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

GB/T 47209-2026

**Inspection of grain and oils - Determination of
gamma-aminobutyric acid in grain - High performance liquid
chromatography**

粮油检验 粮食中 γ -氨基丁酸的测定 高效液相色谱法

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Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and Definitions
- 5.1 Reagents
- 5.2 Materials

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. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the National Food and Strategic Reserves Administration. This document is under the jurisdiction of the National Technical Committee on Standardization of Grain and Oil (SAC/TC270). This document was drafted by: the Academy of Sciences of the National Food and Strategic Reserves Administration and the Henan Provincial Institute of Food and Salt Inspection Technology (Henan Province). Grain, Oil and Feed Product Quality Supervision and Inspection Center), Shanghai Kemao Grain and Oil Food Quality Testing Co., Ltd., Hebei Provincial Grain and Oil Quality Testing and Information Center Service Center, Shandong Provincial Grain and Oil Testing Center, Liaoning Provincial Grain and Material Reserve Affairs Service Center, Xinjiang Uygur Autonomous Region Grain and Oil Science Research Institute Research Institute (Xinjiang Uygur Autonomous Region Grain and Oil Products Quality Supervision and Inspection Station). The main drafters of this document are. Wang Li, Wang Jiaya, Xie Gang, Chen Yuan, Li Shupeng, Zhang Yan, Gao Jingming, Wang Yuanyuan, Yu Haifei, Zhou Minghui, and Wang Jing. Yang Linlin, Zhu Xudong, Wang Yiting, Wang Xueyan, Yan Lulu, Li Wenwen, Gao Haijun. Grain and Oil Testing. Determination of gamma-aminobutyric Acid in Grains High performance liquid chromatography

1 Scope

GB/T 47209-2026 is the Chinese national standard covering GABA in grain - a compound that accumulates when brown rice is germinated, and the basis of the claims made for germinated brown rice products, which makes it a figure that has to be measurable. First edition, in force since 1 September 2026. It was issued on 27 February 2026 and has been

in force since 1 September 2026, as a first edition. The document is under the responsibility of the National Food and Strategic Reserves Administration. 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 a high-performance liquid chromatography method for the determination of gamma-aminobutyric acid (GABA) in grains. This document applies to the determination of gamma-aminobutyric acid (GABA) in raw grains and their milled products, including brown rice, rice, wheat flour, quinoa rice, and soybeans.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 5491 Sampling and Divided Sampling Methods for the Inspection of Grains and Oils

GB/T 6682 Specifications and test methods for water used in analytical laboratories

3 Terms and Definitions

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

4.Principles gamma-aminobutyric acid in grains was extracted with ethanol-water solution, derivatized with 4-dimethylaminoazobenzene-4-sulfonyl chloride, purified, and then processed with high-performance reversed-phase liquid chromatography. The content of gamma-aminobutyric acid was determined at a wavelength of 436 nm using a phase chromatography ultraviolet detector or a diode array detector, and quantification was performed using the external standard method.

5.Reagents and Materials Unless otherwise stated, all reagents used in the analysis were analytical grade reagents, and the water was Grade I water conforming to GB/T 6682.

5.1 Reagents

5.1.1 Anhydrous ethanol (C₂H₅OH).

5.1.2 Acetonitrile (CH₃CN). chromatographic grade.

5.1.3 Sodium bicarbonate (NaHCO₃).

5.1.4 Glacial acetic acid (CH₃COOH).

5.1.5 Sodium acetate trihydrate ($\text{CH}_3\text{COONa} \cdot 3\text{H}_2\text{O}$). 5.1.6
4-Dimethylaminoazobenzene-4-sulfonyl chloride ($\text{C}_{14}\text{H}_{14}\text{ClN}_3\text{O}_2\text{S}$). chromatographic
grade.

5.2 Materials

5.2.1 Capped centrifuge tubes. 2 mL and 50 mL.

5.2.2 Syringe. 2mL.

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