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

GB/T 42491-2023

**Determination of total starch content in feeds - Enzymatic
method**

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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 is modified to adopt ISO 15914:2004 "Enzymatic Determination of Total Starch Content in Animal Feed":

Compared with ISO 15914:2004, this document has more structural adjustments: This document is compared with the structure number of ISO 15914:2004

See Appendix A for a list:

The technical differences between this document and ISO 15914:2004 and their reasons are as follows:

a) The scope of application has been changed (see Chapter 1), and the types of feed products have been refined;

b) Changed the expression of content in the definition of starch content (Note) (see 3:2), changed g/kg to %, and revised the glucose standard in this document

The solution concentration and calculation formula have been changed accordingly to adapt to the customary expression in the industry in my country;

c) Added the assay method for amyloglucosidase activity (see Appendix B), the instructions for adjusting the amount of enzyme and the requirements for enzymes (see 5:12), as method user convenience;

d) The preparation of 40% ethanol solution (see 5:2) has been changed to meet the actual situation of analytical pure ethanol reagents commonly used in my country;

e) Change the provisions of the kit for quantitative determination of glucose by hexokinase

method (see 5:13) to facilitate the use of the method;

f) Increase the fineness requirements for sample preparation (see Chapter 7), which meets the sample preparation requirements in my country;

g) Changed and simplified the procedure of dimethyl sulfoxide dispersion treatment sample (see 8:2) to provide convenience for method users;

h) Added the requirement for hydrolysis oscillation rate (see 8:2:2), which is beneficial to the application of the method;

i) Change the expression and requirements of precision (see Chapter 10), which is beneficial to the application of the method;

j) The inspection report has been deleted, which conforms to the structure of our country's standard:

The following editorial changes have been made to this document:

---Change the file name to "Enzyme Method for Determination of Total Starch Content in Feed":

Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents:

1 Scope

This document describes a method for the enzymatic determination of the total starch content of feed and feed ingredients:

This document is applicable to the determination of total starch content in compound feed, concentrated feed, concentrate supplement and feed raw materials, and is applicable to pure starch

Determination of powder content:

This document does not apply to samples whose matrix contains components that affect absorbance at a wavelength of 340 nm:

The limit of quantitation for the method in this document is 4%:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document:

GB/T 6682-2008 Analytical Laboratory Water Specifications and Test Methods (ISO 3696:1987, MOD)

Note: There is no technical difference between the quoted content of GB/T 6682-2008 and the quoted content of ISO 3696:1987:

GB/T 20195-2006 Preparation of animal feed samples (ISO 6498:1998, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document:

3:1

Starch

Long unbranched straight chain (amylose) consisting of 1,4-alpha-D-glucose units and/or alpha-1,4-glucosides branched at the alpha-1,6 position

A natural vegetable polymer composed of linked glucose units (pullulan):

3:2

Starch content starchcontent

The mass fraction of starch and its polymeric degradation products insoluble in 40% ethanol determined according to this document:

Note: Expressed in percentage (%):

4 principles

Remove soluble sugar from the sample with 40% ethanol, disperse in 90% dimethyl sulfoxide solution at 100°C, dissolve with concentrated hydrochloric acid at 60°C and partly separate

The starch in the sample was further enzymatically hydrolyzed into glucose by amyloglucosidase, and the amount of glucose was determined by hexokinase method:

into starch content [3,4]:

5 Reagents or Materials

Unless otherwise specified, use only analytical grade reagents: