
EXPERIMENT 6 COLLECTION AND TRANSPORT OF FOOD SAMPLES FOR MICROBIOLOGICAL ANALYSIS

Structure

- 6.0 Objectives
- 6.1 Introduction
- 6.2 Collection of Samples for Microbiological Analysis
 - 6.2.1 Materials Required
 - 6.2.2 Sampling Procedure
 - 6.2.3 Sampling Criteria
- 6.3 Transportation and Storage of Samples
 - 6.3.1 Laboratory Preparation
- 6.4 Activity

6.0 OBJECTIVES

After studying and performing this experiment, you will be able to:

- collect the food sample for microbiological examination;
- carry out sampling for microbiological examination; and
- transport and store the food sample properly for microbiological analysis.

6.1 INTRODUCTION

Assessment of microbiological quality of foods continue to be the major interest and concern in our country and the world over on account of foodborne diseases and other health-related problems associated with foods. Increasing global trade and consumer awareness and demand for safe foods also make it imperative to improve quality of foods. Monitoring microbiological quality of foods require accurate and reliable methodologies for isolation and identification of important foodborne pathogens. For microbiological analysis of any food sample, the first step is the collection of the sample properly in sterilized container. You all are coming across sampling procedure everyday. To judge the quality of bulk you just pick up small quantity and examine it. On the basis of quality of this small quantity you make an assessment about bulk. This small quantity which represents the bulk is sample. The methods of sampling depends on the nature of bulk to be examined similarly the number samples varies with size or quantity to bulk. The preservation of sample or its transportation to quality judging laboratory is also of importance as the lack in this regard may lead to misrepresentation.

6.2 COLLECTION OF SAMPLES FOR MICROBIOLOGICAL ANALYSIS

6.2.1 Materials Required

- a) **Sample container:** Clean, dry, sterile, leak proof, screw capped containers such as wide-mouth jars or bottles or stainless steel cans. Disposable plastic bags are better than glass containers.
- b) **Sample collecting devices:** Sterile probes, drills, spoons, swabs etc.
- c) **Instrument for opening food packages:** Sterile scissors, knives, can openers.
- d) **Labels or markers:** Light coloured waterproof paper labels for recording data.
- e) **Insulated container:** Suitable for transporting and holding frozen/chilled samples.
- f) **Sterilizing agent:** 70% ethanol or isopropanol for disinfecting outer side of cans.

6.2.2 Sampling Procedure

- a) Aseptic precautions must be undertaken at the time of sampling to protect sample from extraneous contamination. The samples shall not be touched by hand and shall be handled only with the help of sterile forceps.
- b) The sample should be a true representative.
- c) Sample should be at least twice of the quantity required for analysis so as to keep half portion in reserve.

6.2.3 Sampling Criteria

The minimum sample weight per carton shall be 50 g. At meat packaging plants, the surface area of meat sample (10cm X 10cm) should be swabbed with a gauge swab (5 cm X 5 cm) moistened with 0.1% sterile peptone water. General type and category of carcass/cuts/minced meat (chilled or frozen) shall be kept separately and each shall constitute a lot. Minimum weight per sample per carcass shall be 100 gm.

- a) **Type of sample:** Take original unopened container in case of canned food, if available. Take sample from various places within the container (s) in case of bulk product to ensure full representation of whole product.
- b) **Labeling:** Label all sample containers immediately before or after the sample is taken. Number the sample label and make a related record.
- c) **Sampling report:** Complete detailed information about the various aspects of the sample as indicated below should be attached with each individual sample.

- *General Description*

- i) Name and address of the person collecting samples.
- ii) Name of the manufacturer/source.

- *Sample Description*

- iii) Date, place and time of sampling.
- iv) Reasons for sampling.
- v) Number and size of units.

- vi) Number and marking of the lot.
- vii) Size, number and reference number of food samples.
- viii) Temperature of the product.
- ix) Means of transportation.
- *Purpose of sample collection*
 - x) Specify reasons- routine/legal/food poisoning.
 - xi) Tests to be done.
- *Information on other factors, conditioned or circumstances, which may have influenced sampling.*

6.3 TRANSPORTATION AND STORAGE OF SAMPLES

Measures to be adopted for safe transportation and storage of microbiological sample are as follows:

- a) Sample should be transported as rapidly as possible (within 24 hours).
- b) Frozen sample should be kept solidly frozen until analyzed. Collect in pre-chilled condition and place in a freezer. Use dry ice as refrigerant.
- c) Refrigerated samples should be kept refrigerated (0-4.4° C) and should not be frozen.
- d) Ice in plastic containers or cold packs (0-4.4° C) can maintain temperature for two days. Use dry ice for longer duration.
- e) Perishable food should be stored under refrigeration immediately (0-4.4° C).
- f) Non-perishable food can be stored at ambient temperature or refrigerated.
- g) Product in canned or dry condition needs no particular precautions except avoidance of temperatures above 45° C.
- h) Samples should be properly packed to prevent breakage and leakage.
- i) Samples should be marked as perishable, packed in dry ice, fragile etc.
- j) Refrigerated samples should not be stored for more than 36 hours.

6.3.1 Laboratory Preparation

- i) Prior information should be given to the laboratory where the samples are to be analyzed, if possible.
- ii) All equipments should be well maintained and in proper working condition (incubator, water bath, glass and aluminum blender, stomacher, balances and weights, pH meter etc.).
- iii) All media and glassware should also be ready.

6.4 ACTIVITY

After going through this experiment, you collect a meat sample from a carcass and store it properly for microbiological analysis.