



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

GB 5009.169-2016

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

食品安全国家标准 食品中牛磺酸的测定

(English Translation)

Issued on: August 31, 2016

Implemented on: March 1, 2017

Issued by: National Health and Family Planning Commission of the PRC

Table of Contents

Foreword...	3
1 Scope...	4
2 Principles...	4
3 Reagents and materials...	4
4 Instruments and equipment...	6
5 Analytical procedures...	6
6 Expression of analysis results...	9
7 Precision...	9
8 Other...	9
9 Principles...	10
10 Reagents and materials...	10
11 Instruments and equipment...	11
12 Analytical procedures...	12
13 Expression of analysis results...	14
14 Precision...	15
15 Other...	15
Appendix A Chromatogram...	16

Foreword

This standard replaces GB/T 5009.169-2003 "National food safety standard - Determination of taurine in foods" and GB 5413.26-2010 "National food safety standard - Determination of taurine in foods for infants and young children, milk and milk products".

As compared with GB/T 5009.169-2003, the main changes of this standard are as follows.

- CHANGE the standard name into "National food safety standard - Determination of taurine in foods";
- ADD the OPA post-column derivatization high performance liquid chromatography method as the first method; ADD the dansyl chloride

pre-column derivatization high performance liquid chromatography as the second method;

- DELETE the thin layer chromatography.

National food safety standard

Determination of taurine in foods

1 Scope

This standard specifies the method for the determination of taurine in food.

This standard applies to the determination of taurine in infant formula, milk powder, soybean meal, soy milk, milk beverage, special purpose drink, flavor beverage, solid beverage and jelly.

Method 1.O-phthalaldehyde (OPA) post-column derivatization high performance liquid chromatography

2 Principles

USE water to dissolve the sample; USE the metaphosphoric acid to precipitate the protein; after extracted by ultrasonic shock, centrifuged, and filtered through a microporous membrane, MAKE it pass through the sodium ion chromatography column for separation AND be subjected to o-phthalaldehyde (OPA) derivative reaction; USE the fluorescence detector to conduct detection; and USE the external standard method for quantitation.

3 Reagents and materials

Unless otherwise stated, the reagents used in this method are of analytical grade AND water is level I water as specified in GB/T 6682.

3.1.8 O-phthalaldehyde (OPA).

3.1.9 2-mercaptoethanol.

3.2.1 Metaphosphoric acid solution (30 g/L)

WEIGH 30.0 g of metaphosphoric acid (3.1.1); USE water to dissolve it and

MAKE its volume reach to 1000 mL.

3.2.2 Trisodium citrate solution

WEIGH 19.6 g of trisodium citrate (3.1.2); ADD 950 mL of water to dissolve it; ADD 1 mL of phenol (3.1.3); USE nitric acid (3.1.4) to adjust the pH to 3.10 ~ 3.25; MAKE it pass through a 0.45 μ m microfiltration membrane for filtration.

3.2.3 Post-column fluorescence derivative solution (o-phthalaldehyde solution)

3.2.4.1 Precipitant I. WEIGH 15.0 g of potassium ferrocyanide (3.1.11); USE water to dissolve it and MAKE the volume reach to 100 mL. This precipitant is stable at room temperature for 3 months.

3.4.1 Taurine standard stock solution (1 mg/mL)

Accurately WEIGH 0.1000 g of taurine standard substance (3.3), USE water to dissolve it and MAKE the volume reach to 100 mL.

5.1 Sample preparation

Accurately WEIGH 1 g ~ 5 g (accurate to 0.01 g) of solid sample in the conical flask; ADD 20 mL of about 40 °C warm water; SHAKE it uniformly to dissolve the sample; PLACE it in the ultrasonic oscillator for ultrasonic extraction for 10 min. ADD another 50 mL of metaphosphoric acid solution (3.2.1); SHAKE it uniformly.

5.2.1 Column. Sodium ion amino acid analysis column (25 cm x 4.6 mm) or the equivalent.

5.3 Production of standard curve

Respectively INJECT the standard series working solution into the high performance liquid chromatograph; DETERMINE the corresponding chromatographic peak height or peak area; USE the concentration of the standard working solution as the abscissa AND the response value (peak area

or peak height) as the ordinate, to draw the standard curve.

5.4 Determination of sample solution

INJECT the sample solution into the high performance liquid chromatograph to obtain the chromatographic peak height or peak area; OBTAIN the concentration of taurine in the test solution based on the standard curve.

6 Expression of analysis results

The taurine content in the sample is calculated in accordance with the equation (1)

7 Precision

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

8 Other

When the sampling amount is 10.00 g, the method detection limit is 0.2 mg/100g AND the quantification limit is 0.5 mg/100g.

9 Principles

USE water to dissolve the sample; USE the potassium ferrocyanide and zinc acetate to precipitate the protein. TAKE the supernatant and USE the dansyl chloride for derivative reaction; MAKE the derivatives be separated by C18 reverse phase column. USE the UV detector (254 nm) or fluorescence detector (excitation wavelength).

10 Reagents and materials

Unless otherwise stated, the reagents used in this method are of analytical grade AND water is level I water as specified in GB/T 6682.

10.1.7 Dansyl chloride (5-dimethylaminonaphthalene-1-sulfonyl chloride).

Chromatographic purity.