International Standard 6557/2

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Fruits, vegetables and derived products — Determination of ascorbic acid content — Part 2: Routine methods

Fruits, légumes et produits dérivés — Détermination de la teneur en acide ascorbique — Partie 2: Méthodes pratiques

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Foreword

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Fruits, vegetables and derived products — Determination of ascorbic acid content — Part 2: Routine methods

1 Scope and field of application

This part of ISO 6557 specifies two routine methods for the determination of the ascorbic acid content[1] of fruits, vegetables and derived products:

method A: 2,6-dichlorophenolindophenol titrimetric method;

method B: 2,6-dichlorophenolindophenol spectrometric method after extraction with xylene.

Method A can only be used in the absence of certain interferences (see 2.6).

Method B is applicable to derived fruit and vegetable products in strongly coloured solutions.

2 Method A: 2,6-dichlorophenolindophenol titrimetric method

2.1 Principle

Extraction of the ascorbic acid from a test portion using either oxalic acid solution or metaphosphoric acid-acetic acid solution. Titration with 2,6-dichlorophenolindophenol dyestuff until a salmon pink colour is obtained.

2.2 Reagents

All reagents shall be of recognized analytical grade. The water used shall be distilled water or water of at least equivalent purity.

2.2.1 Extraction solution.

Use either a 2 % (*m*/*m*) oxalic acid solution or a metaphosphoric acid/acetic acid solution prepared as follows.

Dissolve 15 g of metaphosphoric acid in 40 ml of glacial acetic acid and 200 ml of water in a 500 ml one-mark volumetric flask, make up to the mark with water and filter immediately through filter paper into a glass bottle.

This solution can be kept for 7 to 10 days if stored in a refrigerator.

2.2.2 2,6-dichlorophenolindophenol, dyestuff solution.

Dissolve 50 mg of the sodium salt of 2,6-dichlorophenolindophenol in 150 ml of hot (50 to 60 °C) water containing 42 mg of sodium hydrogen carbonate in a 200 ml one-mark volumetric flask, make up to the mark with water and filter. Store the solution in a dark brown bottle in a refrigerator.

As the dyestuff decomposes with time, fresh solution should be prepared periodically.

2.2.3 Ascorbic acid, 1 g/l standard solution.

Weigh, to the nearest 0,01 mg, 50 mg of ascorbic acid which has been stored in a desiccator, transfer quantitatively to a 50 ml one-mark volumetric flask and make up to the mark with the extraction solution (2.2.1).

2.3 Apparatus

Usual laboratory equipment, and

2.3.1 Analytical balance.

2.3.2 Mixer.

2.3.3 Burette, of capacity 10 to 50 ml.

2.4 Procedure

2.4.1 Preparation of the test sample

If necessary, remove seeds and hard seed-cavity walls and then thoroughly mix the sample. Filter, and proceed with the determination on the filtrate.

Allow frozen or deep frozen products to thaw in a closed vessel and add the liquid formed during this process to the product before mixing.

2.4.2 Test portion

Weigh, to the nearest 0,1 mg, 10 to 100 g of the sample.

1) The ascorbic acid is determined as dehydroascorbic acid.