum Sample Quantity: 50g
Sample Retention Time: 30 days, unless highly perishable

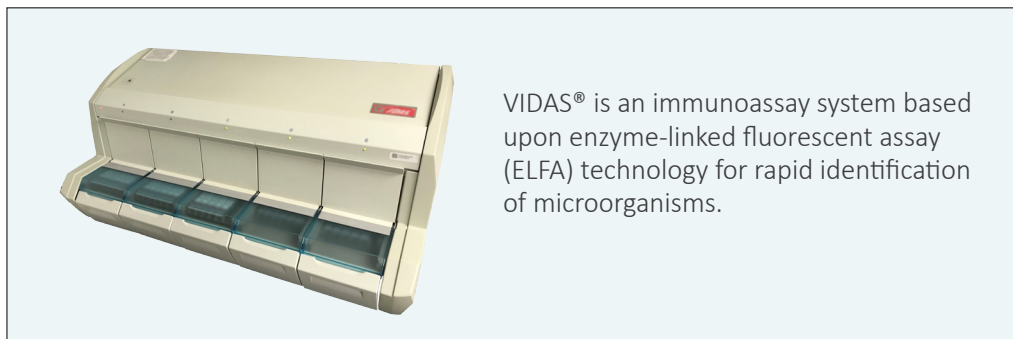


Total Coliform and *E. coli*

Coliforms are often referred to as “indicator organisms”. Their presence in the environment can indicate that conditions are favorable for objectionable organisms to be present. Generic *E. coli* is also a coliform, but of fecal origin. The presence of generic *E. coli* in a sample indicates fecal contamination. The Total coliform/*E. coli* test is a fast and inexpensive way to assess the cleanliness of an environment or food, and can also be used to gather information regarding the potential for other contamination.

AOAC Method: 991.14, 998.08 – Petrifilm
EMSL Test Code: F104 – Quantification
Minimum Sample Quantity: 50g
Sample Retention Time: 30 days, unless highly perishable





VIDAS® is an immunoassay system based upon enzyme-linked fluorescent assay (ELFA) technology for rapid identification of microorganisms.

Listeria

Listeria is an organism that is ubiquitous in the environment. Unlike some other food related pathogens, it is not disseminated from animals. For high risk populations (the very old, the very young, pregnant and immunocompromised) a low level amount of *Listeria* in food can be highly dangerous. *Listeria monocytogenes* is the most pathogenic of the species.

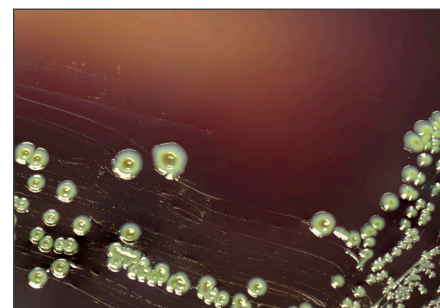
L. monocytogenes has been associated with foods such as raw milk, pasteurized milk, cheeses (particularly soft-ripened varieties), ice cream, raw vegetables, fermented raw-meat sausages, raw and cooked poultry, raw meats (all types), and raw and smoked fish. Its ability to grow at temperatures as low as 3°C (37°F) permits multiplication in refrigerated foods.

AOAC Method: 2013.10 – VIDAS® (LPT)

EMSL Test Code: F107 – Presence/Absence

Minimum Sample Quantity: 50g

Sample Retention Time: 30 days, unless highly perishable



Salmonella

There is a widespread occurrence of *Salmonella* in animals, especially in poultry and swine. Environmental sources of the organism include water, soil, insects, factory surfaces, kitchen surfaces, animal feces, raw meats, raw poultry, and raw seafoods, to name only a few. Raw meats, poultry, eggs, milk and dairy products, fish, shrimp, frog legs, yeast, coconut, sauces and salad dressings, cake mixes, cream-filled desserts and toppings, dried gelatin, peanut butter, cocoa, and chocolate are foods that have been associated with *Salmonella* outbreaks. All age groups are susceptible, but symptoms are most severe in the elderly, infants, and the infirm. Acquired Immunodeficiency Syndrome (AIDS) patients suffer salmonellosis frequently (estimated 20-fold more than general population) and suffer from recurrent episodes.

AOAC Method: 2013.01 – VIDAS® UP (STP)

EMSL Test Code: F106 – Presence/Absence

Minimum Sample Quantity: 50g

Sample Retention Time: 30 days, unless highly perishable





Total Yeast and Mold

Both yeasts and molds cause various degrees of deterioration and decomposition of foods. They are capable of invading and growing on virtually any type of food at any time; they attack crops such as grains, nuts, beans, and fruits in fields before harvesting and during storage. They also grow on processed foods and food mixtures. Their detectability in or on foods will depend on food type, organisms involved, and degree of invasion; the contaminated food may be slightly blemished, severely blemished, or completely decomposed, with the actual growth manifested by rot spots of various sizes and colors, unsightly scabs, slime, white cottony mycelium, or highly colored sporulating mold. Abnormal flavors and odors may also be produced. Occasionally, a food appears mold-free but is found upon mycological examination to be contaminated. Contamination of food by yeasts and molds can result in substantial economic losses to producer, processor, and consumer.

AOAC Method: 997.02– Petrifilm

EMSL Test Code: F103 – Presence/Absence

Minimum Sample Quantity: 50g

Sample RetentionTime: 30 days, unless highly perishable



Enterobacteriaceae

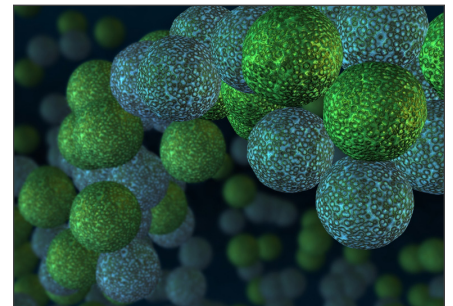
A taxonomically defined family, Enterobacteriaceae, is comprised of several Genera of bacteria including: *Citrobacter*, *Enterobacter*, *Erwinia*, *Escherichia*, *Klebsiella*, *Proteus*, *Salmonella*, *Shigella*, and *Yersinia*. This group has been used for years in Europe as indicators of food quality and as indices of food safety. The practice is also being adopted in the United States.

AOAC Method: 2003.01 – Petrifilm

EMSL Test Code: F111 – Quantification

Minimum Sample Quantity: 50g

Sample Retention Time: 30 days, unless highly perishable



Questions

Call: 800-220-3675

Email: info@emsl.com

