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CCS X83

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 22246-2025

Replacing GB/T 22246-2008

Determination of pantothenic acid in health foods

保健食品中泛酸的测定

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Table of Contents

1 Scope

GB/T 22246-2025 is the Chinese national standard on determination of pantothenic acid in health foods, in the field of food technology. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 24 January 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 August 2025. Classification: ICS 67.050, CCS X83. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document describes a high-performance liquid chromatography (HPLC) for the determination of pantothenic acid in health foods. This document is applicable to the determination of pantothenic acid in health foods in dosage forms, such as tablets, hard capsules, soft capsules, granules, powders, oral liquids and jelly candies, etc.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date,

only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 6682 Water for Analytical Laboratory Use - Specification and Test Methods

3 Terms and Definitions

This document does not have terms or definitions that need to be defined.

4 Principle

Pantothenic acid in the specimen is extracted with hot water, separated by high-performance liquid chromatography, and detected by ultraviolet light. Qualitative determination is based on retention time, and quantitative determination is based on the external standard method.

5 Reagents or Materials

Unless otherwise specified, only analytically pure reagents shall be used.

5.1 Reagents

5.1.1 Water, Grade 1 water as specified in GB/T 6682.

5.1.2 Hydrochloric acid (HCl).

5.1.3 Sodium hydroxide (NaOH).

5.1.4 Phosphoric acid (H3PO4). 100 mL volumetric flasks, add water to dilute to the scale and mix them well to obtain pantothenic acid series standard working solutions with concentrations of 1 g/mL, 2 g/mL, 4 g/mL, 8 g/mL, 16 g/mL and 32 g/mL. Prepare immediately prior to use.

5.4 Materials Filter membrane. 0.45 m, aqueous.

6 Instruments and Equipment

6.1 High-performance liquid chromatograph. equipped with UV detector or equivalent.

6.2 Balance. with a division value of

0.001 g and

0.1 mg.

6.3 Constant-temperature oscillating water bath. with an oscillating frequency of 100 r/min 20 r/min.

6.4 Ultrasonic cleaner.

6.5 pH meter. with an accuracy of 0.01.

6.6 High-speed centrifuge. speed not less than 8,000 r/min.

7.1 Specimen Preparation

7.1.1 Solid specimens (hard capsules, tablets and powders, etc.). take at least 20 capsules or at least 5 g of sample (for hard capsules, remove the shells and take the contents; for tablets, crush them), finely grind (if necessary), mix well and set aside.

7.1.2 Solid specimens (jelly candies, etc.). take at least 10 capsules (for mixed specimens of different colors or flavors, evenly conduct the sampling by color or flavor) or at least 10 g of sample, cut into small pieces and set aside.

7.1.3 Semi-solid specimens (soft capsules, etc.). take at least 20 capsules or at least 5 g of sample, remove the shells, take the contents, mix well and set aside.

7.1.4 Liquid specimens (oral liquids, etc.). take 5 minimum-size packages or at least 50 mL of sample (if the sample contains carbonic acid, use ultrasound to remove carbon dioxide), mix well and set aside.

7.2 Specimen Preparation Weigh-take 1 g ~ 3 g of specimen (accurate to

0.001 g), or transfer-take 1 mL ~ 3 mL of specimen, or a volume that obtains approximately 1 mg of pantothenic acid in the specimen. Place it in a 100 mL conical flask. Add 30 mL of warm water at 40 °C ~ 50 °C; vortex or stir it, until the sample is thoroughly dissolved. Perform ultrasound for 20 minutes, and cool to room temperature. Use

0.1 mol/L hydrochloric acid solution (5.1.8),

1.0 mol/L hydrochloric acid solution (5.1.9),

0.01 mol/L sodium hydroxide solution (5.1.10) or

0.1 mol/L sodium hydroxide solution (5.1.11) to adjust the pH to 5.0.Add 5 mL of

0.5 mol/L zinc sulfate solution (5.1.12) and mix it thoroughly. Transfer to a 50 mL volumetric flask, use water to dilute to the scale, mix it thoroughly, and transfer to a centrifuge tube. At 8,000 r/min, centrifuge for 2 min. Pass the supernatant through a 0.45 m filter membrane (5.4) and prepare the filtrate for determination on the machine. NOTE. if necessary, based on the content of the components in the specimen, appropriately increase the dilution factor f to ensure that the mass concentration of pantothenic acid in the specimen is within the range of 1.0 g/mL ~ 32.0 g/mL.

7.3 Chromatographic Reference Conditions The chromatographic reference conditions are as follows:

a) Chromatographic column. C18 (particle size 5 m, 250 mm

4.6 mm), or equivalent chromatographic column;

b) Mobile phase. potassium dihydrogen phosphate solutionacetonitrile (5.1.14);

c) Flow rate. 1 mL/min;

d) Column temperature. 35 °C;

e) Injection volume. 10 L or 20 L;

f) Detection wavelength. 200 nm.