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Fruits, vegetables and derived products — Determination of sorbic acid content

Fruits, légumes et produits dérivés — Détermination de la teneur en acide sorbique

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FOREWORD

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 5519 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in March 1977.

It has been approved by the member bodies of the following countries :

Australia	Ghana	Poland
Austria	Hungary	Portugal
Bulgaria	India	Romania
Canada	Iran	South Africa, Rep. of
Czechoslovakia	Israel	Spain
Egypt, Arab Rep. of	Korea, Rep. of	Thailand
France	Mexico	Turkey
Germany	New Zealand	Yugoslavia

No member body expressed disapproval of the document.

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Fruits, vegetables and derived products — Determination of sorbic acid content

0 INTRODUCTION

The determination of the sorbic acid content of fruits, vegetables and derived products has been studied in numerous projects during the acid's use as a fungicide, especially in wines. Because of its great volatility (very similar to that of acetic acid), the simplest extraction process is its entrainment by steam. This method has the advantage of producing an almost pure aqueous solution of sorbic acid.

Two techniques for the determination of the quantity of sorbic acid contained in this solution are described in this International Standard, namely :

Technique A : spectrophotometry in the ultra-violet range, carried out after oxidation of sulphur dioxide, which would interfere. The oxidation occurs spontaneously in a few minutes in air after the addition of a trace of a copper catalyst.

The natural essential oils of citrus fruits do not interfere with the determination provided that they are present in the small quantities normal in juice not enriched with essential oils. When the quantities of essential oils are significant, they may be eliminated beforehand by the same method as that applied in technique B.

Technique B : colorimetry, based on Schmidt's reaction, which requires the elimination of ethanol and essential oils by the evaporation of an aliquot portion of the distillate. This technique, not so rapid as technique A but giving comparable results, is provided for use when a spectrophotometer allowing measurements in the ultra-violet range is not available.

The interference caused by essential oils of garlic, onion or leek may be eliminated, when using either technique, by the evaporation of an aliquot portion of the distillate.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for extracting sorbic acid present in fruits, vegetables and derived products, and two techniques for determining the sorbic acid extracted.

2 PRINCIPLE

Homogenization of the product, followed by quantitative entrainment, by steam, of the sorbic acid present in a test portion. Determination of this acid in the distillate obtained, either by spectrophotometry in the ultra-violet range (technique A), or by measuring by photocolorimetry or by spectrophotometry the pink colour obtained after oxidation by chromic acid and then treatment with thiobarbituric acid (technique B).

3 REAGENTS

All reagents shall be of recognized analytical quality, and the water used shall be distilled water or water of at least equivalent purity.

3.1 Tartaric acid, crystalline.

3.2 Sorbic acid, 0,010 g/l standard solution, prepared by one of the following methods (3.2.1 or 3.2.2).

3.2.1 Dissolve 0,100 g of sorbic acid in 10 to 12 ml of a 0,1 N sodium hydroxide solution. Transfer quantitatively into a 1 000 ml volumetric flask, and dilute to the mark with water.

Introduce 100 ml of the solution obtained into a second 1 000 ml volumetric flask, and dilute to the mark with water.

3.2.2 Dissolve 134 mg of potassium sorbate in water in a 1 000 ml volumetric flask, and dilute to the mark with water.

Introduce 100 ml of the solution obtained into a second 1 000 ml volumetric flask, and dilute to the mark with water.