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

GB/T 21033-2025

Replacing GB/T 21033-2007

**Determination of immunoglobulin IgG in feeds - High
performance liquid chromatography**

饲料中免疫球蛋白IgG的测定 高效液相色谱法

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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 supersedes GB/T 21033-2007 "Determination of Immunoglobulin IgG in Feed by High Performance Liquid Chromatography" and is consistent with GB/T 21033- Compared to.2007, aside from structural adjustments and editorial changes, the main technical changes are as follows:

---Change the detection limit in "Range" to the quantitation limit (see Chapter 1, Chapter 1 of the.2007 edition);

---The preparation method for mobile phase A solution has been modified (see 5.2, 4.3 in the.2007 edition);

---The preparation method for mobile phase B solution has been modified (see 5.3, 4.4 in the.2007 edition);

---The source of the immunoglobulin IgG standard substance has been changed to either porcine or bovine origin (see 5.4, 4.5 in the.2007 edition);

---Hexane treatment of the samples has been added (see 8.1);

--- Qualitative and quantitative requirements have been added (see 8.2.3 and 8.2.4);

---The calculation formulas in the experimental data processing have been changed (see Chapter 9, Chapter 8 in the.2007 edition). 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 and is under the jurisdiction of the National Technical Committee on Standardization of Feed Industry (SAC/TC76). This document was drafted by: China National Grain Wuhan Scientific Research and Design Institute Co., Ltd., China Agricultural University, and New Hope Liuhe Co., Ltd. The main drafters of this document are: Cheng Linli, Wang Boyuan, Yang Qing, Chen Xiyu, Shao Rui, Wang Lin, Shi Mengyu, Deng Lufang, Zong Wenli, Guo Liang, and Liu Haodong. Li Junyan, Gong Shan, Cao Chengqiang, Zhang Dan, Liu Xiaomin. The release history of this document and the document it replaces is as follows:

---First published in 2007 as GB/T 21033-2007;

1 Scope

GB/T 21033-2025 is the Chinese national standard covering IgG in feed - the immunoglobulin in the plasma and colostrum products fed to young animals, which is exactly what the buyer is paying for and what heat treatment destroys. It replaces GB/T 21033-2007. It was issued on 31 December 2025 and has been in force since 1 July 2026, replacing GB/T 21033-2007. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2025 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 (HPLC) method for the determination of immunoglobulin IgG in feed. This document applies to the determination of immunoglobulin IgG (porcine or bovine) in compound feed, concentrated feed, and feed ingredients containing IgG. The limit of quantification for immunoglobulin IgG is 100 mg/kg.

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 6682 Specifications and test methods for water used in analytical laboratories

GB/T 20195 Preparation of animal feed samples

3 Terms and Definitions

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

4. Principles IgG in the sample was extracted with phosphate buffer, defatted with n-hexane,

and determined by high performance liquid chromatography using the external standard method.

5.Reagents or materials Unless otherwise specified, use only analytical grade reagents.

5.1 Water. GB/T 6682, Grade 1.

5.2 Mobile Phase A. Weigh

3.4 g of potassium dihydrogen phosphate and

4.6 g of dipotassium hydrogen phosphate, dissolve in water and dilute to 1000 mL, mix well. Use phosphoric acid... Adjust the pH of the solution to 6.5 ± 0.1 .

5.3 Mobile phase B. Weigh

3.8 g of glycine, add 300 mL of water, stir and add

3.0 mL of hydrochloric acid dropwise, dissolve, and then bring the volume to 1000 mL. Mix well. Adjust the pH of the solution to $2.5 \pm$

0.1 with hydrochloric acid.

5.4 IgG standard solution (

1.0 mg/mL). Weigh

0.010 g (accurate to

0.01 mg) of IgG (porcine IgG, purity not less than 95%; bovine IgG). IgG (purity not less than 95%; or certified reference material) standard, dissolved and diluted to

10.0 mL with mobile phase A (5.2), mix well. Before use. Prepared on the spot.

Note. Porcine IgG standards should be used for testing compound feed, concentrated feed, and porcine-derived feed ingredients; bovine IgG standards should be used for testing bovine-derived feed ingredients. Standard product.

5.5 IgG Standard Series Solutions. Accurately transfer an appropriate amount of IgG standard solution (5.4) into a 10 mL volumetric flask, and dilute with mobile phase A (5.2). Adjust the volume, mix well, and prepare solutions with mass concentrations of 20.0 $\mu\text{g/mL}$, 50.0 $\mu\text{g/mL}$, 100 $\mu\text{g/mL}$, 200 $\mu\text{g/mL}$, and 500 $\mu\text{g/mL}$.