

ICS 67.050
CCS X 83



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

GB/T 45443-2025

Replacing GB/T 5009.170-2003

Determination of melatonin in health foods

保健食品中褪黑素的测定

Issued on: March 28, 2025

Implemented on: October 1, 2025

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

Table of Contents

Foreword

1 Scope

2 Normative references

3 Terms and definitions

4 Principle

5 Reagents or materials

5.1 Reagents

5.2 Standard substances or standard samples

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document specifies the technical requirements for food quality. For food safety requirements, please refer to relevant laws, regulations, policies and food safety standards. document.

This document replaces GB/T 5009.170-2003 "Determination of melatonin content in health foods" and is consistent with GB/T 5009.170-2003.

In addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope of application of the document has been changed (see Chapter 1, Chapter 1 of the 2003 edition);
- b) The sample processing method has been changed (see 7.2, 5.1 and 5.2 of the 2003 edition);
- c) The method for preparing the standard curve has been changed (see 7.4, 5.3.2 of the 2003 edition);
- d) The calculation formula for melatonin has been changed (see Chapter 8, Chapter 6 of the 2003 edition);
- e) The precision content has been changed (see Chapter 9, Chapter 7 of the 2003 edition);
- f) The detection limit and quantification limit have been changed (see Chapter 10, Chapter 1 of the 2003 edition);

g) The fluorescence method has been deleted (see the second method - high performance liquid chromatography fluorescence method in the 2003 edition).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document is proposed and coordinated by the National Technical Committee for Standardization of Special Foods (SAC/TC466).

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The previous versions of this document and the documents it replaces are as follows.

- First published in 2003 as GB/T 5009.170-2003;
- This is the first revision.

1 Scope

This document describes a method for the determination of melatonin in health foods by HPLC.

This document applies to melatonin in health foods in the form of tablets, hard capsules, soft capsules, granules, powders, oral liquids, and gel candies. Determination of.

2 Normative references

GB/T 6682

3 Terms and definitions

There are no terms or definitions that require definition in this document.

4 Principle

Melatonin in the sample was extracted with 70% ethanol solution, separated by high

performance liquid chromatography, detected by ultraviolet detector, and qualitatively determined by retention time.

Quantification by external standard method.

5 Reagents or materials

Unless otherwise specified, only analytical grade reagents were used.

5.1 Reagents

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

5.1.2 Methanol (CH_4O). chromatographically pure.

5.1.3 Anhydrous ethanol ($\text{C}_2\text{H}_6\text{O}$).

5.1.4 Trifluoroacetic acid ($\text{C}_2\text{HF}_3\text{O}_2$). high purity.

5.1.5 Trifluoroacetic acid aqueous solution. Take 908 μL of trifluoroacetic acid (5.1.4), dilute to 1000 mL with water, and mix well.

5.1.6 70% ethanol solution. Measure 700 mL of anhydrous ethanol (5.1.3), dilute to 1000 mL with water, and mix well.

5.1.7 Mobile phase. methanol-trifluoroacetic acid aqueous solution (45:55, volume ratio). Take 450 mL of methanol (5.1.2) and add 550 mL of trifluoroacetic acid.

Acetic acid aqueous solution (5.1.5), mix well.

5.2 Standard substances or standard samples

Melatonin ($\text{C}_{13}\text{H}_{16}\text{N}_2\text{O}_2$, CAS No.. 73-31-4) standard. purity not less than 99%, or nationally certified and certified standard