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

GB/T 20715-2024

Replacing GB/T 20715-2006

Milk replacer for calves

犊牛代乳粉

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3 Terms and definitions

The terms and definitions given in GB/T 10647 and the following apply.

3.1 milk replacer for calves. A uniform mixture made up in a set proportion from dairy products and plant protein products as the main raw materials, supplemented with the necessary feed additives such as amino acids, vitamins and mineral elements, and used to feed calves as a substitute for cow milk. Note 1: it is fed to calves after being reconstituted with warm boiled water. Note 2: calf milk replacer belongs to the calf concentrate supplement feed.

4 Technical requirements

4.1 Raw materials. The dairy products include whole milk, skimmed milk, milk protein concentrate, whey powder, delactosed whey powder and casein; the plant protein sources include soya bean, wheat, peanut and rice. Non-protein nitrogen substances such as urea shall not be used, and animal-origin feed products other than milk and dairy products shall not be used.

4.2 Appearance and properties. A light yellow or light cream powder, uniform in colour, free from lumps, mould, deterioration and off-odour, with a milky aroma.

4.3 Grinding fineness. 100 % shall pass a 0.42 mm analytical sieve; the passing rate through a 0.18 mm analytical sieve shall be greater than 80 %.

4.4 Mixing uniformity. The coefficient of variation (CV) shall be not greater than 7.0 %.

4.5 Moisture. The moisture content shall be not greater than 6.0 %.

4.6 Physical and chemical indexes. Table 1 fixes the following, on a dry matter basis and expressed as per cent: crude protein 22.0 to 28.0, fat 12.0 to 20.0, lactose not less than 25.0, crude ash not more than 8.0, neutral detergent fibre not more than 4.0, lysine not less than 1.8, methionine not less than 0.5, threonine not less than 1.2, calcium 0.6 to 1.2, phosphorus 0.4 to 0.8. Recommended mineral element and vitamin contents are given in Annex A.

4.7 Hygienic indexes. In addition to complying with GB 13078, pathogenic bacteria shall not be detected, moulds shall be not more than 50 CFU/g and bacteria not more than 50 000 CFU/g; if probiotics are added this shall be declared on the label.

5 Sampling

Sampling is carried out as specified in GB/T 14699.1.

6 Test methods

6.1 Appearance and properties are examined by placing a suitable amount of sample in a clean white porcelain tray and inspecting it by eye, by smell and by touch under normal illumination, in a well ventilated place free from off-odours.

6.2 to 6.5, 6.8 and 6.9 assign grinding fineness to GB/T 5917.1, mixing uniformity to GB/T 10649, moisture to GB/T 6435, crude protein to GB/T 6432, crude ash to GB/T 6438 and neutral detergent fibre to GB/T 20806.

6.6 Fat is determined by the third method, alkaline hydrolysis, of GB 5009.6-2016. 6.7 Lactose is determined by the second method, the Lane-Eynon method, of GB 5413.5-2010.

6.10 to 6.13 assign lysine, methionine and threonine to GB/T 18246, calcium to GB/T 6436, phosphorus to GB/T 6437 and the hygienic indexes to GB 13078.

7 Inspection rules

7.1 Batching. Products of one specification with the same formula and the same raw materials, produced continuously or in the same shift, form one batch; a batch shall not exceed 40 t.

7.2 Delivery inspection covers appearance and properties, moisture, crude protein, fat and crude ash.

7.3 Type inspection covers all the items specified in 4.2 to 4.7. Under normal production it is carried out at least once every six months, and also when the product is first put into production; when the process, formula or main raw material source changes appreciably in a way that may affect quality; when production is resumed after a stoppage of more than three months; when the delivery inspection result differs appreciably from the previous type inspection result; and when the feed administration department calls for it.

7.4 Decision rules. A batch is judged qualified when every inspected item complies. If any index fails, a doubled sample may be re-drawn from the same batch for re-inspection; if one index still fails, the batch is judged unqualified. Microbiological indexes shall not be re-inspected. Limiting values are judged by the rounded value comparison method of GB/T 8170, and the permitted error in judging test results follows GB/T 18823.

8 Labelling, packaging, transport, storage and shelf life

8.1 Labelling follows GB 10648.

8.2 Packaging materials shall be non-toxic, harmless and moisture-proof. The product should be packed in lined cartons, fibre drums or bags, or polypropylene plastic drums or bags, lined with a food-grade polyethylene bag; other packaging may be used at the customer request.

8.3 During transport the packages shall be protected from damage, sunlight and rain, and shall not be carried together with toxic, harmful or polluting substances.

8.4 Storage is in a clean, dry, ventilated dedicated warehouse, not together with toxic or harmful substances, protected from sunlight, rain, insects, rodents and mould.

8.5 For unopened packages kept under the transport and storage conditions of the document, the shelf life of the product is the shelf life marked on the label.

A Annex A (informative) Recommended mineral element and vitamin contents

A.1 Table A.1 recommends, on a dry matter basis: magnesium not less than 0.15 %, sodium not less than 0.40 %, potassium not less than 0.65 %, chlorine not less than 0.32 %, sulfur not less than 0.29 %, iron not less than 85 mg/kg, copper not less than 10 mg/kg, manganese not less than 60 mg/kg, zinc not less than 65 mg/kg, iodine 0.50 mg/kg to 1.00 mg/kg, cobalt 0.10 mg/kg to 0.50 mg/kg, selenium 0.30 mg/kg to 0.50 mg/kg.

A.2 Table A.2 recommends, on a dry matter basis: vitamin A not less than 11 000 IU/kg, vitamin D3 not less than 3 200 IU/kg, vitamin E not less than 200 IU/kg, vitamin K not less than 2 mg/kg, vitamin B1, vitamin B2 and vitamin B6 not less than 6.5 mg/kg each, pantothenic acid not less than 13 mg/kg, niacin not less than 10 mg/kg, folic acid not less than 0.5 mg/kg, biotin not less than 0.1 mg/kg, vitamin B12 not less than 0.07 mg/kg, choline not less than 1 000 mg/kg.