Bacteriological Analytical Manual (BAM)

FDA's Bacteriological Analytical Manual (BAM) presents the agency's preferred laboratory procedures for microbiological analyses of foods and cosmetics. AOAC International published previous editions of this manual in a loose-leaf notebook format, and, more recently, on CD-ROM. This online BAM is now available to the public. Some changes have been made to methods since the previous version. A listing of chapters updated since the last hard-copy version (Edition 8, Revision A /1998) can be found in About the Bacteriological Analytical Manual (/food/laboratory-methods/about-bacteriological-analytical-manual). The members of the BAM Council are listed below. In addition recent changes for most Chapters are documented in a brief Revision History at the beginning of the Method. There is also e-mail contact information for each Chapter. Chapter numbers have been retained from the previous version. However, for this Table of Contents, chapters have been grouped by category. Please send comments to Karen Jinneman (mailto:Karen.Jinneman@fda.hhs.gov).

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Appendix 4	Food and Feed Items that are of current Interest to the FDA for Microbiological Methods Validation (/food/laboratory-methods/food-and-feed-items-are-current-interest-fda-microbiological-methods-validation)	T. HAMMACK (ret.)

Archived Methods

DISCLAIMER: *The following Methods and Appendices have been archived. They are included for reference purposes only. For additional information, contact BAM Council Chair: Karen Jinneman* (mailto:Karen.Jinneman@fda.hhs.gov)

- Chapter 11: Serodiagnosis of *Listeria monocytogenes* (http://wayback.archive-it.org/7993/20180424210118/https://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm071418.htm) (http://www.fda.gov/about-fda/website-policies/website-disclaimer)
- Chapter 13A: Staphylococcal Enterotoxins: Micro-slide Double Diffusion and ELISA-based Methods (http://wayback.archive-it.org/7993/20161022185228/http://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm073674.htm) (http://www.fda.gov/about-fda/website-policies/website-disclaimer)
- Chapter 13B: Electrophoretic and Immunoblot Analysis of Staphylococcal Enterotoxins in Food (https://wayback.archive-it.org/7993/20170404234656/https://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm073685.htm) (http://www.fda.gov/about-fda/website-policies/website-disclaimer)
- Chapter 15: *Bacillus cereus* Diarrheal Enterotoxin (https://wayback.archive-it.org/7993/20190423084730/https:/www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm073688.htm) (http://www.fda.gov/about-fda/website-policies/website-disclaimer)
- Chapter 24: Identification of Foodborne Bacterial Pathogens by Gene Probes (https://wayback.archive-it.org/7993/20170404234656/https://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm072659.htm) (http://www.fda.gov/about-fda/website-policies/website-disclaimer)
- Chapter 26A: Detection and Quantitation of Hepatitis A Virus in Shellfish by the Polymerase Chain Reaction (https://public4.pagefreezer.com/browse/FDA/02-11-2021T10:11/https://www.fda.gov/food/laboratory-methods-food/bam-chapter-26-detection-and-quantitation-hepatitis-virus-shellfish-polymerase-chain-reaction) (http://www.fda.gov/about-fda/website-policies/website-disclaimer)
- Chapter 28B: Detection of Hepatitis A Virus in Foods (https://public4.pagefreezer.com/browse/FDA/02-11-2021T10:11/https://www.fda.gov/food/laboratory-methods-food/bam-chapter-26b-detection-hepatitis-virus-foods) (http://www.fda.gov/about-fda/website-policies/website-disclaimer)
- Appendix 1: Rapid Methods for Detecting Foodborne Pathogens (https://wayback.archive-it.org/7993/20170404234656/https://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm109652.htm) (http://www.fda.gov/about-fda/website-policies/website-disclaimer)

BAM Council

Updated: September 2022

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Introduction

To test for an organism or microbial toxin not covered by the BAM, or to analyze a sample that may require special handling or processing, the user is referred to the *Official Methods of Analysis* of the AOAC International; *Standard Methods for the Examination of Dairy Products, Recommended Procedures for the Examination of Seawater and Shellfish*, and *Compendium of Methods for the Microbiological Examination of Foods* of the American Public Health Association; also, *Standard Methods for Water Analysis* of the Environmental Protection Agency. FDA works closely with AOAC International, APHA, EPA, the International Dairy Federation (IDF/FIL), and, by way of participation in Codex Alimentarius, the International Organization for Standardization (ISO). However, not all methods appearing in the BAM have been collaboratively evaluated by one or more of these organizations.

Text for the BAM was peer-reviewed by scientists outside and within FDA.

Introduction to the 8th edition, Revision A (1998)

Innovations in methods for the microbiological analysis of food continue to appear at a rapid pace. Edition 8 (1995) of the Bacteriological Analytical Manual (BAM-8) contained numerous refinements of procedures and updates of references from the 1992 edition. The list of commercially available test kits and the discussion of rapid methods in Appendix 1 were thoroughly revised. Three chapters were added: the use of reverse transcription (RT) and the polymerase chain reaction (PCR) to detect and quantify contamination of shellfish with hepatitis A virus (Chapter 26); new procedures for the alkaline phosphatase test to determine whether dairy foods were prepared with pasteurized milk (Chapter 27); and the use of PCR to detect toxigenic Vibrio cholerae in foods (Chapter 28). For this printing (BAM - 8A), the following has been revised or added: Campylobacter (Chapter 7), Yeast and Molds (Chapter 18), Cyclospora [Chapter 19 (Parasites)] and Staphylococcus enterotoxins (Chapter13). In addition, there are updated tables in Appendix 1 on Rapid Methods and revised and corrected tables in Appendix 2 on MPN. Appendix 3 reflects changes in media and corrects errors in the 8th Edition. A table summarizing changes from BAM-8 to BAM-8A is included.

The methods described in Chapters 1 to 28 are those preferred by FDA for the microbiological analysis of foods, drinks, and cosmetics as well as for their containers, contact materials, and the production environment. This is not necessarily the case for the rapid methods listed in Appendix 1: this appendix is a listing of different kits that are commercially available. These methods have not necessarily been evaluated by FDA, and listing of a method in this appendix does not constitute a recommendation.

To test for an organism or microbial toxin not covered by the BAM, or to analyze a sample that may require special handling or processing, the user is referred to the Official Methods of Analysis of the AOAC International; Standard Methods for the Examination of Dairy Products, Recommended Procedures for the Examination of Seawater and Shellfish, and Compendium of Methods for the Microbiological Examination of Foods of the American Public Health Association; also, Standard Methods for Water Analysis of the Environmental Protection Agency. FDA works closely with AOAC International, APHA, EPA, the International Dairy Federation (IDF/FIL), and, by way of participation in Codex Alimentarius, the International Organization for Standardization (ISO). However, not all methods appearing in the BAM have been collaboratively evaluated by one or more of these organizations.

Text for the BAM was peer-reviewed by scientists outside and within FDA. Outside reviewers included P. Entis, J. Smith, M. Doyle, N. Stern, R. Twedt, S. Tatini, R. Labbe, M. Eklund, M. Cousin, L. Eveland, R. Richter, J. Kabara, M. Curiale, and the staff of the National Food Processors Association. Reviews by FDA's field microbiologists, who made valuable suggestions concerning content and practicality, were coordinated by Meredith A. Grahn and her staff.

The 8th Edition of the BAM was prepared in the Technical Editing Branch, Center for Food Safety and Applied Nutrition, FDA by Lois A. Tomlinson with production assistance by Dorothy H. Hughley. This version (Revision A) of the 8th Edition, was prepared and produced by Dr. Robert I. Merker, Office of Special Research Skills, CFSAN, FDA.

Original Source: Bacteriological Analytical Manual, 8th Edition, Revision A, 1998.