



BAX® System Real-Time PCR Assay

Vibrio cholerae/
parahaemolyticus/vulnificus
Part KIT2010 (D12863877)



KIT CONTENTS

- 96 PCR tubes with tablets (2 bags of 6 x 8 strips)
- 96 flat optical caps (12 x 8 strips)
- 1 bottle of protease (400 µL)
- 2 bottles of lysis buffer (12 mL)

INTENDED USE

Food processors and associated laboratories can use the BAX® System as a quick and reliable method for detecting *Vibrio* in a variety of foods. This real-time PCR assay was designed to report yes/no results for three species, *V. cholerae*, *V. parahaemolyticus* and *V. vulnificus* at concentrations as low as 10⁴ cfu/mL after enrichment. In addition to determining the presence/absence of *Vibrio*, this assay can be used with multiple dilutions of a single enrichment to perform MPN calculations. With a processing time of approximately 70 minutes in the BAX® System Q7 instrument, the method returns results comparable to culture methods, but with a significantly faster time to result.

BAX® Systems are designed for use by qualified lab personnel who follow standard microbiology laboratory practice, including the safe handling and disposal of potentially pathogenic materials.

Field of use: Data obtained from the BAX® System should not be used for human diagnostic or human treatment purposes. Equipment is not approved by the United States Food and Drug Administration or any other U.S or non-U.S. regulatory agency for use in human diagnostics or treatment. The BAX® System should not be used as the sole basis for assessing the safety of products for release to consumers. The information generated is only to be used in conjunction with the user's regular quality assurance program. Not approved for clinical diagnosis. Use for research and development, quality assurance and quality control under supervision of technically qualified persons.

PRINCIPLE OF THE METHOD

See the BAX® System User Guide for an overview of how the BAX® System method uses automated, real-time Polymerase Chain Reaction (PCR) technology.

MATERIALS

BAX® System Real-Time PCR Assay for *Vibrio cholerae/parahaemolyticus/vulnificus* (Part KIT2010 [D12863877])

BAX® System start-up package (equipment and supplies for up to 192 tests)

- BAX® System Q7 cycler/detector and computer workstation
- Heating blocks with inserts* capable of maintaining 37±2°C and 95±3°C
- Cooling blocks with inserts*
- PCR tube holder
- Capping/decapping tools
- Adjustable mechanical pipettes (5-50 µL; 20-200 µL)
- Repeating pipette
- Multi-channel pipette (8 channels – 5-50 µL)
- Cluster tubes with caps and racks
- Pipette tips with barriers
- Powder-free nitrile gloves

*The Automated Thermal Block (Catalog No. MCH2023 [D14614252]) can be used in place of heating and cooling blocks.

Stomacher with bags

Incubator capable of maintaining directed enrichment temperatures within ±2°C

Enrichment media (See BAX® System User Guide for details)

Phosphate Buffered Saline (if performing MPN calculations)

STORAGE AND SHELF LIFE

- Reagent packages should be kept refrigerated at 2–8°C. Do not freeze.
- Reagents should be used by the expiration date stamped on the individual labels.
- After protease has been added to the lysis buffer, shelf life of the solution is 2 weeks when stored at 2-8°C.
- If storing PCR tubes with tablets in an open kit for more than 3 weeks, seal the Mylar bag of PCR tubes into a larger bag with desiccant or store at 4°C in a desiccation unit, if possible.

PRECAUTIONS

The BAX® System method includes sample enrichment procedures that nourish the growth of potential pathogens

to detectable levels. Because pathogens can cause human illness, appropriate safety precautions must be taken when handling samples, media, reagents, glassware and other supplies and equipment that could be contaminated with potentially pathogenic bacteria.

Reagents used with the BAX® System assays should pose no hazards when used as directed. Before using this product, please review the Safety Data Sheets (SDS) included with your BAX® System purchase and also available at www.hygiena.com. Refer to your site practices for safe handling of materials at extreme temperatures.

SOFTWARE REQUIREMENTS

Before using this assay for the first time, install the most current version of the BAX® System software, then run a calibration report to check that “Real Time *Vibrio*” appears in the list of calibration files. See “Troubleshooting Calibration” in the BAX® System User Guide for details. If the report list does not contain “Real Time *Vibrio*”, you must recalibrate the Q7 instrument to load the required dyes. Be sure to allow enough time to complete the calibration (about 1.5 to 2 hours) before starting the assay. For instructions and tips on calibrating the instrument, see the BAX® System User Guide.

ENRICHMENT PROTOCOL

1. Prepare Enrichment Broth

Prepare enrichment broth according to the manufacturer's instructions. See the BAX® System User Guide for common enrichment media recipes.

2. Collect and Enrich Samples

Method Approved by AOAC

Presence/Absence Testing

- Tuna, shrimp and scallops: Homogenize 25 g sample with 225 mL pre-warmed (35°C) Alkaline Peptone Water. Incubate at 35°C for 16-20 hours.

MPN Testing

- Shrimp and scallops: Homogenize 50 g sample with 450 mL Phosphate Buffered Saline (PBS) dilution water to create a 1:10 dilution. From this stock dilution;
 - Transfer 10 mL dilution to 3 tubes containing 10 mL pre-warmed (35°C) double-strength alkaline peptone water
 - Transfer 1 mL dilution to 3 tubes containing 10 mL pre-warmed (35°C) single-strength alkaline peptone water

- Transfer 1 mL dilution to 9 mL PBS and mix, then add 1 mL of new dilution to 3 tubes containing 10 mL pre-warmed (35°C) single-strength alkaline peptone water.

Incubate all samples at 35°C for 16-20 hours.

Note: Run all 9 samples in the BAX® System, then use the plus/minus results to perform MPN calculations

- Oysters: Homogenize sample in 1:2 ratio with Phosphate Buffered Saline (PBS) dilution water for 90 seconds. Combine with additional PBS to create a 1:10 dilution. From this stock dilution;
 - Transfer 100 mL dilution to 3 tubes containing 100 mL pre-warmed (35°C) double-strength alkaline peptone water
 - Transfer 10 mL dilution to 3 tubes containing 10 mL pre-warmed (35°C) double-strength alkaline peptone water
 - Serially dilute the stock dilution 6 times into tubes containing PBS, then add 1 mL of each dilution to 3 tubes containing 10 mL pre-warmed (35°C) single-strength alkaline peptone water

Incubate all samples at 35°C for 16-20 hours.

Note: Run all 24 samples in the BAX® System, then use the plus/minus results to perform MPN calculations

TEST PROTOCOL

3. Prepare Equipment

- 3.1 Turn on the heating blocks to 37°C and 95°C*.
- 3.2 Make sure cooling blocks are chilled to 2-8°C*.

*If using the Automated Thermal Block, follow the instructions in the Automated Thermal Block User Guide for running the Gram Negative program.

- 3.3 Power on the Q7 instrument and launch the BAX® System application.
- 3.4 Create a rack file (see User Guide for details).

4. Perform Lysis

- 4.1 Break cluster tubes apart.
- 4.2 Label and arrange cluster tubes in rack according to the rack file.
- 4.3 Prepare lysis reagent by adding 150 µL protease to one 12 mL bottle of lysis buffer.
- 4.4 Transfer 200 µL lysis reagent to the corresponding cluster tube.
- 4.5 Transfer 5 µL enriched sample to each cluster tube.
- 4.6 Heat at 37°C for 20 minutes.
- 4.7 Heat at 95°C for 10 minutes.
- 4.8 Cool at 2-8°C for at least 5 minutes.

5. Hydrate PCR tablets

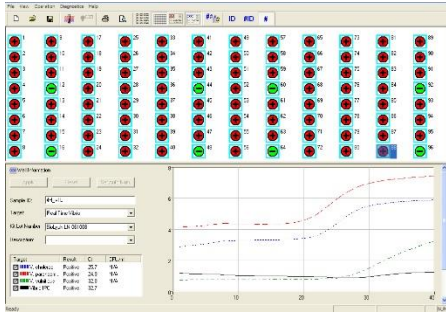
- 5.1 Initialize the instrument by selecting RUN FULL PROCESS from the OPERATION menu.
- 5.2 Place a PCR tube rack onto a chilled (2-8°C) PCR cooling block
- 5.3 Arrange strips of PCR tubes according to your rack file.
- 5.4 Remove the caps from the first strip of tubes with the decapping tool.
- 5.5 Transfer 30 µL lysate (from step 4.8) into PCR tubes, then seal with flat optical caps.
- 5.6 Repeat with remaining strips of PCR tubes until all PCR tablets have been hydrated.

6. Amplify and Detect

- 6.1 At the “Ready for Rack Load” prompt, click the NEXT button and open the instrument drawer.
- 6.2 Place the rack of PCR tubes over the wells in the drawer, and check that the tubes are seated correctly.
- 6.3 Close the drawer, and click the NEXT button to begin automated processing.

7. Review Results

Qualitative results are displayed as a grid of color-coded icons in the top half of the screen:



	Green (-)	=	Negative for target organism
	Red (+)	=	Positive for target organism
	Yellow (?)	=	Indeterminate result*
	Yellow (?) with red slash	=	Signal error*

*Refer to the troubleshooting section in the User Guide for assistance.

Note: For MPN testing, use the plus/minus results of the dilution tubes to perform the appropriate MPN calculations.

CONFIRMATION

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If desired, BAX® System results can be confirmed from the reference culture method appropriate for the sample type, such as:

- U.S. FDA Bacteriological Analytical Manual (BAM)
- International Organization for Standardization (ISO)

Internal studies have shown the BAX® System assay may be more sensitive for detecting *Vibrio* in some matrices than culture methods using TCBS or mCPC media. The growth of background organisms combined with plating inefficiencies of *Vibrio* on these selective plates can complicate efforts to isolate and confirm the presence of the target. To help with isolation of *Vibrio*, we recommend streaking a third plate of CHROMagar (www.chromagar.com/products/vibrio.html).

DISPOSAL

Decontaminate materials and dispose of biohazardous waste per your site practices and as required by federal, state and local regulations.

VALIDATION

The BAX® System Real-Time PCR Assay for *Vibrio cholerae/parahaemolyticus/vulnificus* has been certified by the AOAC Research Institute as Performance Tested MethodsSM #050902. This test kit’s performance was reviewed by AOAC-RI and was found to perform to the manufacturer’s specifications. Validation studies for foods demonstrated BAX® System sensitivity and specificity equal to or better than the reference culture based methods.

TECHNICAL ASSISTANCE

For questions or comments, please contact your local distributor. You can also call 800-863-6842 in the U.S., 1-302-695-5300 outside the U.S., or email diagnostics.support@hygiena.com.

LIMITATION OF WARRANTY AND LIABILITY

NOTICE: READ THIS LIMITATION OF WARRANTY AND LIABILITY BEFORE USING THE BAX® SYSTEM EQUIPMENT, ASSAYS, AND/OR MEDIA (“BAX® SYSTEM”). If the terms are not acceptable, notify Hygiena immediately and arrangements will be made for return of the unused Equipment, assays, and/or media to Hygiena and for the refund of the purchase price, less shipping costs. USE OF BAX® SYSTEM EQUIPMENT, ASSAYS AND/OR MEDIA CONSTITUTES AN ACCEPTANCE OF ALL TERMS AND CONDITIONS OF THIS LIMITATION OF WARRANTY AND LIABILITY. Any additional or different terms in Buyer’s purchase form(s) are material alterations and hereby rejected.

1. BAX® System Equipment should only be used with BAX® System assays.

2. When used with BAX® System assays, BAX® System Equipment is warranted be free of defects in materials, workmanship and design that may appear under normal and proper use within twelve (12) months from the installation date to the first end user. BAX® System assays are warranted to

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4. The accuracy of the BAX® System can be affected by factors over which Hygiena has no control, including, without limitation, the use of the Equipment, assays and/or media in a manner that is contrary to the conditions of use, the procedures or the instructions specified by Hygiena. Because of the large number of factors over which Hygiena has no control, Hygiena makes no promise or guarantee of the accuracy of or results obtained from the use of the BAX® System. In particular, Hygiena disclaims any warranty or liability and assumes no responsibility whatever for the failure of the BAX® System due, in whole or in part, to user’s failure to: (a) properly maintain Equipment, (b) maintain specified operating or storage conditions, (c) follow the specified instructions, or (d) use the proper microbiological techniques consistent with the standard of care accepted in the industry for the proper collection, storage, handling and preparation of the sample.

5. Externally caused failures, such as improper sample preparation, improper storage or loading of reagents, electrical outages, or out-of-specification environmental conditions are not covered under this warranty. Equipment failures caused by spills, abuse, misuse, negligence, or improper operation are not covered by this warranty. Modifications, service or repairs by parties other than Hygiena-authorized providers are not covered by this warranty and, in fact, void this warranty. Circumstances beyond the reasonable control of Hygiena, including fire, explosions, accidents, flood, labor trouble or shortage, war, act of or authorized by any government, inability to obtain suitable material, Equipment, fuel, power or transportation, or acts of God are not covered under this warranty.

6. The BAX® System is designed to test only for the presence of the target organisms specified in the particular assay. The BAX® System has been tested against many, but not all, strains of the target within the sample types specified in the user documentation. Hygiena, therefore, cannot and does not make any representation or warranty that the BAX® System is capable of detecting every organism in the target genus, serotype, or species in any sample source. Accordingly, the BAX® System should not be used as the sole test for the release of user’s products, nor should it be used as the sole basis for determining the safety of user’s products.

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