

Qualitative vs. Quantitative Results

**Listeria Presence Absence vs
Listeria Enumeration**



NQAC

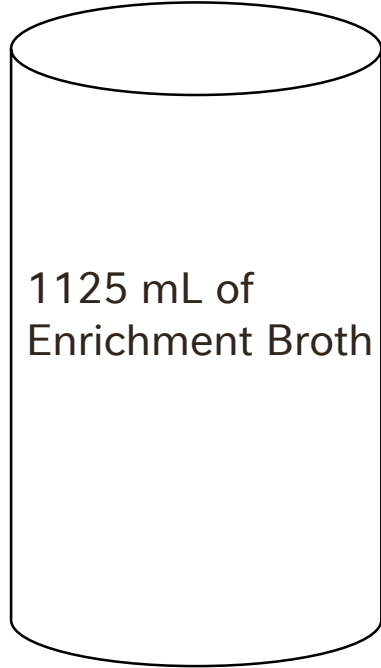
Nestlé Quality Assurance Center



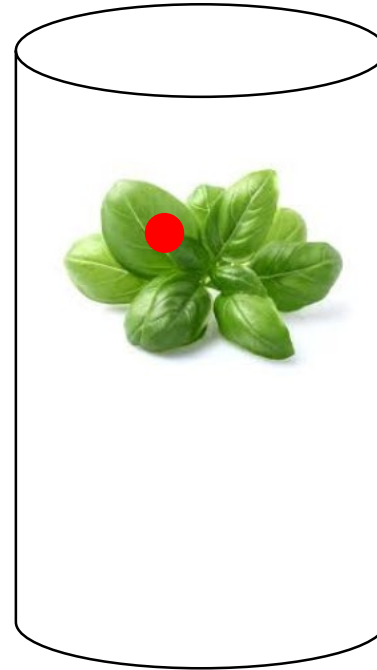
Qualitative Result: Presence/Absence



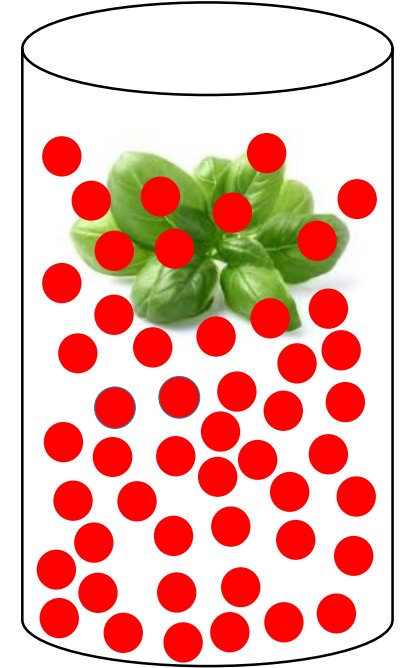
125g of Basil
with one Listeria
cell



1125 mL of
Enrichment Broth



Incubate 26-30 hrs. @
30°



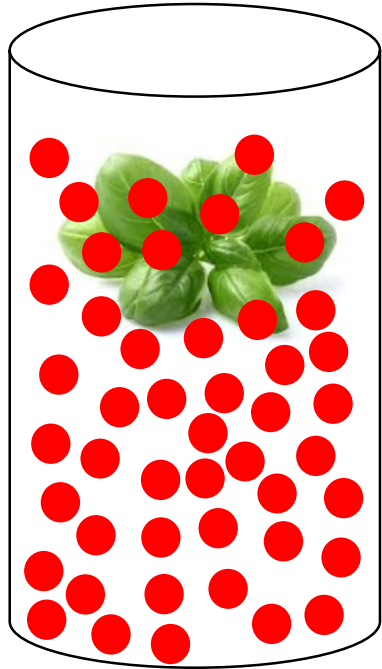
With incubation, one
cell multiplies and can
become billions of cells

Dilute a food matrix
1:10 with enrichment
broth



NQAC
Nestlé Quality Assurance Center

Qualitative Result: Presence/Absence



0.5 mL



We can say that the **LOD**, or "**Level of Detection**" of the Qualitative Assay is **1 cell/wt.** analyzed.

One cell can multiply to $10^3 - 10^6$ cells during incubation and trigger a positive result on VIDAS

VIDAS LPT Platform
 $10^3 - 10^6$ cells in the 0.5 mL aliquot will return a "**Presence**" result

Remove 0.5 mL to test on VIDAS

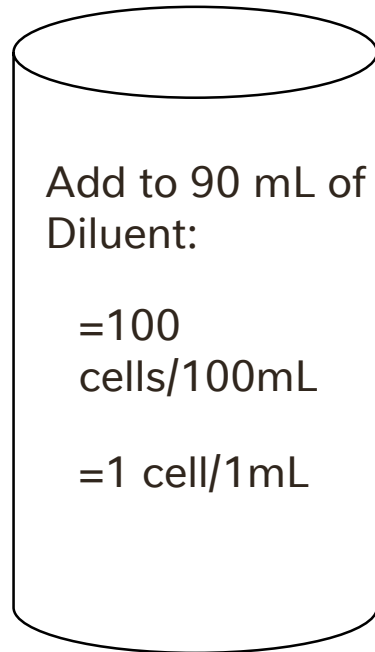


NQAC
Nestlé Quality Assurance Center

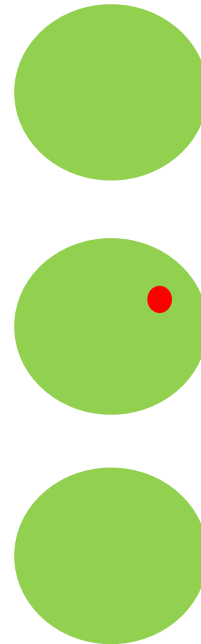
Quantitative Result: How many cells/g are present in the original sample?



100 Listeria cells in 10g of Basil



Make a 1:10 dilution of the matrix



Spread 1 mL among 3 plates.
-Add the # colonies
-Multiply by 10
-This equals the count/mL (or /g)

The minimum count possible among the 3 plates is 1 colony.

1 colony x 10 = 10. This means there are 10 cells/g of the matrix.

We can say that the **LOD** of the **Quantitative Assay** is **10 cells/g**.

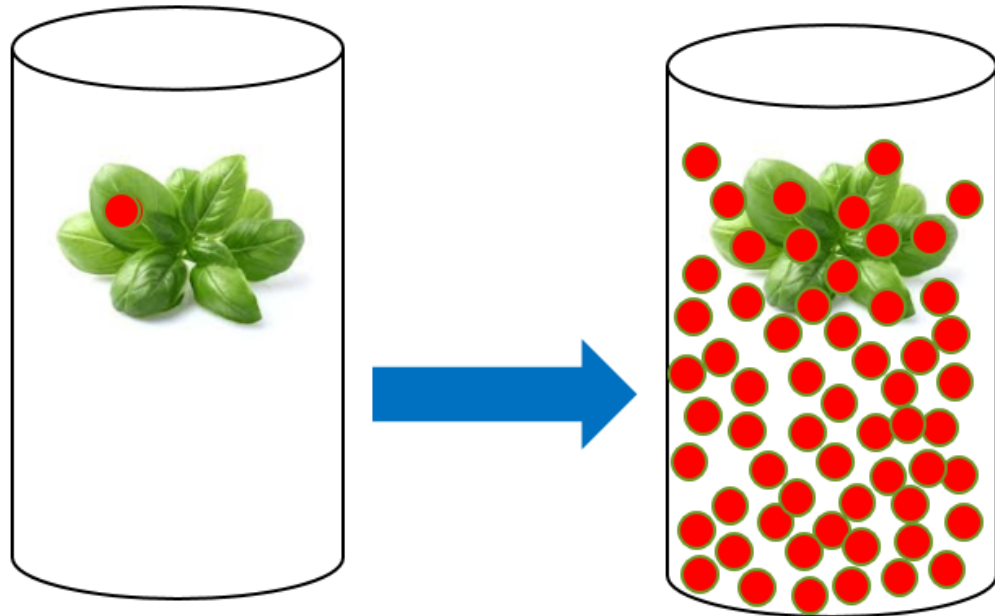


NQAC
Nestlé Quality Assurance Center

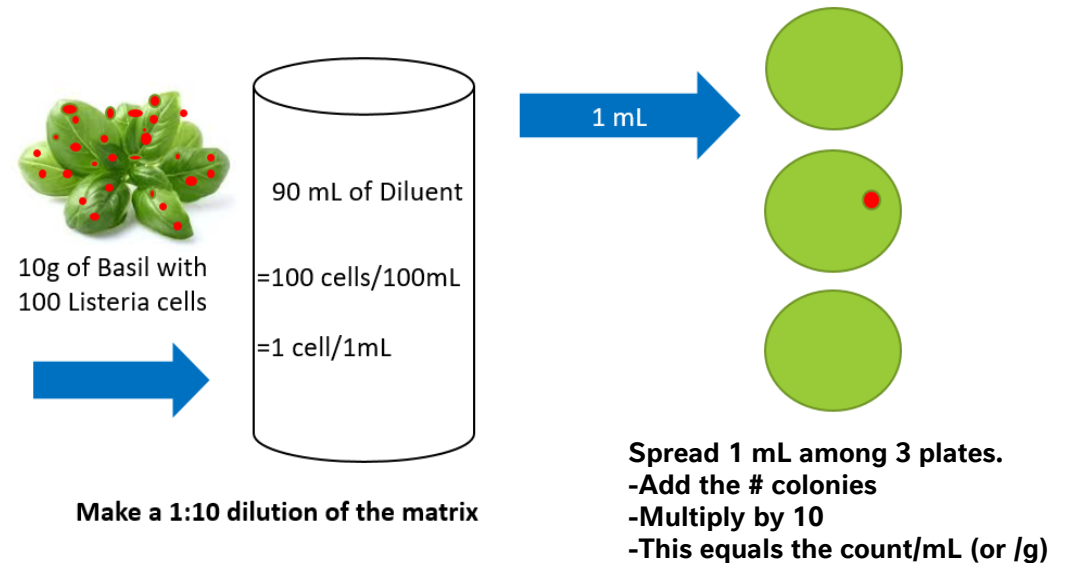
Qualitative LOD = 1 cell/amount tested

Quantitative LOD = 10 cells/g

- A **Positive Qualitative** Result means there was **at least one cell that grew** to detectable levels upon **enrichment**



- A **Positive quantitative** result means there were **at least 10 cells/g** of matrix when **one unenriched ml** was plated



Comparing Results

125g of Basil is enriched for Qualitative Screening. Contamination level is:	Qualitative Result Positive? (LOD = 1 cell/amount tested)	Quantitative Result Positive? (LOD = 10 cells/g)
14 cells/125g	Yes	No. (0.112 cells/g) Report <10 cells/g
140 cells/125g	Yes	No. (1.12 cells/g) Report <10 cells/g
1400 cells/125g	Yes	Yes. (11.2 cells/g) Report 11 cells/g
1000 cells/125g	Yes	No. (8.0 cells/g) Report <10cells/g
1250 cells/125g	Yes	Yes. (10.0 cells/g) Report 10 cells/g

A “<10 cells/g” Quantitative Result **does not mean Listeria is not present** in the sample. It **does not invalidate** a positive Qualitative result. It simply means that Listeria is present at a level of <10 cells/g.

Keep in mind that **bacterial cells may not be evenly distributed throughout a matrix**. The Qualitative analysis was conducted on a different aliquot than was the Quantitative analysis.



Thank you.



NQAC

Nestlé Quality Assurance Center