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MICROBIOLOGY



Workbook for Practical Microbiology

2nd Edition

Upasana Bhumbla

Forewords
TV Rao
FS Mehta

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Head

Department of Microbiology

Chapter 4 Laboratory Instruments



1. Autoclave

Principle:
Water boils when its vapour pressure equals that of surrounding atmosphere. When atmospheric pressure is raised, boiling temp. is also raised.

Sterlisation conditions:
121°C for 15 mins at pressure of 15 pounds (lbs) per square inch (psi).

Uses: For surgical instruments, culture media, autoclavable plastic containers, Plastic tubes and pipette tips, solutions, biohazardous waste



2. Incubator

In biology, an incubator is a device used to grow and maintain microbiological cultures or cell cultures.

The incubator maintains optimal temperature, humidity and other conditions.

For routine bacterial cultures, temperature is mainted at 37°C.

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Widely used method of sterilisation by dry heat.

Temperature:
Holding temp. of 160°C for 2 hours is requied for sterilisation

Materials sterilised:
Glassware like glass syringes, petri dishes, flasks, pipettes and test tubes

Surgical instruments like scalpels, forceps

Chemicals life paraffin, fats, glycerol, glove powder

3. Hot air oven

McIntosh and Filde's Jar

- Hydrogen gas is passed in
- Catalyst helps to combine Hydrogen and O_2
- Reduced methylene blue remains colorless if anaerobiosis is achieved



McIntosh and Filde's anaerobic jar is an instrument used in the production of an anaerobic environment (anaerobiosis)

Hydrogen gas is passed in

Catalyst helps to combine hydrogen and oxygen

The presence of air is deleterious for many anaerobic bacteria and must be incubated in its absence. The inoculated culture plates are placed inside a metal jar and the lid clamped tight. The air inside is removed using a vacuum pump. The pressure inside the chamber is reduced to 100 mm below mercury

4. McIntosh and Filde's Jar

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Workbook for Practical Microbiology

Salient Features

- Provides essential information about practical aspects of Microbiology
- Covers all the topics including Clinical Microbiology
- Gives opportunity to students to practice and learn Microbiology
- Includes recent advances that are increasingly applied in the rapid diagnosis of infectious diseases.

Upasana Bhumbla MBBS MD (Microbiology) is working as Infection Control Officer and Assistant Professor, Department of Microbiology at Geetanjali Medical College and Hospital, Udaipur, Rajasthan, India. She has involved herself in many research activities at her institute. Her keen interest in teaching and promoting research works has made her compile this workbook for the better understanding of Practical Microbiology for undergraduate students.

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