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GB/T 14698-2017

Replacing GB/T 14698-2002

Identification method of feed material by microscopy

饲料原料显微镜检查方法

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Foreword

This standard was drafted in accordance with the rules given GB/T 1.1-2009.

This standard replaces GB/T 14698-2002 “Identification method of feed material by microscopy”. As compared with GB/T 14698-2002, the main technical changes of this standard are as follows:

- DELETE the relevant contents of compound feed from the text (SEE clause 1 of 2002 version);

- ADJUST the standard text structure;

- ADD the petroleum ether degreasing treatment method (SEE clause 7.2.3).

This standard was proposed by AND shall be under the jurisdiction of National Feed Industry Standardization Technical Committee (SAC/TC 76).

The drafting organizations of this standard: National Feed Quality Supervision and Inspection Center (Wuhan), New Hope Liuhe Co., Ltd., Guangzhou Kangruide Biological Technology Co., Ltd., Hunan Zhenghong Technology Development Co., Ltd.

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This standard replaces the standards previously issued as follows:

- GB/T 14698-1993, GB/T 14698-2002.

Identification method of feed material by microscopy

1 Scope

This standard specifies the identification method of feed material by microscopy.

This standard applies to the qualitative identification of feed material by microscopy.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 14699.1 Feed - Sampling

GB/T 34269-2017 Identification chromatogram of feed material by microscopy

Feed material directory (Announcement of Ministry of Agriculture of People's Republic of China No. 1773)

3 Principles

The appearance morphology, organization structure, cell morphology, and staining characteristics of the substance under inspection are observed under the microscope, the results are compared with GB/T 34269-2017, to identify and evaluate its type and quality.

4 Instruments

4.1 Stereo-microscope: magnification can be 7 times ~ 40 times.

4.2 Biological microscope: magnification can be 40 times ~ 500 times.

4.3 Magnifying glass.

a spoon to take some of specimens from above and below each sieve, respectively LAY it horizontally in the culture dish. If necessary, the specimen can be sieved after being treated by petroleum ether, acetone, carbon tetrachloride (In accordance with clause 7.2.3, 7.2.4 and 7.2.5).

7.2.2 Particle or pellet specimen treatment

TAKE a few grains into a mortar (4.5), USE pestle to grind it to scatter it into different compositions, BUT do not CRUSH the composition itself. After initial grinding, MAKE it pass the sieve of bore diameter 0.42 mm. In accordance with the characteristics of the feed specimen after grinding, MAKE treatment in accordance with 7.2.3, 7.2.4 and 7.2.5.

7.2.3 Petroleum ether degreasing treatment

For the specimen of high fat content or attached with a large number of fine particle samples (such as: fish meal, meat and bone meal, extruded soybean and other raw materials feed samples), TAKE about 5 g of sample into a 100 mL high beaker, ADD 50 mL of petroleum ether (5.2), STIR it for 10 s, LET it be standing to allow it to settle, carefully DECANT the petroleum ether, after the petroleum ether at the sample surface is volatilized, PLACE it into the oven (4.9) at about 70 °C to bake it for 10 min with the door opened, or PLACE it into a fume hood to blow it dry, TAKE it out and COOL it to room temperature, PLACE the sample into the culture dish (4.7) to prepare for inspection.

WARNING - This procedure shall be operated in a ventilated environment or fume hood, beware of explosion and fire.

7.2.4 Acetone treatment

For the specimen having a lump structure due to molasses OR having high moisture content and being vague, it can be treated first using this method. TAKE about 10 g of specimen, PLACE it into a 100 mL high beaker, ADD about 70 mL of acetone solution (5.3), STIR it for a few minutes to dissolve the molasses, LET it be standing to allow it to settle. Carefully DECANT it, USE the acetone solution (5.3) to make repeated rinsing, settlement, and decantation for two times. After it is slightly evaporated dry, PLACE it into a 60 °C oven for 20 min, TAKE it out, COOL it at room temperature.

WARNING - This procedure shall be operated in a ventilated environment or fume hood, taking care to prevent organic solvent poisoning.

7.2.5 Carbon tetrachloride flotation treatment

TAKE about 10 g of specimen into a 100 mL high beaker, ADD about 90 mL of carbon tetrachloride (5.1), STIR it for about 10 s, LET it be standing for 2 min ~ 5 min. After the upper and lower layers are clearly separated, USE spoon to

During observation, USE a shape tweezers to toggle and flip, and USE a probe to touch the specimen particle, to systematically inspect each composition in the culture dish.

To facilitate observation, the ninhydrin test (9.2.6), the phloroglucinol test (9.2.7), the iodine test (9.2.8) and the like may be performed on the specimen. During the inspection process, MAKE comparison observation between the reference sample and the specimen under inspection at the same conditions, or otherwise MAKE reference to GB/T 34269 to perform comparative observation.

RECORD the various components observed, for the substance which is not indicated by the specimen, if it is in small amount, it is called impurity, if it is in large amount, it is called dopant. It shall pay special attention to hazardous substance.

8.3 Biological microscopy

Specimen particles and specimen that cannot be accurately identified under a stereomicroscope, respectively TAKE a small amount of specimen from above the sieve and from the sieve base plate, PLACE it on the slide glass (4.7), ADD two drops of a suspending agent I (5.11), USE the probe (4.8) to stir it to scatter it, MAKE it uniformly soaked, USE a glass slide to cover it. Stir and disperse with the probe (4.8), soaked and covered with a glass slip. MAKE observation under a biological microscope (4.2), MAKE searching observation under a lower magnification microscope first, then INCREASE the observation magnification further for each target. COMPARE it with the reference sample. TAKE off the glass slide (4.7), LIFT up the cover slip, ADD one drop of iodine solution (5.7), STIR it uniformly, ADD the glass slip again, PLACE it under microscope for observation. At this time, the starch is dyed blue to black, yeast and other protein cells are yellow to brown. If sample transparency is too low to be observed easily, it may take a small amount of specimen, ADD about 5 mL of suspending agent II (5.12), MAKE it boiling for 1 min, COOL it down, TAKE 1 ~ 2 drops of bottom sediment on the glass slide (4.7), COVER the glass slip to perform microscopic inspection.

9 Identification methods and identification experiments

9.1 Identification of major inorganic components

PLACE the dried sediment (7.2.3, 7.2.4 and 7.2.5) on a sieve set composed of sieve having hole-diameter 0.42 mm, 0.25 mm, 0.177 mm and base plate to sieve it, respectively PLACE the sieved four parts into the culture dishes, USE

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