

Lecture 2

Factors regulating the growth of bacteria:

A- Physical factors:

1- pH:

- Acidophiles = 1.0 - 5.4 (*Helicobacter pylori*)
- Neutrophiles = 5.4 – 7 (most bacteria causing diseases)
- Alkaliphiles = 7 - 11.5 (*Vibrio cholerae*)

2 – Temperature

- Psychrophiles = 15C – 20C (some can grow at 0C)
- Mesophiles = 25C – 40C
- Thermophiles = 50C – 60C

3- Osmotic pressure and salt concentration of the solution can affect bacterial growth.

B- Oxygen requirements:

- 1- Strict or obligate anaerobes: Oxygen must be absent (*Clostridium tetani*)
- 2- Strict or obligate aerobes: Oxygen must be present (*Pseudomonas*)
- 3- Facultative anaerobes: Survive with & without Oxygen (*E. coli*, *Staphylococcus*)
- 4- Aerotolerant: Don't use Oxygen, but can still survive in an environment with Oxygen present (*Lactobacillus*.)
- 5- Microaerophiles: Thrive in low Oxygen/high CO₂ conditions.