

ICS 67.050
CCS X 83



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

GB/T 23788-2026

Replacing GB/T 23788-2009

Determination of soy isoflavones in health foods

保健食品中大豆异黄酮的测定

Issued on: January 28, 2026

Implemented on: August 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document specifies the technical requirements related to food quality. For food safety requirements, please refer to relevant laws, regulations, policies, and food safety standards. document. This document supersedes GB/T 23788-2009 "Determination of Soy Isoflavones in Health Foods by High Performance Liquid Chromatography". Compared with GB/T 23788-2009, apart from structural adjustments and editorial changes, the main technical changes are as follows:

- a) The scope of the document has been changed (see Chapter 1, Chapter 1 of the.2009 edition);
- b) The term "soy isoflavones" has been removed (see 3.1 in the.2009 edition);
- c) The principle has been changed (see Chapter 4, Chapter 4 of the.2009 edition);
- d) Changes were made to materials, instruments, and equipment (see 5.5 and Chapter 6, Chapter 6 in the.2009 edition);

- e) The sample preparation method has been changed (see 7.1 in the.2009 edition);
- f) The chromatographic reference conditions have been changed (see 7.3, 7.2 in the.2009 edition);
- g) The preparation of the standard curve and the determination of the sample solution were modified (see 7.3 in the.2009 edition);

1 Scope

GB/T 23788-2026 is the Chinese national standard covering the isoflavone content of a supplement - daidzein, genistein and glycitein and their glycosides, which is the active claim on the label and the number a regulator checks it against. It replaces GB/T 23788-2009. It was issued on 28 January 2026 and has been in force since 1 August 2026, replacing GB/T 23788-2009. The document is under the responsibility of the State Administration for Market Regulation. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes the method for determining soy isoflavones in health food products. This document applies to the determination of soy isoflavones in health food products in tablet, hard capsule, soft capsule, oral liquid, wine, and beverage dosage forms.

4.Principles Soy isoflavones in the sample were extracted with 80% methanol solution, separated by high performance liquid chromatography, and detected by ultraviolet detector. The determination of the fraction was based on retention time. Sex, quantified using the external standard method.

5.Reagents and Materials Unless otherwise specified, use only analytical grade reagents.

5.1 Reagents

5.1.1 Water. Grade I water as specified in GB/T 6682.

5.1.2 Acetonitrile (CH₃CN). chromatographic grade.

5.1.3 Methanol (CH₃OH). chromatographic grade.

5.1.4 Dimethyl sulfoxide (C₂H₆OS). chromatographic grade.

5.2 Reagent Preparation 5.2.1 80% methanol solution. Measure 800 mL of methanol (5.1.3), dilute with water to 1000 mL, and mix well. 5.2.2 0.01% phosphoric acid aqueous solution. Take

0.1 mL of phosphoric acid, dilute with water to 1000 mL, and mix well. 5.2.3 50% methanol solution. Measure 50 mL of methanol (5.1.3), dilute with water to 100 mL, and mix well.

5.3 Standard Samples/Standard Substances

5.3.1 Daidzin (C₂₁H₂₀O₉, CAS No.. 552-66-9). Purity $\geq$ 98%, or conforming to nationally certified standards. Sample/standard substance.

5.3.2 Glycitin (C₂₂H₂₂O₁₀, CAS No.. 40246-10-4). Purity $\geq$ 98%, or certified by the state and granted a certificate. Standard samples/standard substances.

5.3.3 Genistin (C₂₁H₂₀O₁₀, CAS No.. 529-59-9). Purity $\geq$ 98%, or certified by the state and granted a certificate. Standard samples/standard substances.

5.3.4 Daidzein (C₁₅H₁₀O₄, CAS No.. 486-66-8). Purity $\geq$ 98%, or certified by the state and granted a certificate. Standard samples/standard substances.

5.3.5 Glycitein (C₁₆H₁₂O₅, CAS No.. 40957-83-3). Purity $\geq$ 98%, or certified by the state and granted a certificate. Standard samples/standard substances.

5.3.6 Genistein (C₁₅H₁₀O₅, CAS No.. 446-72-0). Purity $\geq$ 98%, or certified by the state and granted a certificate. Standard samples/standard substances.

5.4 Preparation of Standard Solutions

5.4.1 Soy isoflavone standard stock solution (1000 µg/mL) Weigh 25 mg each of the standard samples (5.3) of daidzein, genistein, daidzein, daidzein, genistein, and genistein (accurate to 100 mg/mg).

0.1 mg (calculated according to the purity of the standard sample), added to 10 mL of dimethyl sulfoxide (5.1.4), sonicated until fully dissolved, transferred to 25 mL of brown... In a volumetric flask, dilute to the mark with methanol (5.1.3) and mix well. Store in a refrigerator at 4°C; shelf life is 3 months.

5.4.2 Intermediate Standard Solution of Soy Isoflavones Transfer

2.5 mL each of the three standard stock solutions (5.4.1) of daidzein, genistein, and genistein, and transfer

2.5 mL of each of the stock solutions of daidzein, genistein, and genistein. Take

0.5 mL of each of the three standard stock solutions of genistein (5.4.1) and place them in a 10 mL volumetric flask. Dilute to the mark with methanol (5.1.3) and mix well. The mixed standard solution of soybean isoflavones contained 250 µg/mL of daidzein, genistein, and genistein, and daidzein were also present. The concentrations of genistein and famigrin are 50 µg/mL. Store at 4°C. Shelf life is 3 months.

5.4.3 Standard working solutions of soybean isoflavones Transfer

0.02 mL,

0.2 mL,

0.4 mL,

2.0 mL of the mixed standard intermediate solution (5.4.2) respectively, and dilute with 50% methanol solution. (5.2.3) Adjust the volume to 5 mL, mix well, and prepare a solution with mass concentrations of 1.0 µg/mL, 10.0 µg/mL, and 10.0 µg/mL for daidzein, genistein, and genistein, respectively. The concentrations of daidzein, genistein, and genistein were 20.0 µg/mL, 50.0 µg/mL, and 100.0 µg/mL, respectively, and the mass concentrations were 0.2 µg/mL, 0.0... 2.0 µg/mL, 4.0 µg/mL, 10.0 µg/mL, 20.0 µg/mL. Prepare fresh before use.

5.5 Materials

5.5.1 Filter membrane, 0.45µm, organic system.

6 Instruments and Equipment

6.1 High-performance liquid chromatograph. equipped with a UV detector or diode array detector.

6.2 Ultrasonic cleaner.

6.3 Analytical balance. accuracy

0.1 mg and

0.001 g.

6.4 Centrifuge. The speed shall not be less than 8000 r/min.

6.5 High-speed pulverizer.

7 Analysis Steps

7.1 Sample Preparation The preparation steps for samples of different dosage forms are as follows:

a) Solid samples (hard capsules, tablets). For tablets, take no less than 20 tablets or no less than 10g of sample, and grind them using a high-speed pulverizer or mortar and pestle. Powder, mix well and set aside; for hard capsules, take no less than 20 capsules or no less than 10g of sample, take their contents, grind finely if necessary, and mix well. spare.

b) Semi-solid sample (soft capsule). Take no less than 20 capsules or no less than 10g of sample, cut them open, squeeze out the contents, grind if necessary, and mix. Prepare