



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

GB 5413.31-2013

**National Food Safety Standard Determination of urease in
infant foods and dairy products**

婴幼儿食品和乳品中脲酶的测定

(English Translation)

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Foreword

This standard replaces GB/T 5413.31-1997 Milk powder and formula foods for infant and young children - Qualitative detection of urease.

As compared with GB/T 5413.31-1997, the main changes of this standard are as follows.

- MODIFY the standard name;
- ADD the storage conditions for urea solution;
- ADD the storage conditions for Nessler's reagent;
- ADD the time limit for determination results.

National standard on food safety

Food and dairy products for infant and young children

- Determination of urease

1 Scope

This standard specifies the determination methods for urease in infant foods and dairy products.

This standard applies to qualitative detection of urease in infant food and dairy urease.

2 Principles

Under the appropriate pH and temperature conditions, urease will catalyze the urea to convert into ammonium carbonate. Ammonium carbonate will, under the alkaline conditions, generate ammonium hydroxide, which will react with the potassium iodide double salt in the Nessler's reagent to produce brown double-mercury ammonium iodide.

3 Reagents and materials

Note: Unless otherwise stated, the reagents used in this standard are of analytical pure AND the water is grade III water as specified in GB/T 6682.

3.2.1 Urea solution (10 g/L). WEIGH 5 g of urea and DISSOLVE it in 500 mL water. STORE it in a brown reagent bottle; PRESERVE it in the refrigerator, AND the valid period is 1 month.

3.2.2 Sodium tungstate solution (100 g/L). WEIGH 50 g of sodium tungstate and DISSOLVE it in 500 mL water.

3.2.5 Disodium hydrogen phosphate solution. WEIGH 9.47 g of anhydrous sodium hydrogen phosphate and DISSOLVE it in 1000 mL water.

3.2.6 Potassium dihydrogen phosphate solution. WEIGH 9.07 g of potassium dihydrogen phosphate and DISSOLVE it in 1000 mL water.

3.2.9 Nessler's reagent. WEIGH 144 g of sodium hydroxide and DISSOLVE it in 500 mL water; MAKE it fully dissolved and cooled;

5 Analysis steps

Take two test tubes A and two test tubes B; WEIGH 0.10 g of sample respectively and PLACE into the two tubes; ADD 1 mL of water; SHAKE for 0.5 min (about 100 times). Respectively ADD 1 mL of neutral buffer solution. ADD

1 mL of urea solution into the test tube A (sample tube) AND 1 mL of water into

the test tube B (blank control tube). After shaking uniformly, PLACE them in

6 Presentation of analysis results

The analysis results are to be judged based on Table 1.

7 Detection limit

The method is a qualitative method, AND the detection limit is 0.7U.

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