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SCIENCE

GUIDEBOOKS

04/16/2024, 08:00AM EDT

Microbiology Laboratory Guidebook

The Microbiology Laboratory Guidebook (MLG) contains test methods used by the FSIS Field Service Laboratories to support FSIS regulatory activities. The MLG contains methods for the sample preparation, isolation and identification of the major foodborne pathogenic microorganisms and their toxins, meat tissue species identification, and the detection of antimicrobial residues. Appendices to the MLG include a pathogen method summary chart, method flow charts, Media and Reagent formulations, and Most Probable Number Tables. Methods contained in the MLG are designed to provide FSIS analysts with written documentation to facilitate training,

performance, quality assessment, and interpretation of data. FSIS does not specifically endorse any of the products mentioned in the MLG and acknowledges other products may be available for laboratory use.

Method Number	Method Title
1.02	FSIS Laboratory System Introduction, Method Performance Expectations, and Sample Handling for Microbiology /sites/default/files/media_file/documents/mlg_1.02.pdf (Effective Feb 5, 2024; PDF Only)
2.	Physical Examination of Meat and Poultry Products /sites/default/files/media_file/2021-03/mlg-2.pdf (1998; PDF Only)
3.02	Quantitative Analysis of Bacteria in Foods as Sanitary Indicators /sites/default/files/media_file/2021-03/mlg-3.pdf (Jan 5, 2015; PDF Only)
4.14	Isolation and Identification of <i>Salmonella</i> from Meat, Poultry, Pasteurized Egg, and Siluriformes (Fish) Products and Carcass and Environmental Sponges /sites/default/files/media_file/documents/mlg-4.14.pdf (Effective Jun 5, 2023; PDF Only) <ul style="list-style-type: none"> • Appendix 2.07, Flow Chart Specific for FSIS Laboratory Isolation and Identification of <i>Salmonella</i> /sites/default/files/media_file/documents/mlg-4-appendix-2.07.pdf (Effective Feb 1, 2023; PDF Only)

5C.03	<p>Detection, Isolation and Identification of Top Seven Shiga Toxin-Producing <i>Escherichia coli</i> (STECs) from Meat Products and Carcass and Environmental Sponges /sites/default/files/media_file/documents/mlg-5c.03.pdf (Effective Feb 1, 2023; PDF Only)</p> <ul style="list-style-type: none"> • Appendix 1.02, Flow Chart Specific for FSIS Laboratory Isolation and Identification of non-O157 Shiga Toxin-Producing <i>Escherichia coli</i> (STEC) /sites/default/files/media_file/2021-08/mlg-5c-appendix-1.02-flow-chart.pdf (Aug 16, 2021; PDF Only) • Appendix 2.00, Morphologies of Representative Strains from Six non-O157 Shiga Toxin-Producing <i>Escherichia coli</i> (STEC) Grown on Modified Rainbow Agar /sites/default/files/media_file/2021-03/mlg-5-appendix-2.pdf (Feb 4, 2019; PDF Only) • Appendix 3.00, PCR Platform Instructions, Data Analysis, and Control Results Interpretation for non-O157 Shiga Toxin-Producing <i>Escherichia coli</i> (STEC) Real-time PCR Assay /sites/default/files/media_file/2021-03/mlg-5-appendix-3.pdf Feb 4, 2019; PDF Only) • Appendix 4.00, Primer and Probe Sequences and Reagent Concentrations for non-O157 Shiga Toxin-Producing <i>Escherichia coli</i> (STEC) Real-Time PCR Assay /sites/default/files/media_file/2021-03/mlg-5-appendix-4.pdf (Feb 4, 2019; PDF Only) • Appendix 5.00, PCR Platform Instructions for the real-time PCR detection of Shiga toxin gene and H7 gene in <i>E. coli</i> O157:H7 /sites/default/files/media_file/2021-03/mlg-5-appendix-5.pdf (Feb 4, 2019; PDF Only)
7.	Isolation and Identification of <i>Aeromonas</i> Species from Meat and Poultry Products (ARCHIVED Feb 16, 2016)

8.14	Isolation and Identification of <i>Listeria monocytogenes</i> from Ready-to-Eat Meat, Poultry, Siluriformes (Fish), Egg Products, and Environmental Samples <a href="</sites/default/files/media_file/documents/mlg-8.14.pdf>"></sites/default/files/media_file/documents/mlg-8.14.pdf> (Mar 13, 2024; PDF Only)
9.	Isolation & Identification of Pathogenic <i>Yersinia enterocolitica</i> from Meat and Poultry Products (ARCHIVED Feb 16, 2016)

10.01

Examination of Canned and Aseptically Processed, Hermetically Sealed Meat and Poultry Products

/sites/default/files/media_file/2021-12/mlg-10.01.pdf (Jan 10, 2022; PDF Only)

- **Appendix 1.00, Flow Chart Specific for Microbial Examination of Heat Processed, Hermetically Sealed (Canned) Meat and Poultry Products**
/sites/default/files/media_file/2021-12/mlg-10-appendix-1.00.pdf (Jan 10, 2022; PDF Only)
- **Appendix 2.00, Glossary of Metal/Plastic Can Seam Terminology for Container Components and Defects**
/sites/default/files/media_file/2021-12/mlg-10-appendix-2.00.pdf (Jan 10, 2022; PDF Only)
- **Appendix 3.00, Glossary of Glass Container Parts**
/sites/default/files/media_file/2021-12/mlg-10-appendix-3.00.pdf (Jan 10, 2022; PDF Only)
- **Appendix 4.00, Glossary for Flexible Retortable Pouches** /sites/default/files/media_file/2021-12/mlg-10-appendix-4.00.pdf (Jan 10, 2022; PDF Only)
- **Appendix 5.00, Normal pH Values for a Few Representative Canned Meat/Poultry Products**
/sites/default/files/media_file/2021-12/mlg-10-appendix-5.00.pdf (Jan 10, 2022; PDF Only)
- **Appendix 6.00, Key to Probable Cause of Spoilage in Low Acid Canned Foods** /sites/default/files/media_file/2021-12/mlg-10-appendix-6.00.pdf (Jan 10, 2022; PDF Only)
- **Appendix 7.00, Key to Probable Cause of Spoilage in Semi-Acid Canned Foods** /sites/default/files/media_file/2021-12/mlg-10-appendix-7.00.pdf (Jan 10, 2022; PDF Only)

	<ul style="list-style-type: none"> Appendix 8.00, Characteristics of Normal and Abnormal Perishable Canned Meat/Poultry Products /sites/default/files/media_file/2021-12/mlg-10-appendix-8.00.pdf (Jan 10, 2022; PDF Only)
11.	Tests For Enzymes In Meat and Meat Products (ARCHIVED Feb 16, 2016)
12.	Examination of Meat and Poultry Products For <i>Bacillus cereus</i> /sites/default/files/media_file/2021-03/mlgchp12.pdf (1998; PDF Only)
13.	Examination of Meat and Poultry Products For <i>Clostridium perfringens</i> /sites/default/files/media_file/2021-03/mlgchp13.pdf (1998; PDF Only)
14.	Methods for the Detection of <i>Clostridium botulinum</i> Toxins In Meat and Poultry Products (ARCHIVED Feb 16, 2016)
16.	Agarose Thin-Layer Isoelectric Focusing (TLIEF) For Species Determination of Raw Muscle Tissues (ARCHIVED Feb 16, 2016)
17.02	Identification of Animal Species in Meat and Poultry Products (ARCHIVED Feb 10, 2005; PDF Only)
18.	Species Identification Field Tests (SIFT) (ARCHIVED Feb 16, 2016)
19.	Competitive Enzyme-Linked Immunoassay (CELIA) For The Detection and Quantitation of Chloramphenicol (ARCHIVED Feb 16, 2016)
20.	LCD-Macroarray Method for Species Identification in Meat and Poultry Products /sites/default/files/media_file/2021-09/mlg-20.00.pdf (Oct 4, 2021; PDF)

	Chapter Numbers 22-30 Reserved For Future Use.
31.01	<p>Isolating Bacteria from Food Animals for Antimicrobial Resistance Surveillance</p> <p>/sites/default/files/media_file/documents/mlg_31.01.pdf (Jan 16, 2023; PDF)</p>
34.03	<p>Bioassay for the Detection, Identification and Quantitation of Antimicrobial Residues in Meat and Poultry Tissue</p> <p>/sites/default/files/media_file/2021-03/mlg_34_03.pdf (May 25, 2011; PDF Only)</p>
39.03	<p>Preliminary and Confirmatory testing of FSIS Regulated Products for Staphylococcal Enterotoxins</p> <p>/sites/default/files/media_file/2021-03/mlg-39-03.pdf (April 1, 2018; PDF Only)</p>
40.00	<p>Avian Influenza Detection in the Chicken Heart Using Real-Time Reverse Transcriptase PCR /sites/default/files/media_file/2021-03/mlg_40_00.pdf (Oct 8, 2007; PDF Only)</p>
41.07	<p>Isolation and Identification of <i>Campylobacter jejuni/coli/lari</i> from Poultry Rinse, Sponge and Raw Product Samples /sites/default/files/media_file/2022-03/mlg_41.07.pdf (Effective Mar 7, 2022; PDF Only)</p> <ul style="list-style-type: none"> Appendix 2.04, FSIS Laboratory Specific Flow Chart for <i>Campylobacter jejuni/coli/lari</i> Enrichment Analysis /sites/default/files/media_file/2022-03/mlg_41_appendix_2.04.pdf (Effective Mar 7, 2022; PDF Only)
42.01	<p>Whole Genome Sequencing of Bacterial Isolates</p> <p>/sites/default/files/media_file/documents/mlg_42.01.pdf (Mar 18, 2024; PDF Only)</p>
Appendices:	

1.12	Media and Reagents </sites/default/files/media_file/documents/mlg-appendix-1.12.pdf> (Effective Oct 30, 2023; PDF Only)
2.05	Most Probable Number Procedure and Tables </sites/default/files/media_file/2021-03/mlg-appendix-2.pdf> (Jun 29, 2014; PDF Only)
3.06	FSIS Laboratory Regulatory Sample Pathogen Methods Table and Definitions </sites/default/files/media_file/2022-03/mlg_appendix_3.06.pdf> (Effective Mar 7, 2022; PDF Only)

All methods are offered as PDF documents. If you require an alternative format, please contact: Microbiology Section Laboratory Quality Assurance Staff, USDA/FSIS/OPHS 950 College Station Road Athens, GA 30605 Phone: (706) 713-5898

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