



# Microbiology

## Presence of micro-organisms in water

### ESPERIENZA DI MICROBIOLOGIA

Gli studenti divisi in gruppi di tre effettueranno delle analisi microbiologiche su campioni di acque diverse in cui andranno a verificare la presenza di microrganismi utilizzando un terreno generico (Nutrient Agar) e utilizzando un terreno specifico per l' E.coli (TBX) verificarne la presenza.

#### Fasi esperienza

##### Prima fase

1. Preparazione del terreno N.A. e TBX
2. Semina per striscio o spatolamento dei campioni di acqua
3. Incubazione piastre

##### Seconda fase

1. Osservazione piastre
2. Prelievo colonie
3. Colorazione colonie cresciute su N.A. con blu di metilene e colorazione di Gram

### MICROBIOLOGY EXPERIENCE

Students divided into groups of three will carry out microbiological analyzes on samples of different waters in which they will verify the presence of microorganisms using a generic medium (Nutrient Agar) and using a specific medium for E. coli (TBX) to verify their presence.

#### Experience phases

##### First phase

1. Preparation of the ground N.A. and TBX
2. Sowing by smearing or spreading water samples
3. Plate incubation

##### Second phase

1. Plates observation
2. Collecting colonies
3. Coloring of colonies grown on N.A. with methylene blue and Gram stain

I. **PURPOSE:** To verify the presence of microorganisms in the water.

II. **MATERIALS:**

- Bottle, 500ml
- funnel for powders
- stirring rods
- graduated cylinder
- tubes
- metal caps
- loops for sowing
- spatula
- weight scale
- organic soils
- autoclave
- optical microscope
- coverslip
- glass holder
- blue methylene
- heating plate
- culture plate

III. **PROCEDURE:**

**-Preparation of organic soils/culture medium.**

- 1) In a bottle of 500ml put some of water and then add the quantity of organic soil that has been calculated.
- 2) Melt the organic soil warming it inside the microwave.
- 3) After that put the solution on the heating plate.
- 4) Repeat the procedures number 2 and 3 till the organic soil becomes transparent.
- 5) Pour the organic soil inside all the different tubes in the laboratory and close them with the metal caps.
- 6) Sterilize the tubes in the autoclave.

**-Sowing of the water's samples.**

- 1) Pour the broth that is inside the tubes into culture plates
- 2) After the solidification of the soil do the sowing.
- 3) Withdraw 0.5 ml of sample and then pour it on the broth.
- 4) Do the smearing.

**-Observation of the culture plates**

- 1) Count the bacteria's colonies that have been developed (measurement in U.F.C/ml).
- 2) Withdraw the colonies.
- 3) Make the coloration of blue methylene.
- 4) Observe at the optical microscope.