
EXPERIMENT 4 DETERMINATION OF ASH CONTENT IN MEAT

Structure

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4.0 OBJECTIVES

After going through this experiment, you will be able to:

- determine total mineral content of meat and meat products; and
- estimate nutritive value in terms of essential minerals.

4.1 INTRODUCTION

Ash is the inorganic residue left after ignition in a muffle furnace at 550 to 600° C for 2 to 4 hours. Ash is partitioned into soluble portion comprising of mineral matter such as calcium and phosphorus and insoluble ash consisting of silica or sand due to either contamination or adulteration. Some volatile mineral elements such as iodine and selenium are lost at high temperature.

Ash is used for preparing mineral extract in the estimation of various minerals as well as for finding out organic matter and nitrogen-free extract by difference.

4.2 EXPERIMENT

4.2.1 Principle

The tissue matter is dried at a very high temperature and the residue left is referred to as ash. During this process, tissue water is lost.

4.2.2 Requirements

- Muffle Furnace
- Tongs
- Silica Basin
- Desiccator

4.2.3 Procedure

1. Silica basin is preheated at 500-600°C and weigh.
2. Weigh 5 g of meat sample into a clean, dry, pre-weighed silica basin.
3. To decarbonise the meat sample, silica basin is slowly heated at low flame till charring occurs and no smoke is emitted.
4. Keep the silica basin in muffle furnace maintained at 500 – 600°C for 5 – 6 hours until no black particle is left.
5. Cool the silica basin with ash in a desiccator and weigh.
6. The silica basin is again kept in the muffle furnace and heated. After cooling, it is weighed again.
7. The process is repeated till two consecutive readings are constant.

4.2.4 Observation

Weight of the empty silica basin = A g

Weight of the silica basin with sample = B g

Weight of the silica basin with ash = C g

Weight of moisture free sample = W g

4.2.5 Calculation

Total ash content (gram/100 gram sample) =

$$\frac{\text{Weight of the ash}}{\text{Weight of the sample taken}} \times 100 = \frac{(C - A)}{(B - A)} \times 100$$

$$\text{Total ash content (gram/100 gram in dry sample)} = \frac{(C - A)}{W} \times 100;$$

where W is the weight of moisture free sample(g)

4.2.6 Result

Total ash content is g/100g sample

Total ash content dry sample basis is g/100g sample

4.3 PRECAUTIONS

- Heating should be performed on a low flame.
- The meat piece should be cut in pieces before putting in silica basin. Increased surface area enhances rate of evaporation.
- Desiccator should have tight seal and also possess absorbent to avoid any moisture.