3M Micro Messenger

Volume I 2001 *Published by 3M Microbiology Products*

3M Lactic Acid Test Meets Food Processors' Needs

Lactic acid bacteria is often the cause of diminished shelf life and degraded product quality in salad dressings, tomato-based products and processed meats. That's why processors of these high-acid/low-pH or vacuum-packed products place such high priority on continuous monitoring for the presence of these spoilage organisms at critical processing points. Many rely on 3M™ Petrifilm™ Aerobic Count Plates for their lactic acid bacteria testing to help achieve their goal of better process control and consistent product integrity and quality.

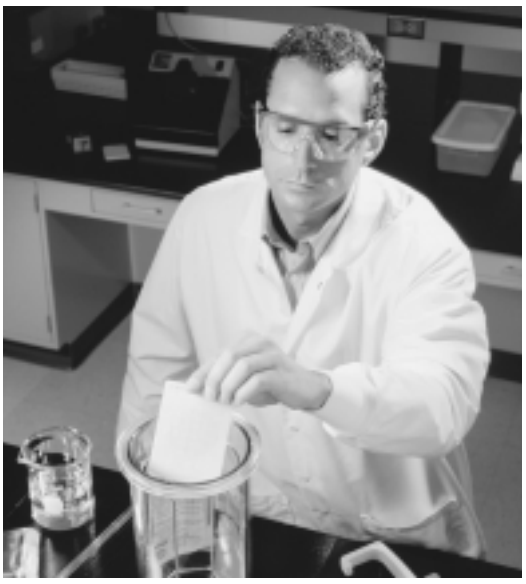
Petrifilm Plates Prove More Accurate, Faster

When used in combination with MRS broth diluent and anaerobic incubation, Petrifilm Aerobic Count plates can be used to differentiate gas-producing organisms (heterofermenters) from non-gas-producing organisms (homofermenters). In tests that compared the Petrifilm plate method with the traditional MRS method for recovering lactic acid bacteria in 161 naturally contaminated food products, the Petrifilm plate method demonstrated greater sensitivity in identifying gas production from obligate and facultative heterofermenters.

The Petrifilm plate method is easier, faster and produces more consistent results than other methods, explained Sandy McDonald, technical service representative, 3M Microbiology. "Some lactic acid bacteria produce very little gas. With the traditional MRS method, lab personnel often have to use wax plugs or saran-wrap-type coverings to hold gas in the MRS tube so that bacterial growth can be detected."

In contrast, the unique construction of Petrifilm plates enhances the growth of homo- and hetero-fermentative lactic acid bacteria and simplifies the procedure. The overlying film traps gas, making it easy to gauge gas-producing bacteria.

Petrifilm plates deliver faster results, too, McDonald noted. "Labs that use the traditional MRS method have to wait up to seven days for results. With Petrifilm Aerobic Count plates, lactic acid bacteria can be detected in 48 hours or less."



New 2x MRS Method Saves Materials, Time

Time is a critical factor in quality assurance. 3M's new 2x MRS method for identifying lactic acid bacteria offers processors significant savings in both time and materials, McDonald explained. "First, a double-strength MRS broth is prepared. Lab personnel then use a 1mL 3M™ Electronic Pipettor to draw up 0.5mL of the MRS broth, 0.5mL of their existing sample dilution and inoculate the Petrifilm plate. The remaining MRS broth can be saved and used for subsequent tests."

By eliminating MRS waste, this cost-efficient 2x procedure reduces material cost to a fraction of the cost of the traditional MRS method. Even more important is the time saved, said Kevin Habas, marketing manager, 3M Microbiology. "Efficient labor management is an important QA goal. Laboratory managers have reported to 3M that the 2x method with Petrifilm plates has helped them significantly reduce the number of hours needed to perform lactic acid bacteria tests."

Reinvestment of those saved hours into expanded quality assurance efforts has enabled managers to increase the return on their QA investment, Habas added. "With this added efficiency, processors have been able to monitor critical control points more frequently, resulting in better process control and, ultimately, higher-quality products."

For more information about lactic acid bacteria testing with Petrifilm plates and Electronic pipettors, call the 3M Customer Service Helpline at **1-800-228-3957** or visit **www.3M.com/microbiology**.

3M Managers Add Value to Corporate Accounts Worldwide

To effectively meet the needs of the growing number of multinational food processing companies, 3M Microbiology's Corporate Account Program has recently expanded to three regions. Qualified corporate accounts have a central quality department that is responsible for quality assurance procedures in multiple plant locations. Five corporate account managers currently oversee these countries:

Marcello Napol
Canada

Karine Demichelis
Europe

Ginny Huber
United States

Terry McCall
United States

David Rivera
United States

"Our corporate account managers work closely with corporate decision-makers worldwide who are responsible for coordinating activities at all levels in their facilities," said Rich Caruso, manager of the 3M Microbiology Corporate Accounts Program. "By focusing on their activities, we are able to form strong, mutually beneficial, long-term business relationships."

Maintaining effective communications at the customer's corporate level, as well as with key regional personnel, is a top priority, said Caruso. "We are the interface between our field representatives and corporate contacts to identify customer issues, business objectives and needs at all levels."

Depending on a customer's needs, the corporate account managers conduct quarterly or annual business reviews, providing them with an overview for each of their facilities. "We conduct financial analyses of plants to provide return-on-investment or impact reports. Based on documented savings in other plants, we can estimate how much lab time could be saved through use of 3M Petrifilm plates and recommend how that time could be used more productively," said Caruso.

Other added benefits from these business partnerships include streamlining orders to multi-plant facilities, assigning a dedicated technical service representative who helps lead training programs and address specific plant issues, offering the chance for initial product evaluations prior to introductions, and facilitating the customer link to other 3M businesses and services.

"The current climate of change and consolidation within the food industry has made these close business relationships more important than ever," concluded Caruso. "We are dedicated to being a valued resource to our corporate customers."

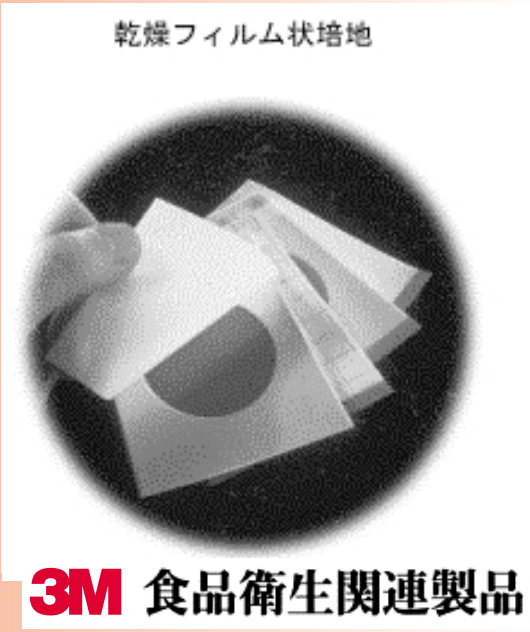
3M Japan Launches Web Site

3M Japan is pleased to announce the launch of their new web site:

www.mmm.co.jp/hc/microbiology.html

The Japanese site is directly linked to **www.3M.com/microbiology**, and also provides a convenient resource of detailed product and industry information for Japanese users of 3M Microbiology products.

The 3M Japan site provides yet another new and exciting channel of communication for 3M Microbiology around the world.



Good Things Come in Small Packages: The Importance of Lactic Acid Testing

By: Chuck Cooper

Quality Assurance Manager, Portion Pac Inc., Jacksonville, Florida

Consistent quality. Predictable portions. Convenience. Safety. Cost-effectiveness. These attributes of portion-controlled foods and condiments provide restaurateurs, foodservice operators and busy families with a strong sense of food security. Strict manufacturing processes and stringent quality assurance testing for both the package and the product inside make this level of trust possible.

Still, the risk of spoiled or contaminated products arriving in foodservice establishments and being served to consumers is always present. Spoilage is a natural phenomenon, and microorganisms—the bacteria, yeast and molds that naturally contaminate fruits, vegetables, milk and meat—are the major cause of food spoilage.

Although food spoilage caused by lactic acid-producing bacteria does not grab headlines the way outbreaks of *E. coli* and *Listeria* can, lactic acid bacteria can cause headaches for food processors when found in low-pH food products. Second to yeast in causing food spoilage in portion-controlled products, lactic acid microorganisms cause rapid degradation and substantial financial losses when those products must be destroyed or withheld from the market.

Since bacteria are found naturally on fruits and vegetables, detecting and preventing them from entering food-manufacturing processes and finished products is an everyday challenge—and every employee's responsibility.

Quality control ensures product specifications and quality standards are met during the manufacturing process. At the heart of quality control is product evaluation, which demands accurate and timely microbiological analysis. Without this evaluation, product specifications and standards are meaningless.

While new microbial detection technologies are constantly being introduced (e.g., techniques such as ELISAs—enzyme-linked immunosorbent assays and PCR—polymerase chain reaction), the use of microbial culture test methods remain the preferred instrument of food microbiologists for analyzing risk, validating hazard analysis critical control point (HACCP) and sanitation programs, and investigating sources of contamination.

Although food spoilage caused by lactic acid-producing bacteria does not grab headlines the way outbreaks of E. coli *and* Listeria *can, lactic acid bacteria can cause headaches for food processors when found in low-pH food products.*

When deciding which testing methodology to use, food microbiologists may consider several factors, including reliability, repeatability or reproducibility, validation and approval by AOAC INTERNATIONAL, and cost-effectiveness. In today's high-speed processing plants, speed and accuracy are also critical performance attributes.

Reliable test methods are critical because obtaining false negative results—having microbiological spoilage, but no data to identify the cause or substantiate the finding—has serious consequences. We conducted side-by-side tests with 3M™ Petrifilm™ Plates in our Jacksonville, Florida plant and experienced improved lactic acid bacteria recovery compared to traditional lactic agar plate methods. This facilitated the enhancement of Portion Pac's already thorough corrective action procedures and plant sanitation processes, and contributed to the further reduction of bacterial counts.

We also found that several products from 3M Microbiology helped streamline our testing and shortened result turn-around times. Our quality control departments now detect lactic acid bacteria more rapidly than traditional agar plate methods, trimming as many as three days from the process. When problems are detected, our plant personnel react more rapidly.

As the nation's largest manufacturer of portion-controlled condiments, Portion Pac is committed to safeguarding our products' reputations and customer satisfaction. The Jacksonville plant enjoys 100 percent customer satisfaction—a real source of employee pride. Fast, reliable testing for lactic acid bacteria plays an important role in delivering, high-quality portion-controlled products that meet and exceed customer expectations.

Technical Tips

Lactic Acid Testing with 3M™ Petrifilm™ Aerobic Count Plates

Q&A

1. Can I obtain an actual count of gas-producing lactic acid bacteria?

Yes, the Petrifilm plate lactic acid procedure makes it possible to count the number of heterofermenters (organisms that produce gas).

2. What should I use for an anaerobic chamber?

Any airtight chamber along with a gas pack will provide an anaerobic environment. BBL makes jars, and Mitsubishi produces small plastic boxes that can be used.

3. What kind of gas packs should I use for my anaerobic chamber?

Use any Hydrogen + Carbon Dioxide generating envelopes such as the ones produced by BBL # 71040. Do not use envelopes that utilize ascorbic acid, as the ascorbic acid tends to turn Petrifilm plates pink.

4. Can I make one sample dilution and use it for my lactic acid test along with my other microbial tests?

Yes, prepare your dilution as usual; first inoculate your other plates, then follow either the 2x MRS procedure or the 4x MRS procedure for your lactic acid test.

5. What is the difference between the 4x MRS and the 2x MRS procedure?

The 4x MRS procedure is the original procedure that made it possible to plate other bacteriological tests from the initial sample dilution. 4x MRS is added to the initial sample dilution **after** other microbial tests have been plated. The initial dilution, along with the MRS addition, can then be used to plate for lactic acid testing. This procedure provides <11 cfu/g sensitivity at a 1:10 initial dilution.

The 2x MRS procedure is faster and more cost-effective because sample preparation time is reduced and it utilizes significantly less MRS broth. Since a 1:2 dilution can be prepared using the 1mL 3M™ Electronic Pipettor, you can inoculate your lactic acid tests at any time in the plating process. This procedure provides <20 cfu/g sensitivity at a 1:10 initial dilution.

6. If I use the 2x MRS procedure, how do I report my results?

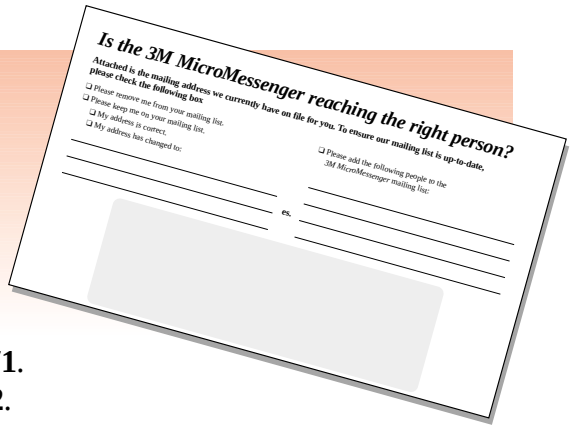
If your initial dilution is 1:10, you multiply the count on your plate by 20 (i.e., you have made a 1:2 dilution from a 1:10 dilution thereby making a 1:20 dilution).

7. What is the recommended time and temperature to incubate these tests?

We recommend that you anaerobically incubate the plates at 30°–35°C (86°–95°F) for 48 ± 3 hours.

Is our newsletter reaching the right person?

Do you know someone else that would like to receive the 3M MicroMessenger Newsletter? Has your mailing address changed? For your convenience, we've enclosed a reply card with this issue so you can notify us. Or if you'd like, notify us by e-mail at **microbiology@3M.com**.



To order 3M Microbiology products in the U.S., call **1-800-328-1671**. Latin America/Africa and Asia Pacific regions, call **1-651-733-7562**.

3M

Microbiology Products
3M Center, Building 275-5W-05
St. Paul, MN 55144-1000 USA
1 800 228-3957
www.3M.com/microbiology
E-mail: microbiology@3M.com

3M Canada
Post Office Box 5757
London, Ontario N6A 4T1
Canada
1 800 364-3577

3M Europe
Laboratoires 3M Santé
Boulevard de l'Oise
F-95029 Cergy-Pontoise Cedex
France
33 130 31-8571

40% Pre-consumer waste paper
10% Post-consumer waste paper

Printed in U.S.A.

70-2009-4026-3 (418) DPI