**Department of Botany**
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**Paper: DSE3 (unit 5)**

# Microorganisms in Air

# Isolation of microorganism from air

- Atmosphere (The layer nearest to the earth) contains all major groups of microbes ranging from algae to the viruses.

- **Microbes Found in Air**- In addition to gases, dust Particles and water vapour, air also contains microorganisms.

- There are vegetative cells and spores of bacteria, fungi and algae, viruses and protozoan cysts .

- Since air is often exposed to sunlight, it has a higher temperature and less moisture. So,, most of these microbial forms will die

- Environmental factors that affect air microflora include atmospheric temperature(There is a progressive increase in the death rate with an increase in temperature from -18℃ to 49℃ ), humidity(Low and high relative humidity cause the death of most microorganisms) , air current.

- Air current is also important in the dispersal of microorganisms as it carries them over a long distance.
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In still air the particles with microorganisms tend to settle down. But a gentle air can keep them in suspension for long periods.

- Air is not a medium in which organism grow but is a carrier of particulate matter ,dust particles,spores ect

- Air is mainly transport medium for microorganisms. They occur in small numbers in air when compared with soil or water.

- The microflora of air can be studied under two headings outdoor and indoor microflora.

- Air is not a natural environment for microorganisms as it doesn't contain enough moisture and nutrients to support their growth and reproduction.
- One of the most common sources of air-1 microflora is the soil.
- microorganisms found in water may also be-2 released into the air in the form of water droplets
- -from plant or animal surfaces 3
- The main soures of airborne microorganism is-4 human beings. by activities like coughing, sneezing, talking and laughing

- They are different methods to isolate microorganism

solid impingement-1
liquid impingement-2

- There are several methods designed for the enumeration of microorganisms in air. The most important ones are solid and liquid impingement
- It is not collects and counts all the microorganisms in the air sample tested. Some microbial cells are destroyed .and some entirely pass through in all the processes

- **Impingement in liquids:**
- In this method, the air drawn is through a very small opening tube and bubbled through the liquid. The organisms get trapped in the liquid medium. Aliquots of the liquid
- then plated to determine microbial content

- **Impingement on solids:**
- In this method, the microorganisms are collected on the solid surface of agar medium. Colonies develop on the medium where the organism impinges

- Aim…….to isolate microoganism from air

Materials :

Petri dishes
Slides
Cover slips
Czapek dox agar
Nutrient agar
Distil water
Gram stain
Aniline blue
Glycerol
Microscope
Incubator
Colony counter

# procedure

- pour melted ,cooled Czapek dox agar-1

With steptomycen and nutrient agar in petri .dishes

.allow them to solidify-2

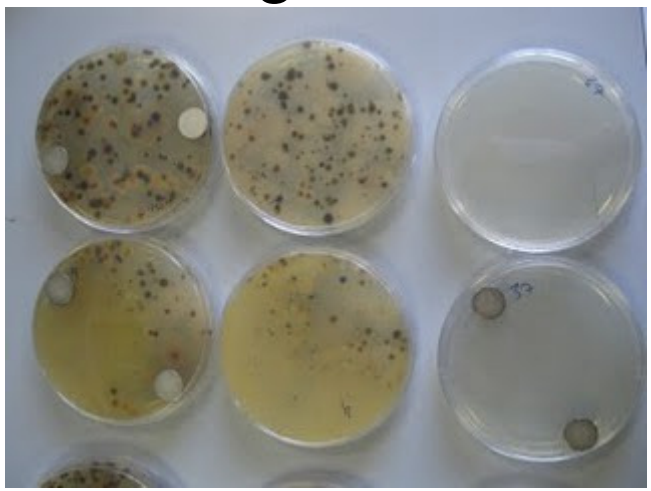
remove cover and expose the petri dishe-3 .for 5-10minute at differnet location

.cover the lid and incubate the plate-4

- Czapek dox agar in25℃ for7days,and- 5 nutrient agar in 35℃ for 24-48 hours

# observation

- observe the plates and count the distribution of-1 fungal and bacterial colonies on Czapek dox agar .and nutrient agar



record your result for the total number of-2 colonies using colony counter and fungi each . plate

| Fungi isolated | Location | number of colonies | Mean | Percentage |
|---|---|---|---|---|

- Bacterial count

$$\text{Percentage occurrence} = \frac{\text{number of colonies of indivdiual species}}{\text{Total number of colonies of all species}}$$