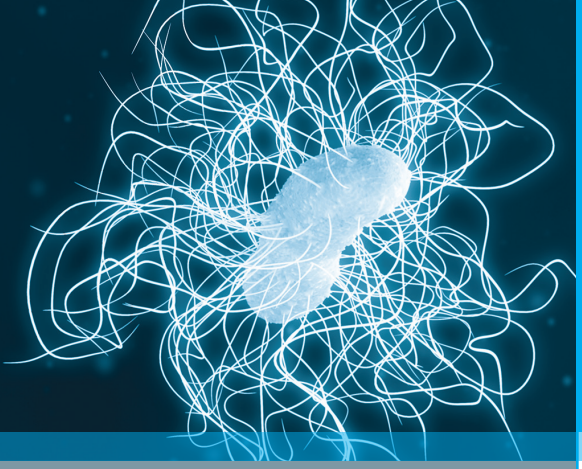

Hygiena Innovate System determines *Clostridium* bacteria presence better, faster than pour plates, Petrifilm plates and pH tests

Aseptic food processing is quickly becoming a preferred method over canning, freezing or concentration. This is largely due to decreased processing costs once aseptic operations go into place. The technique is now used for dairy, juice drinks, fruit purees and baby food, puddings, flavored drinks, edible oils, wine, mineral water, and other foods.

Ultra-high temperature (UHT), pasteurization, and aseptic filling systems can meet commercial sterility demands; but contamination can work its way into products after heat treatment, during manufacturing and production. Traditional microbial detection methods like plate culture are laborious and time-consuming, and indirect methods like pH readings require follow-up tests such as plate culture.

Hygiena's **Innovate System** performs high-throughput screening of products. It rapidly detects adenosine triphosphate (ATP), the energy-releasing molecule found in every living cell. To ensure only microbial ATP is counted, an enzyme breaks down the cell and isolates microbial ATP.

Once cell breakdown (lysis) is complete, only microbial ATP remains and is detected by the **Innovate System**. Results are obtained much faster than plate counts and are more direct measurements than pH readings—two traditional detection methods.

At a customer's request, Hygiena scientists compared **Innovate** to traditional agar, APC Petrifilm™ Plates, and pH measurement on a popular brand of non-dairy almond, soy vanilla and vanilla almond beverages:

- Agar-based plate culture is a long-used method for growing and identifying bacteria. While accurate, it is error- and contamination-prone, requires anaerobic incubation, and requires well-trained technicians, adding to the cost.
- Petrifilm Plates, a product of 3M™ Inc., simplifies traditional plate culture with a portable method to grow bacteria. The process is still lengthy, requiring incubation. To detect anaerobic organisms, incubation in anaerobic conditions is required. This adds material and cost.
- Measuring pH is a crude estimate of possible contamination. If pH levels shift in a sample, additional tests (often plate culture or other specific organism) must be conducted to point to a microbial cause of the shift in pH. Not all microorganism growth results in a pH shift.

This study found that the **Innovate System** was equal to traditional methods in detecting *Clostridium sporogenes* (a proxy bacteria for dangerous pathogens like *C. botulinum*). Innovate detection occurred at least 24 hours earlier than traditional agar-plate culture methods.

Product	Hygiena Innovate System	Agar (anaerobic)	3M APC Petrifilm Plate	pH
Unsweetened Almond	+	+	–	+
Soy Vanilla	+	+	–	+
Unsweetened Vanilla Almond	+	+	–	+

The study showed no significant difference between the **Innovate System** and traditional agar, Petrifilm Plates and pH methods in their ability to detect *C. sporogenes*. The **Innovate System** reduces testing costs, and provides results faster than traditional plate count technology and Petrifilm plates. **Innovate** significantly reduces product hold times and uncertainty of contamination, leading to significant cost savings.