

Microbial price sheetPlease email info@twinarborlabs.com for pricing

- A** Aerobic plate count (culture method)
Anaerobic plate count – Mesophilic (culture method)
Aspergillus (A. niger, A. terreus, A. fumigatus, A. flavus) (RT-qPCR)
- B** Bacillus cereus (culture method)
Bile-tolerant acid bacteria (culture method)
- C** Campylobacter jejuni (RT-qPCR) 25g
Campylobacter jejuni (RT-qPCR) 325g
Coliform (culture method)
Candida albicans (culture method)
- D** Disinfectant efficacy (liquid and UV) ASTM time kill assay
- E** E. coli (culture method)
E. coli O157:H7 (RT-qPCR) 25g
E. coli O157:H7 (RT-qPCR) 375g
 ○ *E. coli O157:H7 culture confirmation if RT-qPCR is positive*
Enterobacteriaceae (culture method)
Enterococcus spp. (culture method)
- L** Lactobacillus spp. (culture method)
Listeria spp. (RT-qPCR) 25g
Listeria spp. (RT-qPCR) 125g
 ○ *Listeria spp. culture confirmation if RT-qPCR is positive*
Listeria monocytogenes (RT-qPCR) 25g
Listeria monocytogenes (RT-qPCR) 125g
 ○ *Listeria monocytogenes culture confirmation if RT-qPCR is positive*
- M** Minimum inhibitory concentration (MIC): one drug
- N** Non-O157:H7 E. coli (STEC family panel) 25g
Non-O157:H7 E. coli (STEC family panel) 375g
Non-O157:H7 E. coli (STEC panel 1: O26, O111, O121)
Non-O157:H7 E. coli (STEC panel 2: O45, O103, O145)
- P** Pseudomonas aeruginosa (culture method)
- S** Salmonella spp. (RT-qPCR) 25g
Salmonella spp. (RT-qPCR) 375g
 ○ *Salmonella spp. culture confirmation if RT-qPCR is positive*
Spore former plate count (culture method)
Staphylococcus aureus (RT-qPCR)
 ○ *Staphylococcus aureus culture confirmation if RT-qPCR is positive*
- U** USP 51 preservative efficacy neutralization validation
USP 51 preservative efficacy
USP 51 additional challenge microorganisms
- W** Water activity
- Y** Yeast and mold plate count (culture method)
Yersinia enterocolitis (culture method)

**For environmental swab or sponge testing, please request quote. Pricing depends pathogen, test method, and whether the client requires a swab or sponge sampling kit. **Pricing and offerings are subject to change without notice.*

Aspergillus (pathogenic sp.)

qPCR

Aspergillus is a group of ubiquitous fungal organisms found in soil and other settings. Some Aspergillus spp. have the capacity to cause disease in humans, known as aspergillosis. Our laboratory utilizes genetic screening for the detection of the four main pathogenic Aspergillus spp. (*A. flavus*, *A. fumigatus*, *A. niger*, and *A. terreus*) in hemp products.

E. coli/ Coliform

Direct plating (AOAC 110402
CompactDry)

Coliform bacteria often are considered indicators of fecal contamination and can be found in the aquatic environment, in soil, and on vegetation. A related subset of the coliforms, fecal coliforms, often indicates the presence of *Escherichia coli* in water. The presence of this organism may be an indicator of fecal contamination and be related to use of polluted irrigation water, the presence of feces, or poor sanitation and hygiene. While coliforms themselves are not normally causes of serious illness, they are easy to culture, and their presence is used to indicate that other pathogenic organisms of fecal origin may be present. Consequently, the coliform group of organisms is recognized as the principal indicator of unsanitary conditions. Our laboratory utilizes chromogenic media for the detection and enumeration of *E. coli* and other coliforms in raw materials, finished products, or on environmental surfaces pertaining to food and related industries.

E. coli O157:H7

qPCR BAX (AOAC RI 031002)

Escherichia coli O157:H7 is a pathogen responsible for outbreaks of serious food-borne disease, due to the consumption of contaminated bovine (cattle) food products, produce (lettuce, sprouts), and raw milk. *E. coli* O157:H7 also survives well in the environment. Our laboratory utilizes genetic (qPCR) techniques to screen for *E. coli* O157:H7 in both food and environmental sources.

E. coli non-O157 STEC

qPCR BAX (AOAC RI 091301)

Escherichia coli is a diverse species of bacteria that includes non-pathogenic strains as well as strains possessing a wide variety of virulence factors that allows them to cause a heterogenous spectrum of disease in humans and animals. One such group of pathogenic *E. coli* are those that have acquired the ability to produce Shiga-like toxins 1 and/or 2 (Stx1 and/or Stx2), also known as Shiga toxin-producing *E. coli* (STEC). Historically, serotype O157 was the most commonly documented STEC serotype. However, not all STEC belong to this serotype. In the United States, O26, O45, O103, O111, O121, and O145 are considered to be the "top six" non-O157 STEC serotypes. Our laboratory utilizes genetic techniques (qPCR) to screen for non-O157 STEC in food and environmental sources.

Enterobacteriaceae

Direct plating (AOAC RI
012001 CompactDry)

The family Enterobacteriaceae is a large, diverse family of gram-negative bacteria that includes a wide variety of harmless symbionts and recognized pathogens. Enterobacteriaceae are usually considered by food manufacturers as hygiene indicators and therefore used to monitor the effectiveness of implemented preventive pre-requisite measures such as Good Manufacturing Practices and Good Hygiene Practices (GMP/GHP). Thus, the detection of these potentially pathogenic species is essential in ensuring food safety for consumers. Our laboratory utilizes chromogenic media that enables for the detection and enumeration of Enterobacteriaceae in raw materials, finished products, or on environmental surfaces pertaining to food and related industries.

Listeria monocytogenes and Listeria spp.

qPCR BAX (AOAC 121402, AOAC RI 081401) Direct plating (HardyChrome)

Listeria monocytogenes has become an important foodborne pathogen and it can be found in a variety of foods which include raw foods and processed foods. This bacterium is a serious threat to the food industry due to its ability to survive the most common food processing conditions such as extreme pH, high salt concentration, low water activity, and refrigeration temperatures. Food contaminated with L. monocytogenes has posed a great concern to the food industry as it can cause serious infection known as listeriosis when ingested, and it is also one of the causes of recalls which may result in large economic losses. Additionally, presence of other Listeria species in food is an indicator of poor hygiene. Our laboratory utilizes both traditional (direct plating) and genetic (qPCR) techniques to screen for both L. monocytogenes and Listeria species in raw and ready to eat food products and related industries.

Salmonella spp.

qPCR BAX (AOAC RI 081201), Direct plating (HardyChrome)

Salmonella is one of the most common sources of food poisoning. Salmonella bacteria are widely distributed in domestic and wild animals. They are prevalent in food animals such as poultry, pigs, and cattle. Salmonella can pass through the entire food chain from animal feed, primary production, and all the way to households or food-service establishments and institutions. Salmonella can be quite resilient, are not killed by freezing, and can also survive in acidic foods. The high resistance to drying, combined with a very high heat resistance once dried, makes Salmonella a potential problem in most foods, particularly in dry and semi-dry products (e.g. milk powder, spices etc.). It is therefore exceptionally important for all food manufacturers to rigorously test for Salmonella to ensure no contaminated products are released to the public. Our laboratory utilizes both traditional (direct plating) and genetic (qPCR) techniques to screen for Salmonella in a wide range of food products and related industries.

Total aerobic plate count (APC)

Direct plating (AOAC RI 010404)

The Aerobic Plate Count (APC) is used as an indicator of bacterial populations on a sample. APC does not differentiate types of bacteria but is used to gauge sanitary quality and adherence to good manufacturing practices. A low APC result does not mean the product or ingredient is pathogen free. However, some products or ingredients showing excessive or unusually high APCs may reasonably be assumed to be potential health hazards, pending pathogen screening results. Our laboratory utilizes traditional techniques (direct plating) to determination of total aerobic bacterial counts in raw materials, finished products, or on environmental surfaces pertaining to food and related industries.

Total yeast and mold

Direct plating (AOAC 100401 CompactDry)

Fungi (yeast and mold) are a large, diverse group of organisms that can live in a wide range of environments. Most fungi are obligate aerobes and can grow in broad pH and temperature ranges. This makes them capable of thriving in many types of foods, causing various degrees of food spoilage. Our laboratory utilizes chromogenic media for the isolation and enumeration of yeast and mold growth in raw materials, finished products, or on environmental surfaces pertaining to food and other related industries.