

Chapter 3 : Collection, Transport and Preparation of Samples

I. Introduction

Microbiological sampling refers to the process of collecting representative portions of food, water, air, or surfaces to analyze their microbial content. Sampling, transport, and preparation of microbiological samples are essential steps in ensuring the accuracy and reliability of laboratory analysis.

II. Collection of Samples

1. General Principles

- Use sterile tools and containers.
- Avoid touching the inner surfaces of containers.
- Collect sufficient quantity for representative analysis.
- Label each sample with detailed information: product, date, location, collector's name.

Example:

A sample of fresh pasteurized milk collected from Farm XYZ at 10:00 AM on 06/11/2025 is placed in an insulated box at 4°C and labeled: "Milk sample – 06/11/2025 – Farm XYZ – 4°C – Collected by Dr. A. Dupont."

2. Types of Samples

- **Food samples** (milk, meat, vegetables) – collected in sterile bags or bottles.
- **Water samples** – collected in sterile flasks, sometimes with sodium thiosulfate to neutralize chlorine.
- **Surface samples** – collected with sterile swabs, contact plates, or adhesive tapes.
- **Air samples** – passive exposure of plates or using vacuum devices.

III. Transport of Samples

1. Conditions

- **Temperature:** Keep samples at 2–8°C.
- **Time:** Transport within 24 hours.
- **Protection:** Avoid sunlight and external contamination.

IV. Preparation of Samples

1. Main Steps

1. **Homogenization:** Mixing samples to obtain uniformity.
2. **Dilution:** Serial dilutions to reduce microbial concentration.
3. **Grinding or filtration:** For solid or semi-solid samples.
4. **Use of diluent:** Usually sterile peptone water, Ringer solution, or physiological saline.

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Example:

10 g of minced meat are mixed with 90 mL of sterile peptone water to prepare the first dilution (10^{-1}).

V. Conclusion

- Sampling, transport, and preparation are interconnected steps that determine result accuracy.
- Mistakes in any stage can lead to invalid results.
- Mastery of aseptic techniques is essential for reliable microbiological analysis

References

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