Lab 7: Osmotic Pressure

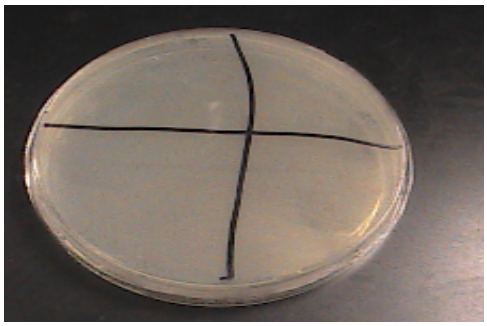
Background and protocol

In this lab, you will learn about the effect of salt concentration on the growth of bacteria.

Bacteria grow under different salt conditions. High salt concentrations are toxic to some organisms yet others thrive or even require these high salt conditions. Some bacteria can live in a **hypotonic** environment. This is when there is less salt in the environment and more inside the cell. If there is less salt, then there is more water and water moves into the cell by **osmosis.** Under **hypertonic** conditions, a cell will undergo plasmolysis. There is more salt in the environment and less water compared to inside the cell so water leaves the cell and the cell shrinks.

In this laboratory, you will be given agar plates that have either 1% salt, 5% salt, 10% salt or 15% salt. If an organism can only grow on the **1% or 5% plates only**, it is classified as a **non halophile**. If the organism can also grow on the **10% plate**, it is classified as a **facultative halophile.** However, if it can grow on the **15% salt plates**, it is called an **extreme halophile.**

In this experiment, you should work in groups. Each group will be assigned salt concentration plates – a 1% plate, a 5% plate, a 10% plate and a 15% plate. Once you are assigned a plate, divide plate into 4 quadrants as shown below.



Then, you will need to get 4 organisms:

E.coli (EC)

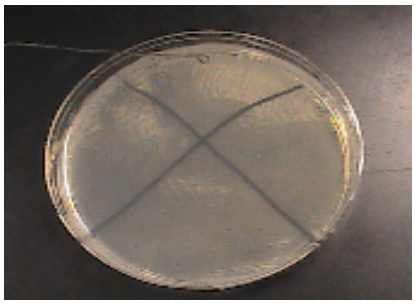
Alcaligenes faecalis (AF)

Serratia marcescens (SM)

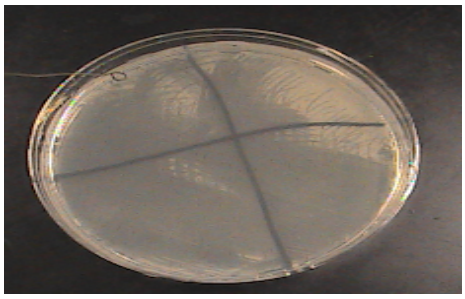
Staphylococcus aureus (SA)

Each of the 4 organisms will be streaked on the 1%, 5%, 10% and 15% salt plates. Each organism will go in one quadrant of the plate. You will use a loop to do the inoculation but you do not need to streak for isolation. You just want to know if the organism will grow. Streak the organisms into each quadrant as shown below.

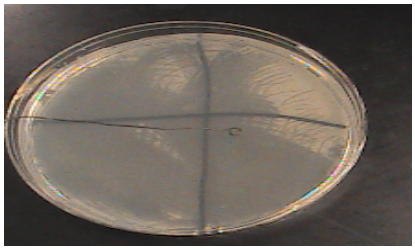
1% salt + 4 organisms



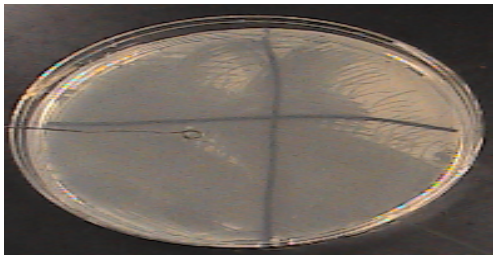
5% salt + 4 organisms



10% salt + 4 organisms



15% salt + 4 organisms



You will then put your plates in the 37 degrees C incubator. In the next lab period, you will record the growth.