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# EXPERIMENT 14 DETERMINATION OF ACID INSOLUBLE ASH IN FOOD PRODUCTS

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## 14.0 OBJECTIVES

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After attending to this experiment, we shall be able to :

- learn to perform determination of acid insoluble ash in food products.

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## 14.1 INTRODUCTION

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The acid insoluble ash is a measure of the sandy matter and plant body parts including calyx, leaves, etc., which contain higher content of non-combustible acid insoluble matter.

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## 14.2 PRINCIPLE

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Acid insoluble ash is determined by dissolving ash in dilute hydrochloric acid (10% m/m), the liquid filtered through an ashless filter paper and thoroughly washed with hot water. The filter paper is then ignited in the original dish, cooled and weighed.

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## 14.3 REQUIREMENTS

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### Apparatus

*Flat-Bottom Dish* - of stainless steel, porcelain, silica or platinum.

*Muffe Furnace* - maintained at  $550 \pm 10^{\circ}\text{C}$ .

*Desiccator*

### Reagent

*Dilute Hydrochloric Acid (5N)*

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## 14.4 PROCEDURE

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To the ash contained in the dish, add 25 ml of dilute hydrochloric acid, cover with a watch-glass and heat on a water-bath for 10 minutes. Allow to cool and filter the contents of the dish through a Whatman filter paper No. 42 or its equivalent. Wash the filter paper with water until the washings are free from the acid and return them to the dish. Keep it in an oven maintained at  $100 \pm 2^\circ\text{C}$  for about 3 hours. Ignite in a muffle furnace at  $550 \pm 10^\circ\text{C}$  for one hour. Cool the dish in a desiccator and weigh. Heat the dish again at  $550 \pm 10^\circ\text{C}$  for 30 minutes, cool in a desiccator and weigh. Repeat this process of heating for 30 minutes, cooling and weighing until the difference between two successive weighing is less than 1 mg. Record the lowest weight.

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## 14.5 CALCULATION

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$$\text{Acid insoluble ash, \% by mass} = \frac{100 \times (W_2 - W_1)}{W}$$

Where,

$W_1$  = weight, in g, of the empty dish,

$W_2$  = weight, in g, of the dish with acid insoluble ash, and

$W$  = weight, in g, of the sample.

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## 14.6 RESULTS AND INFERENCE

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The difference between the results of two concurrent determinations carried out simultaneously or in rapid succession by the same analyst (repeatability) shall not exceed 0.01 % by mass. Higher content of acid insoluble ash in food products is not desirable. It should be as minimum as possible (0.1 % Maximum)

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## 14.7 PRECAUTIONS

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- Ashing should be proper.
- Ashless filter paper should be used for the filtration.