



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 5009.270-2023

**National food safety standard - Determination of inositol in
foods**

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Foreword

This Standard serves as a replacement of GB 5009.270-2016 National Food Safety Standard

- Determination of Inositol in Foods.

In comparison with GB 5009.270-2016, the main changes are as follows.

---"Gas Chromatography" is adjusted to Method 1, and "Microbiological Method" is adjusted to Method 2;

---Appendix B and Appendix C are added;

---The scope of application of gas chromatography, silanization reagents, sample pre-treatment methods and instrument reference conditions are modified;

---The expression of the principle of the microbiological method, the name and preparation method of bacterial strain, equipment, materials and test procedures are modified.

National Food Safety Standard - Determination of Inositol
in Foods

1 Scope

This Standard specifies the methods for the determination of inositol (myo-inositol) in foods.

Method 1 - gas chromatography is applicable to the determination of inositol in infant formulas, formulas for special medical purposes, milk and dairy products, and beverages.

Method 2 - microbiological method is applicable to the determination of inositol in foods.

Method 1 - Gas Chromatography

2 Principle

The inositol in the specimen is extracted with water and precipitated with ethanol. After the supernatant is centrifuged and dried, it is derivatized with a silanization reagent.

3 Reagents and Materials

Unless it is otherwise specified, the reagents used in this Method are all analytically pure, and the water is Grade-1 water specified in GB/T 6682.

3.2 Preparation of Reagents

3.2.1 70% ethanol. measure-take 700 mL of absolute ethanol, use water to reach a constant

volume of 1,000 mL, and evenly mix it.

3.2.2 Silanization reagent. respectively draw-take trimethylchlorosilane,

hexamethyldisilazane and N, N-dimethylformamide, mix them in a volume ratio of 1.2.8, and conduct ultrasonic mixing. Prepare it right before use.

3.3 Reference Material

Inositol reference material (C₆H₁₂O₆, CAS. 87-89-8). purity ? 99%, or a standard substance

certified by the state and awarded a reference material certificate.

5.3 Reference Conditions of Instrument

The reference conditions of the instrument are as follows.

5.4 Drawing of Standard Curve

Respectively inject the inositol standard determination solutions into the gas chromatograph,

take the mass of inositol in the inositol standard determination solutions as the x-coordinate and the measured peak area as the y-coordinate to draw a standard curve.

5.5 Determination of Specimen Solution

Inject the specimen determination solution into the gas chromatograph to measure the retention time and peak area.

6 Expression of Analysis Results

The content of inositol in the specimen is calculated in accordance with Formula (1).

7 Precision

The absolute difference between the results of two independent determinations obtained under repeatability conditions shall not exceed 10% of the arithmetic mean.

8 Others

For solid samples, when the sampling size is 1 g and the constant volume is 50 mL, the detection limit is 1.0 mg/100 g, and the quantitation limit is 3.0 mg/100 g.

9 Principle

Inositol is an essential nutrient for the growth of *Saccharomyces cerevisiae*. Under certain conditions, there is a corresponding relation between the growth of *Saccharomyces cerevisiae* and the inositol content. Taking the standard working curve as a reference, in

accordance with the absorbance value of the solution to be tested, the inositol content in the

specimen to be tested can be calculated.

11 Culture Media and Reagents

Unless it is otherwise specified, the reagents used in this Method are all analytically pure, and the water is Grade-2 water specified in GB/T 6682.

12.2 Preparation and Extraction of Specimens

Solid specimens, for example, cereals, need to be crushed, ground and sieved (the sieve plate

has an aperture of 0.3 mm ~ 0.5 mm); for specimens such as meat and meat products, use a

homogenizer to make them into chyme; specimens such as fruits and vegetables need to be

homogenized and evenly mixed; for liquid specimens, shake and mix them before determination. Specimens are prepared right before use.

12.3 Preparation of Standard Solution

In accordance with Table 2, respectively add water, inositol standard working solution and inositol determination culture medium into the culture tubes. Prepare 3 portions of each tube

in parallel.

12.4 Preparation of Test Solution

In accordance with Table 3, respectively add water, specimen extracting solution and inositol

determination culture medium into the culture tubes. Prepare 3 portions of each tube in parallel.

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