ENUMERATION METHODS

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Enumeration

- Enumeration is counting of microorganisms present in a sample.
- This is done to know the intense of presence of the spoilers in the spoiled food.
- To detect which type of organism is responsible for the spoilage.
- Mostly this is done two important methods.

➢ Viable count

➢ Total count

Types of enumeration:

Viable count

- Spread plate method

Total count

- Pour plate method

Viable count

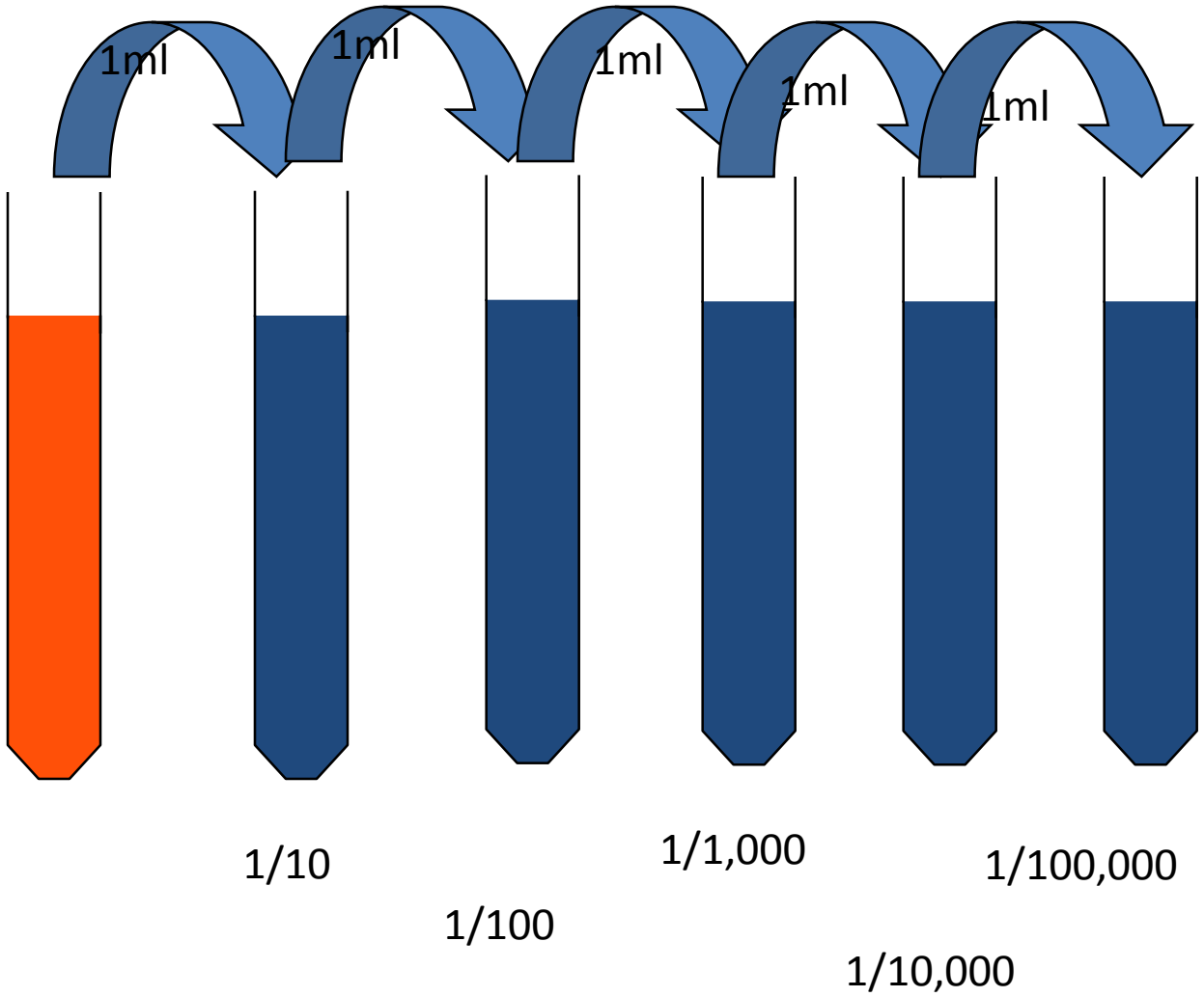
- A viable cell count allows one to identify the number of actively growing or dividing cells in a sample.
- The plate count method or spread plate method relies on bacteria growing a colony on a nutrient medium.
- Number of colonies can be counted.
- Plate count agar is used for general count
- MacConkey agar is used for Gram negative organisms.

Direct viable count:

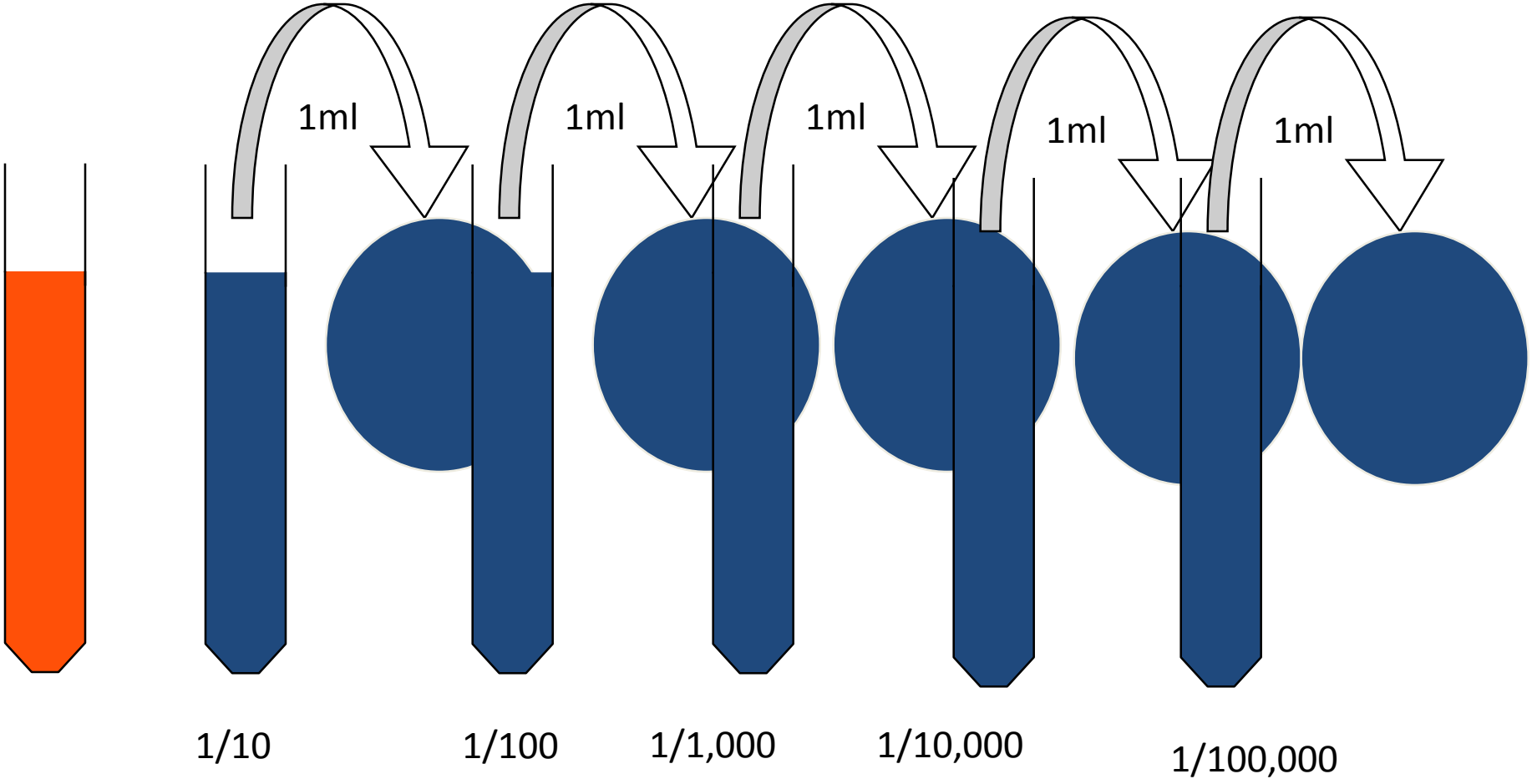
A direct viable count method involves a standard plate count, in which repeated dilutions of a sample.

- The sample is serially diluted as (1:10,1:100,1:1000 etc,) in sterile distilled water and cultivated on nutrient agar for bacteria.
- Potato dextrose agar or sabouraud's dextrose agar is used or fungal identification.

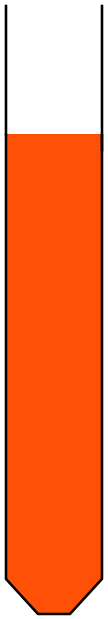
Dilution Series: dilution

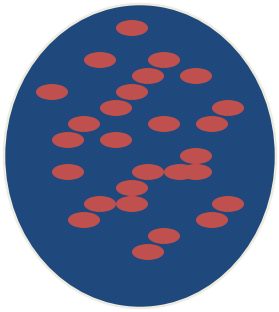


Dilution Series: plating



Dilution Series: Colony counts





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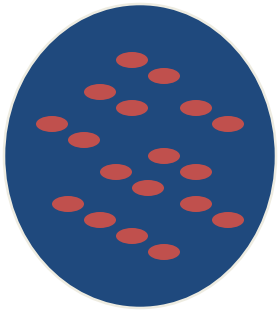

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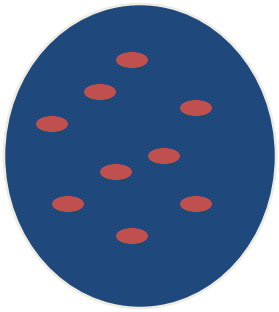

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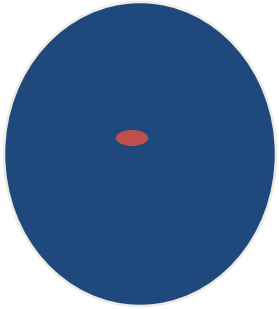

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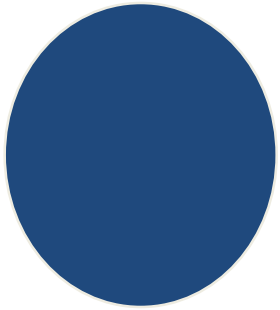

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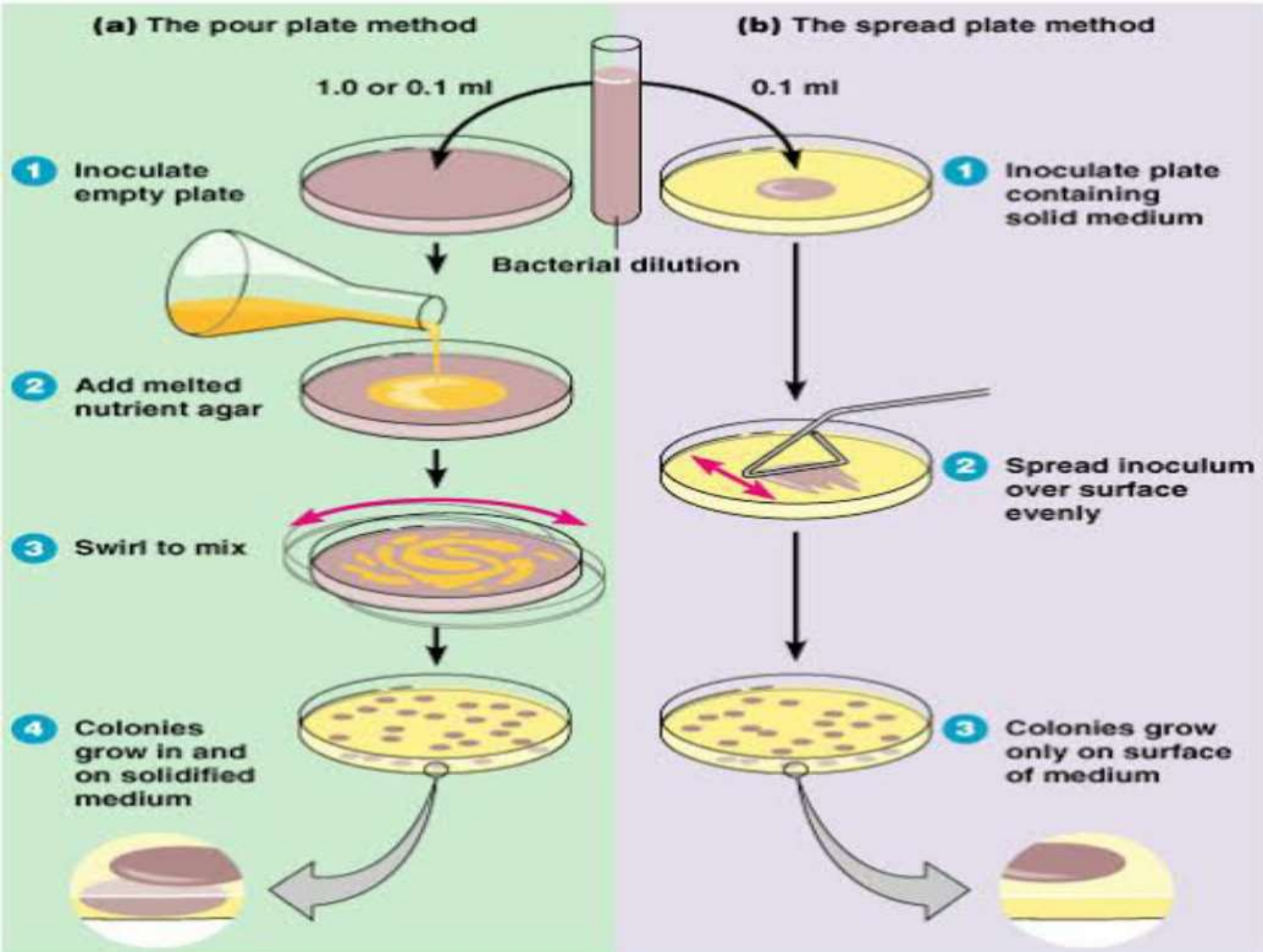
(a) The pour plate method
(b) The spread plate method
1.0 or 0.1 ml
0.1 ml
1 Inoculate empty plate
Bacterial dilution
1 Inoculate plate containing solid medium
2 Add melted nutrient agar
2 Spread inoculum over surface evenly
3 Swirl to mix
4 Colonies grow in and on solidified medium
3 Colonies grow only on surface of medium


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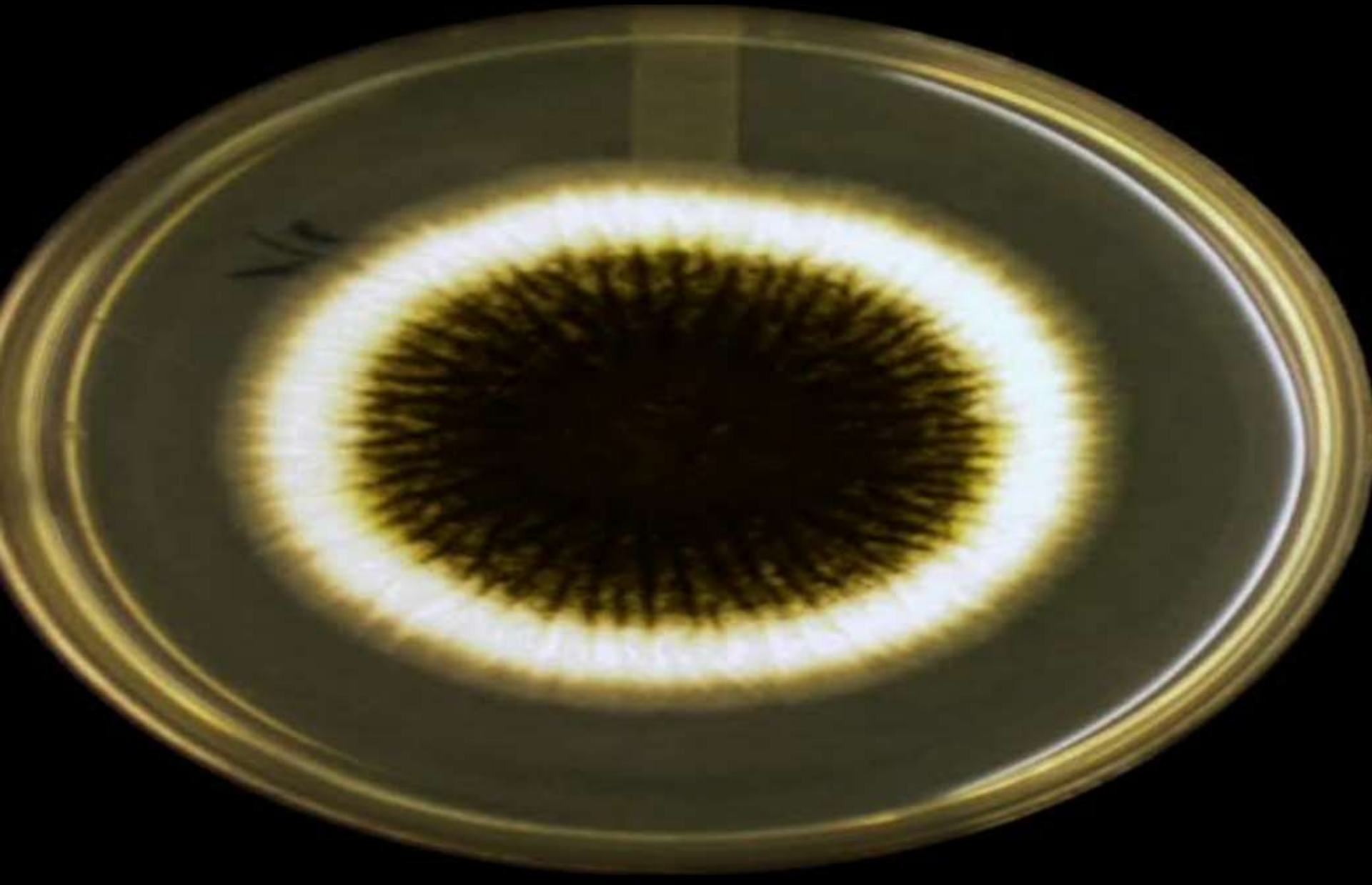

Total count

The initial analysis is done by mixing serial dilution of sample in liquid nutrient agar which is then poured into bottles.

The bottles are then sealed and laid on their sides to produce a slopping agar surface.

The colonies are then counted by eye.The total number of colonies are said as Total Viable Count.

Pour plate method

- The same procedure is done for this till serial dilution.
- The serially diluted sample is then mixed with the molten nutrient agar.
- Then poured onto the sterile petridish.
- Incubated under appropriate temperature amd the colonies where counted.

Conclusion

- The enumeration of these spoiled food samples are important to encounter the type of microbe is causing the spoilage.
- And hence this is used to prevent the same type of spoilage.
- This can be avoided by making the environmental changes which inhibits the organism which is responsible for the spoilage.

Thank you