Raw Beef Components Sampling Data – Data Documentation

Overview

These data are the sampling results of FSIS' routine microbiological sampling of Raw Beef Components Products. Additional information can be found on the FSIS website.

https://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/microbiology/ec

Each row in this data set represents one sample collected and sent to an FSIS laboratory for analysis.

Data contained in this dataset on tested product from establishments are not sufficient to determine an association to human illnesses. Further epidemiologic information is needed to determine if there is an association between the non-clinical isolates and human illnesses.

Data Dictionary

- EstablishmentID
  - Definition: A unique identifier that is used to identify an establishment across data tables in the FSIS databases.
- EstablishmentNumber
  - Definition: A letter/number combination uniquely identifying each establishment.
- EstablishmentName
  - Definition: The name of an establishment on the FSIS grant of inspection.
- State
  - Definition: The state the establishment is located.
- ProjectCode
  - Definition: A short name given to easily identify a FSIS sampling project.
  - See Directive 10,010.1, Revision 4 for additional details

    https://www.fsis.usda.gov/wps/wcm/connect/c100dd64-e2e7-408a-8b27-ebb378959071/10010.1.pdf?MOD=AJPERES

  - Project in this dataset
    - MT54 – *E coli* O157:H7 Sampling of Raw Ground Beef or Beef Patty Components (other than trim)
    - MT64 - Sampling of Raw Ground Beef or Beef Patty Components (other than trim). NOTE: MT64 replaced MT54 in September 2015.

- ProjectName
    - Definition: The name of the FSIS sampling project.
- FormID
    - The form number used to uniquely identify a specific sample.
- CollectionDate
    - The date the FSIS inspector collected the sample at the FSIS regulated establishment.
- SampleSource
    - The type of product collected in the sample.
- EColiO157H7Analysis
    - Definition: The result of the analysis for *E. coli* 0157:H7 in the sample.
    - Negative = *E. coli* 0157:H7 was not found in the sample
    - Positive = *E. coli* 0157:H7 was found in the sample.
    - All raw ground beef samples with a positive *E. coli* 0157:H7 result were either prevented from going into commerce due to test and hold or were recalled.
- EcoliPFGEPattern
    - Definition: The specific pattern identified from Pulsed-Field Gel Electrophoresis, the laboratory technique used to produce a DNA fingerprint for a group of the same type of bacteria.
- EcoliAlleleCode
    - Definition: The allele code designation assigned by CDC-PulseNet based on the number of differences in pre-defined genes, used to analyze the Whole Genome Sequencing (WGS) data. WGS is a DNA sequencing technology that can be used to help characterize bacterial pathogens.
- EcoliAMRResistanceProfile
    - Definition: The antimicrobial resistance profile of the antimicrobial drugs phenotypically tested to which isolates are found to be resistant using the National Antimicrobial Resistance Monitoring System (NARMS) panel 5. The Food and Drug Administration (FDA), in its Guidance 152 classified antimicrobial drugs based on importance of the drug to human medicine. Isolates displaying resistance to multiple antimicrobial drugs tested by the NARMS panel are classified according to the antimicrobial drug(s) with the highest classification of risk. A resistance profile that is "pan-susceptible" means that the isolate is not resistant to any of the antimicrobial drugs tested. (See the FDA Antimicrobial drug classification table below.)
- SalmonellaSpAnalysis
    - Definition: The result of the analysis for *Salmonella* Species in the sample.
    - Negative = *Salmonella* was not found in the sample
    - Positive = *Salmonella* was found in the sample.
- SalmonellaSerotype
    - Definition: The name of the distinct variation of the tested species of bacteria. A list of the serotypes that are more commonly associated with human illness can be found on the CDC Web site at: https://www.cdc.gov/nationalsurveillance/salmonella-surveillance.html

- When a sample screens positive for *Salmonella*, there may be more than one *Salmonella* serotype present in the enrichment. During the laboratory confirmation procedure, the enrichment broth is struck to agarose plates, and those plates are subsequently examined for typical colonies (those that appear to be *Salmonella*). As instructed in the Microbiology Laboratory Guidebook, Chapter 4, section 4.8.1, laboratory staff are to, "pick at least one typical isolated colony from any of the plates." A colony would be from a single serotype, which could result in the lab identifying one serotype when multiple may be present in the original sample.

- SalmonellaPFGEPattern
  - Definition: The specific pattern identified from Pulsed-Field Gel Electrophoresis, the laboratory technique used to produce a DNA fingerprint for a group of the same type of bacteria.
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  - Definition: The allele code designation assigned by CDC-PulseNet based on the number of differences in pre-defined genes, used to analyze the Whole Genome Sequencing (WGS) data. WGS is a DNA sequencing technology that can be used to help characterize bacterial pathogens.
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  - Definition: The antimicrobial resistance profile of the antimicrobial drugs phenotypically tested to which isolates are found to be resistant using the National Antimicrobial Resistance Monitoring System (NARMS) panel 5. The Food and Drug Administration (FDA), in its Guidance 152 classified antimicrobial drugs based on importance of the drug to human medicine. Isolates displaying resistance to multiple antimicrobial drugs tested by the NARMS panel are classified according to the antimicrobial drug(s) with the highest classification of risk. A resistance profile that is "pan-susceptible" means that the isolate is not resistant to any of the antimicrobial drugs tested.

FDA's Antimicrobial drug classification according to their importance to human medicine:

Antimicrobial Class	Antimicrobial Drug	Abbreviation	FDA Classification
1st Generation Cephalosporins (Cephems)	Cephalothin (Cefazolin)	CEP	Important
3rd Generation Cephalosporins (Cephems)	Ceftiofur	TIO	Critically Important
	Ceftriaxone	AXO	Critically Important
Aminoglycosides	Amikacin	AMI	Highly Important
	Apramycin	APR	Highly Important*
	Gentamicin	GEN	Highly Important
	Kanamycin	KAN	Highly Important
	Streptomycin	STR	Highly Important
B-Lactam/B-Lactamase Inhibitor Combinations	Amoxicillin - Clavulanic Acid (Amoxicillin)	AUG	Highly Important

Carbapenems	Imipenem	---	Highly Important
Carboxypenicillins	Ticarcillin	TIC	Highly Important
Cephamycins (Cephems)	Cefoxitin	FOX	Important
Fluoroquinolones	Ciprofloxacin	CIP	Critically Important
Folate Pathway Inhibitors	Sulfamethoxazole (1998-2003)	SMX	Not Classified
	Sulfisoxazole (2004-2009)	FIS	Not Classified
	Trimethoprim-Sulfamethoxazole	COT	Critically Important
Macrolides	Azithromycin	AZI	Critically Important
	Erythromycin	ERY	Critically Important
Phenicols	Chloramphenicol	CHL	Highly Important
	Florfenicol	FFN	Highly Important*
Quinolones	Nalidixic Acid	NAL	Important
Ketolides	Telithromycin	TEL	Not Classified
Lincosamides	Clindamycin	CLI	Highly Important
Penicillins	Ampicillin	AMP	Highly Important
Tetracyclines	Tetracyclines	TET	Highly Important

*Where noted, FSIS has classified drugs approved for animal use only using the same classification that FDA has designated for drugs in the same antimicrobial class that are approved for human use.

- Critically Important (C): Antimicrobial drugs which meet BOTH criteria 1 and 2 in Appendix A of the FDA Guidance for Industry #152 are considered critically important to human medical therapy.
- Highly Important (H): Antimicrobial drugs which meet EITHER criteria 1 or 2 in Appendix A of the FDA Guidance for Industry #152 are considered highly important to human medical therapy.
- Important (I): Antimicrobial drugs which meet EITHER criterion 3 and/or 4 and/or 5 in Appendix A of the FDA Guidance for Industry #152 are considered important to human medical therapy.
- Not Classified (NC): Antimicrobial drugs which are not given a classification in FDA's Guidance for Industry #152 (dated October 23, 2003).

Relationship to Other Data

This data can be combined with other FSIS datasets using the EstablishmentID variable.

Notes and Limitations

Information about FSIS sampling laboratories and procedures can be found on the FSIS website.
http://www.fsis.usda.gov/wps/portal/fsis/topics/science/laboratories-and-procedures

http://www.fsis.usda.gov/wps/portal/fsis/topics/science/laboratories-and-procedures/guidebooks-and-methods/microbiology-laboratory-guidebook/microbiology-laboratory-guidebook

FSIS added *Salmonella* Species analysis in July, 2014.

NULL values indicate that the specific variable is not available for that record.

Prior Analysis

Prior analysis using this data can be found on the FSIS website.

https://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/microbiology/ec/testing-program-for-e-coli-o157h7-and-non-o157-stec