



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

GB 5009.128-2016

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

食品安全国家标准 食品中胆固醇的测定

(English Translation)

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Foreword

This Standard replaces GB/T 5009.128-2003 Determination of cholesterol in foods, GB/T 22220-2008 Determination of cholesterol in foods - High-performance liquid chromatography and GB/T 9695.24-2008 Meat and meat products - Determination of cholesterol.

Compared with GB/T 5009.128-2003, the main changes in this Standard are as follows.

- modified the standard's name to "National food safety standard - Determination of cholesterol in foods";
- added gas chromatography as method one and high-performance liquid chromatography as method two; modified colorimetric method as method three;
- modified extraction solvent, the amount of ethanol and volume constant volume in pre-treatment method of gas chromatography in GB/T 9695.24-2008.

National food safety standard -

Determination of cholesterol in foods

1 Scope

This Standard specifies the determination methods of cholesterol in foods.

This Standard applies to the determination of cholesterol in foods. Method One Gas chromatography is applicable to the determination of cholesterol in meat and meat products, eggs and egg products, milk and dairy products and other animal foods and vegetable oils and fats. Method Two High performance liquid chromatography is applicable to the determination of cholesterol in meat and meat products, eggs and egg products, milk and dairy products and other animal foods. Method Three Colorimetric method is applicable to the determination of cholesterol in meat and meat products, eggs and egg products and other animal foods.

Method One -- Gas chromatography

2 Principle

Saponify the sample by absolute ethanol - potassium hydroxide solution.

Extract by petroleum ether and anhydrous ether mixture. Concentrate the extract to dry. After dissolving and setting volume of absolute ethanol, use gas

chromatography to detect, external standard method to quantify.

3 Reagents and materials

Unless otherwise indicated, the reagents used in this method are of analytical grade, water is grade one water specified in GB/T 6682.

3.2 Regent preparation

3.2.1 60% potassium hydroxide solution. weigh 60 g of potassium hydroxide; slowly add water to dissolve and set volume to 100 mL.

3.2.2 Petroleum ether - anhydrous ether mixture (1+1, volume ratio).

uniformly mix petroleum ether and anhydrous ether of equal volume.

3.3 Standard product

Cholesterol standard (C₂₇H₄₆O, CAS number. 57-88-5). purity $\geq$ 99%.

5.1.1 Meat and meat products and other types of solid samples

Take 200 g of edible part of sample to homogenize

5.1.2 Vegetable oil, dairy products and other liquid samples

Take the uniform liquid sample after mixing into a sealed container to be tested.

5.2.1 Saponification

Weigh 0.25g ~ 10g of prepared sample (nearest to 0.001 g, cholesterol content of about 0.5mg ~ 5mg) in a 250-mL round-bottomed flask. Add 30 mL of absolute ethanol, 10 mL of 60% potassium hydroxide solution.

5.2.2 Extraction

Quantitatively transfer of all saponified liquid in a 250-mL separatory funnel.

Use 30 mL of water to rinse the round-bottomed flask in 2~3 times. Merge the washing liquid into the separatory funnel.

5.2.3 Concentration

Evaporate the extract in the flat-bottomed flask to near dryness under vacuum condition. Use absolute ethanol to dissolve and set volume to 5 mL. Determine with gas chromatograph.

The pretreatment of different sample requires blank test at the same time.

5.3.2 Production of standard curve

Inject the cholesterol standard series of working solution into the gas chromatograph. Under the above chromatographic conditions, measure the response value of the standard solution (peak area). Using concentration as abscissa, the peak area as ordinate, make the standard curve.

6 Expression of analysis result

The content of cholesterol in the sample is calculated according to equation (1).

7 Precision

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

8 Other

When the sample volume is 0.5 g, the set volume is 5.0 mL, the detection limit shall be 0.3 mg/100g, the limit of quantification shall be 1.0 mg/100g.

9 Principle

Saponify the sample by absolute ethanol - potassium hydroxide solution.

Extract by petroleum ether and anhydrous ether mixture. Concentrate the extract to dry.

10 Reagents and materials

Unless otherwise indicated, the reagents used in this method are of analytical grade, water is grade one water specified in GB/T 6682.