FE 305 Experiment 6

Bacteriological Examination of Meat and Fermented Meat Products

Contents

- Total Aerobic Mesophilic Bacteria Count
- Mold and Yeast Count
- Lactic acid bacteria Count
- Coliform Count

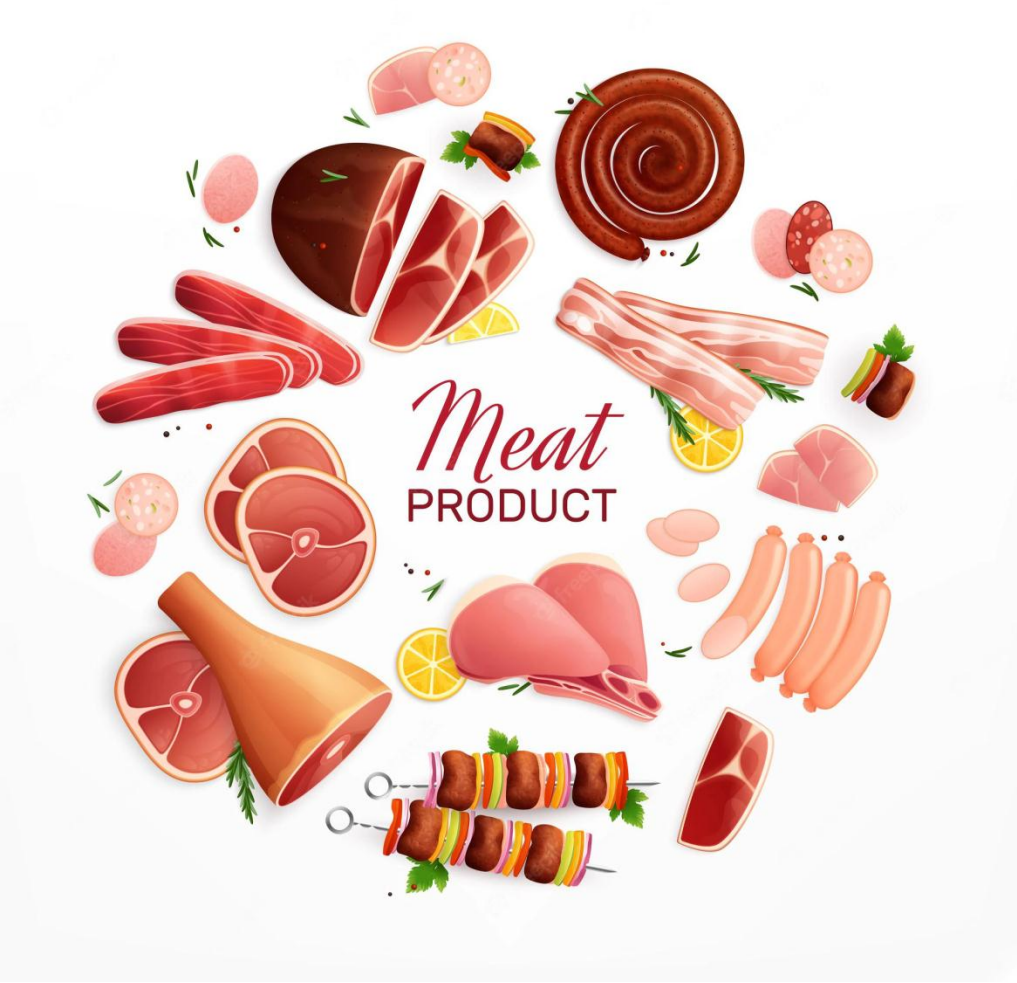
Experiment No from Book: **34**

Samples needed for this experiment

- **Home-made fermented sausage**
- **Pasteurized sausage**
- **Fermented sausage**

Purpose and Importance

- Meat and meat products are pershiable foods during their storage and they may need extra preservation.
- Raw meat has high water activity and open to deterioration caused by in-flesh microorganisms placed in blood or gut.
- The gut is the most important source of bacteria, contributing *C. Perfingens, Salmonella, Staphylococcus,* and coliforms to the meat surfaces.



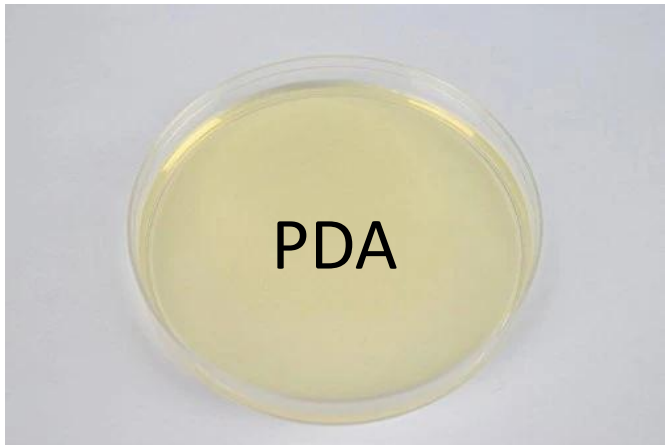
Purpose and Importance

- Fermented sausages. During process and storage; low pH and drying may destroy most of the bacteria.
- *S. aureus* may grow and produce toxin during the fermentation period. *S. aureus* may die out but toxin remains.
- Yeast and mold growth on the surface of sausages during production and storage.

Tests and Analysis

- Total Count
  - Media: PCA
  - Method: Spread Plate
  - Incubation: 37 C for 24 hours

- Mold and Yeast Count
  - Media: PDA
  - Method: Spread Plate
  - Incubation: 25 C for 3-5 days



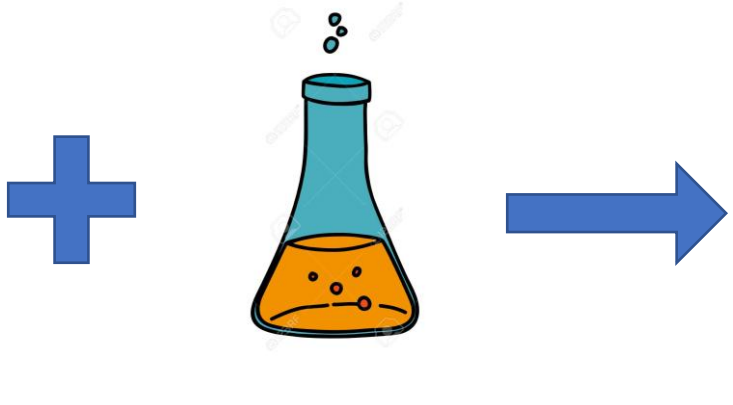
Tests and Analysis

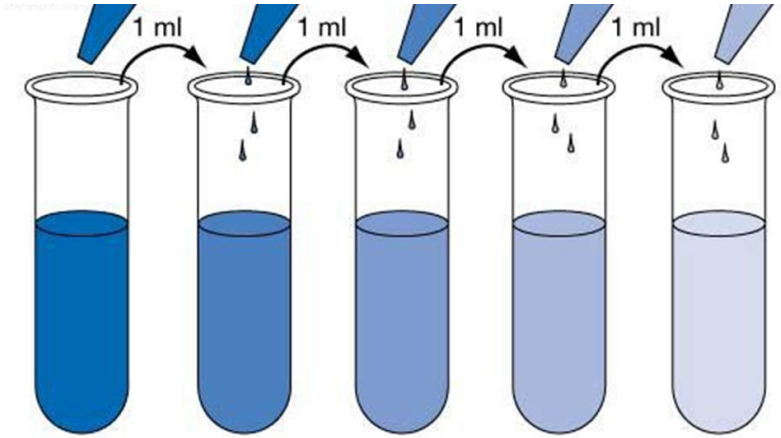
- Lactic acid bacteria Count
  - Media: MRSA
  - Method: Spread Plate
  - Incubation: 42 C for 72 hours

- Coiform Count
  - Media: VRBA
  - Method: Spread Plate
  - Incubation: 37 C for 2 days

Sampling and Preparation

- First sllice and chop the sausage with sterile knife.
- 25 g sausage sample + 225 ml 0.1% sterile peptone water = 10^{-1} diluted sample.





Serial dilution is applied starting from 10^{-1} diluted sample

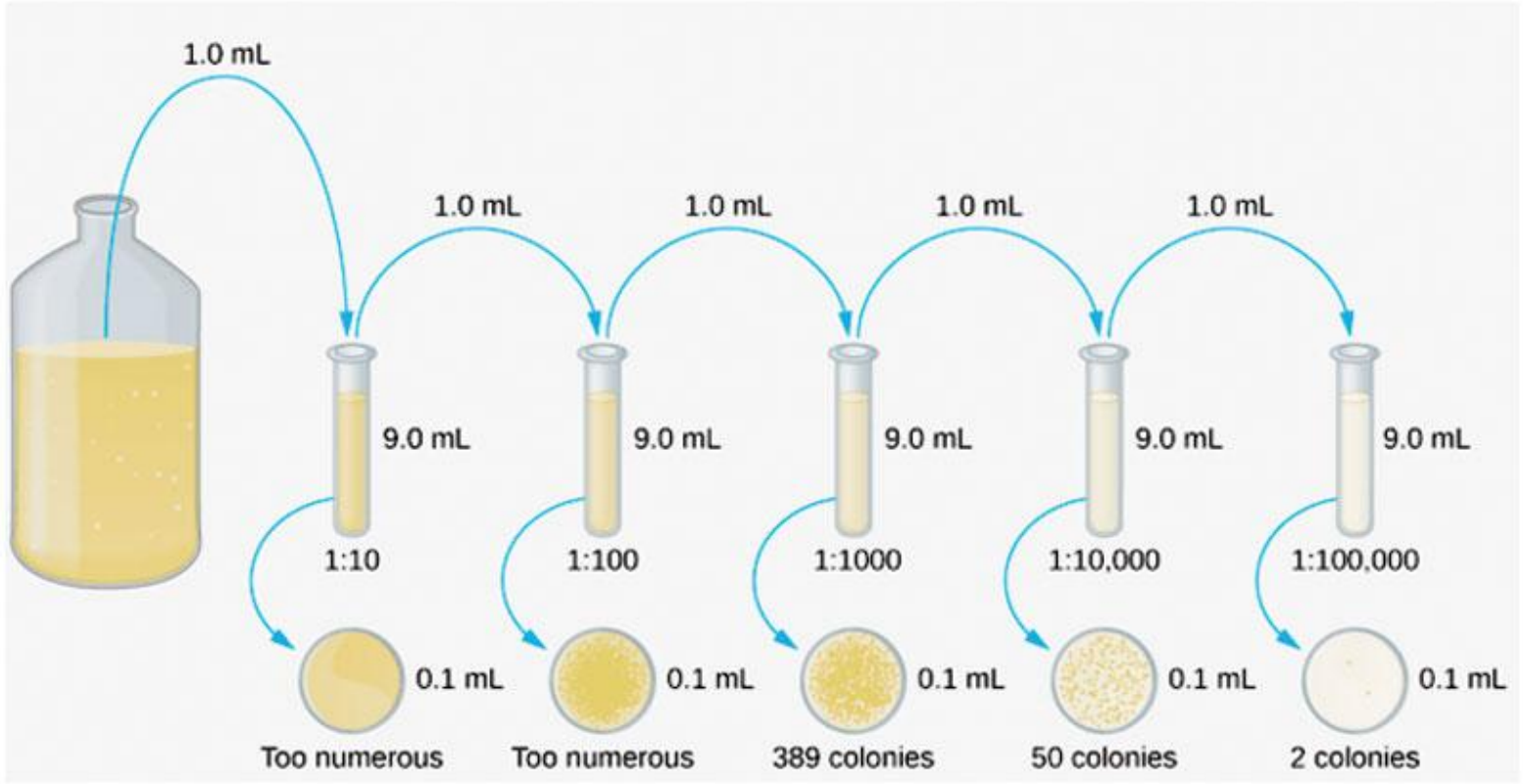
Material and Methods

- Fermented sausage and home made sausage samples,
- 10^{-1} diluted sample and dilutions.
- Spreader
- Sterile pipette
- Incubator
- Alcohol
- Bunsen burner
- Sterile PCA, PDA, MRSA and VRBA media

Procedure

- Take 0.2 ml of sample from each dilution by using sterile pipette at Aseptic Conditions.

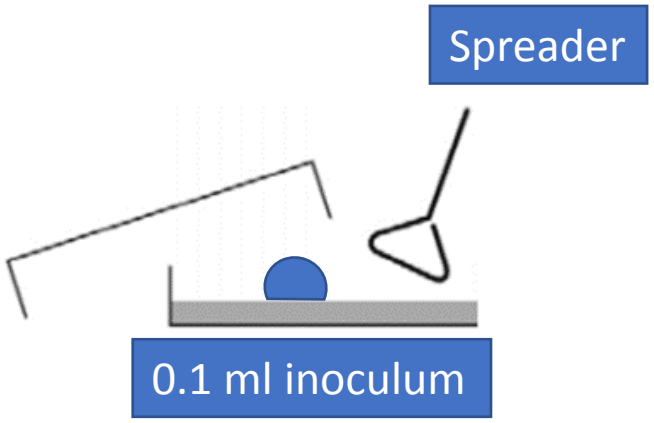
- Place the sample on PCA, PDA, MRSA, VRBA petri plates near flame.

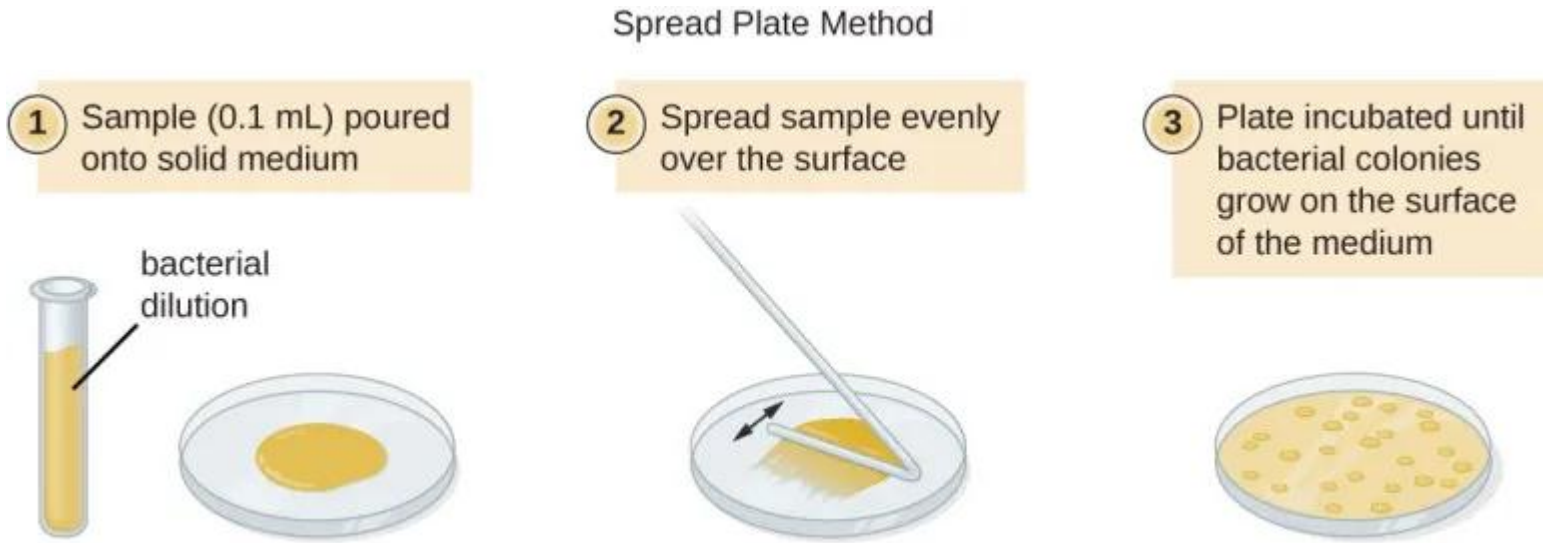


	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}
Total Count	PCA	PCA	PCA	PCA	PCA
Mold and Yeast	PDA	PDA	PDA	PDA	PDA
Total Lactic Acid Bacteria	MRSA	MRSA	MRSA	MRSA	MRSA
Total Coliform Count	VRBA	VRBA	VRBA	VRBA	VRBA

Procedure

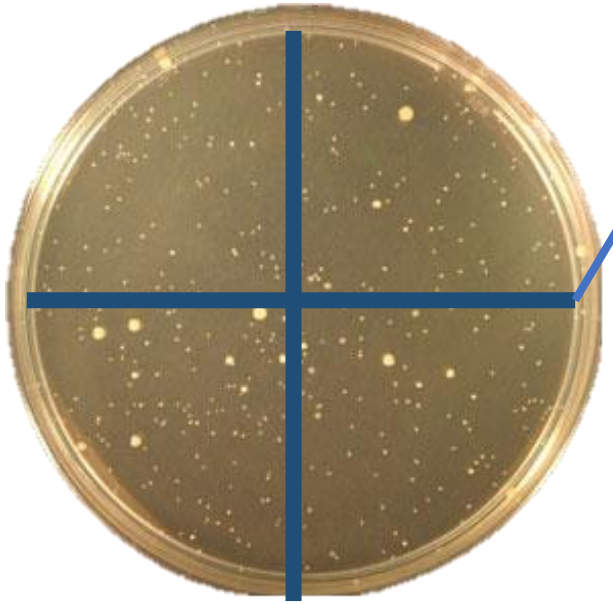
- Sterilize spreader with dipping in alcohol and passing through flame.
- Spread the sample on petri plate by using spreader.





Results

- Count formed colonies on every petri plate for each dilution and record results on the given table below.



- You can divide petri into equal parts to count easily.
- Ex: For Home made yogurt
  - Non → Too number to count → TNTC
  - -1 → 546
  - -2 → 186
  - -3 → 34
  - -4 → 0

Sample names	Dilutions					
	non	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}
Home-made sausage	TNTC	546	186	34	0	0
Fermented sausage						
Pasteurized sausage						

Calculation

- # of microorganisms / ml of juice= $\frac{Count\ of\ microorganisms\ in\ one\ petri}{inoculum\ amount\ in\ one\ petri}\ X\ Dilution\ factor$
- Ex: For Fermented sausage take only counts between 30<x<300 colonies into calculation.
  - Non: TNTC
  - -1: 546 → No calculation above 300
  - -2: 186 → $\frac{186}{0.1\ ml} \times \frac{1}{10^{-2}}$
  - -3: 34
  - -4: 0 → No calculation below 30

  $\frac{34}{0.1\ ml} \times \frac{1}{10^{-3}}$

- Take average of these two results
- # of microorganisms / g or ml of water= $\frac{186000+340000}{2} = 263000$ microorganism / g of fermented sausage

Same Calculation for Mold and Yeast, Lactic acid bacteria and Coliform count

Evaluation of Results

- **Total count** → Calculate and record # of microorganisms / g of sasuage
- **Mold and Yeast count** → Calculate and record # of molds / g of sasuage
- **Lactic acid bacteria count** → Calculate and record # of LAB/ g of sasuage
- **Coliform count** → Calculate and record # of coliforms/ g of sasuage

Total count gives information about general microbial conditions of fruit juice.

Mold and Yeast count is important for spoilage and shelf life of Fruit Juice.