

World of Microbes and Study of Yeast Reproduction

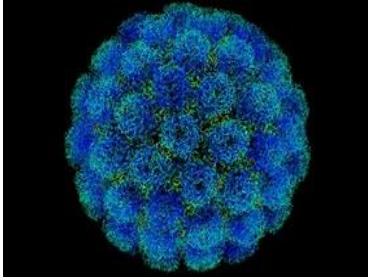
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Microbes And Their Basic Introduction

▶ VIRUS



SMALLEST OF MICROBES

THE CORE MATERIAL IS MADE UP OF DNA OR RNA
VIRUS USES ITS HOST CELL'S MACHINERY TO
REPLICATE ITS OWN GENETIC MATERIAL.

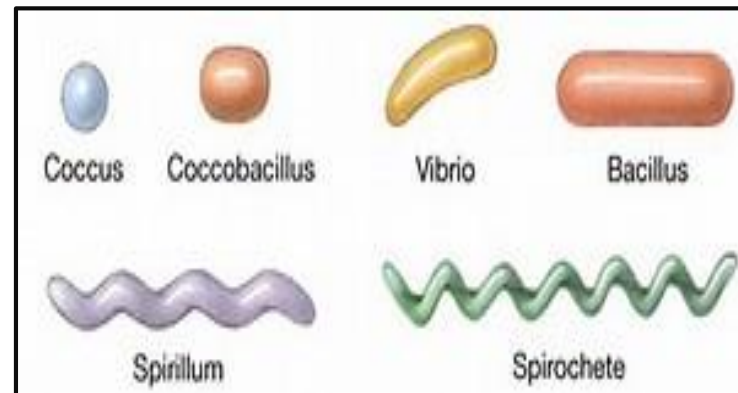
BACTERIA



SINGLE CELLED MICROBES

NO NUCLEUS OR MEMBRANE BOUND ORGANELLES.
REPRODUCE BY BINARY FISSION.

:SHAPES OF BACTERIA:



► FUNGI



EUKARYOTIC

REPRODUCE THROUGH BINARY FISSION

GROW IN WIDE RANGE OF EXTREME CLIMATES

YEAST



THEY DO NOT NEED SUNLIGHT TO GROW.

MAINLY REPRODUCE ASEXUALLY BY THE PROCESS OF BUDDING.

IMPORTANT COMPONENT IN MAKING WINE,
BIOREMEDIATION, INDUSTRIAL ETHANOL PRODUCTION,
NUTRITIONAL SUPPLEMENTS, PROBIOTICS



Experiment 1)-Preparation of Wine
Aim : Understanding the making of fruit wine with the help of yeast fermentation.

▶ **APPARATUS:FRUITS INCLUDING PEARS,APPLES,ORANGE,GRAPES,10mL OF YEAST,BEAKER,MEASURING CUP,JUICER.**

PROCEDURE:

- 1)SELECT TWO FRUITS, E.G ORANGE AND PEAR
- 2) WASH AND PEEL THE FRUITS AND REMOVE
- 3) CUT THE ORANGE AND PEAR IN TINY PIECES AND ADD A LITTLE WATER WHILE BLENDING IT.

- ▶ 3) TRANSFER THE PEAR JUICE IN A STERILIZED BOTTLE AND THE ORANGE JUICE IN A VACCUM SEALED POT RESPECTIVELY.
- ▶ 4) ADD 10ml OF YEAST SOLUTION TO THE JUICES AND SECURE THE LIDS TIGHTLY AND SHAKE WELL.
- ▶ 5) PLACE THE CONTAINERS IN THE CONSTANT TEMPERATURE BOXES FOR 3 DAYS.



EXPERIMENT 2

AIM -PREPARING LIQUID CULTURE MEDIUM OF YEAST

- ▶ APPARATUS- 10g OF YEAST EXTRACT POWDER, 10g OF PEPTONE,20g OF SUCROSE, 1000ml OF WATER,WEIGHING PAPER,ELECTRONIC WEIGHING BALANCE,CONICAL FLASK,GLASS ROD.
- ▶ PROCEDURE-
- ▶ 1)PLACE A WEIGHING PAPER ON THE ELECTRONIC WEIGHING BALANCE AND MEASURE THE MASS OF THE MATERIALS
- ▶ 2) POUR 1000ml OF WATER AND THE MATERIALS IN A BEAKER AND MIX WELL.



3) POUR THE SOLUTION IN 5 DIFFERENT BEAKERS-3 WERE FILLED UP TO 150ml AND 2 WERE FILLED UP TO 200ml.

4) ALL THE BEAKERS WERE COVERED AND LATER WERE PUT IN THE STERILISER MACHINE.



Experiment 3

Aim - Understanding the conditions affecting the growth of yeast.

The influencing factors for this experiment are- temperature, sugar, yeast and pH value

- ▶ Factor 1: Temperature
- ▶ Apparatus - liquid culture medium of yeast, dry yeast , three volumetric flask, 3 balloons and beaker
- ▶ Procedure -
 - ▶ 1] Pour 100 ml of liquid culture medium of yeast in 3 beakers
 - ▶ 2] Add 5g of dry yeast in each beaker and stir the mixture
 - ▶ 3] Pour the mixture in three volumetric flasks



- ▶ 4] Cover the top of the volumetric flask with a balloon and tie a string around it
- ▶ 5] Place one of the volumetric flask in the refrigerator at about 4.C, another volumetric flask in the room at room temperature which is about 20.C and the last volumetric flask in the constant temperature box at about 45.C
- ▶ After about 20 minutes we come to know that the volumetric flask kept in 45.C has the biggest balloon and the one kept in the 4.C has the smallest balloon



- ▶ Factor 2 - sugar [sucrose]
- ▶ Apparatus- Buchner flask, conical flask, rubber tube, liquid culture medium of yeast ,dry yeast
- ▶ Sucrose, sodium hydroxide and water, measuring paper and electronic weighing balance

- ▶ Procedure:
 - ▶ 1] Pour 100ml of liquid culture medium of yeast in beaker and add 5g yeast respectively and stir it.
 - ▶ 2] Pour the mixture in the Buchner flask and add 1 g , 2.5 g and 4 g of sucrose and mix in each of the Buchner flask quantitatively.



- ▶ 3] Add 0.1 g of Calcium Hydroxide and 100 ml of water in the conical flask and filter it to get a clear solution.
- ▶ 4] Connect the Buchner flask and conical flask with a rubber tube
- ▶ 5] Keep this arrangement of Buchner flask and conical flask in the constant temperature box [incubator] for about 20 minutes.
- ▶ Later we come to know that at 4 g of sugar, the solution is milkier since carbon dioxide is present and at the rate of 1 g the solution is clear hence less milkier.



Factor- salt

- ▶ 1] Pour 100 ml of liquid culture medium of yeast in 3 beakers
- ▶ 2] Add 5g of dry yeast in each beaker and stir the mixture. Add 3g of salt in beaker 1, 5g in beaker 2 and 7g in beaker 3
- ▶ 3] Pour the mixture in three volumetric flasks
- ▶ 4] Cover the top of the volumetric flask with a balloon and tie a string around it
- ▶ As the amount of salt increases, the bigger the balloon will expand due to the presence of carbon dioxide.

