



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

GB 5413.18-2010

**National food safety standard -- Determination of vitamin C in
foods for infants and young children, milk and milk products
(English Translation)**

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Table of Contents

Foreword...	3
1 Scope...	4
2 Normative references...	4
3 Principle...	4
4 Reagents and materials...	4
5 Apparatus...	5
6 Analysis procedures...	6
7 Result representation...	7
8 Precision...	8
9 Other...	8

Foreword

This Standard replaces GB/T 5413.18-1997 "Milk powder and formula foods for infants and young children - Determination of vitamin C content".

Compared with GB/T 5413.18-1997, the main changes of this Standard are as follows.

- defined the activity unit of enzyme;
- changed the concentration of o-phenylenediamine solution;
- changed the treatment of specimens containing starch;
- added -- the reaction time after adding boric acid-sodium acetate solution;
- added -- the reaction time after adding o-phenylenediamine solution;

This Standard replaces the following previous standards.

- GB 5413-1985, GB/T 5413.18-1997.

National food safety standard

Determination of vitamin C in foods for infants and
young children, milk and milk products

1 Scope

This Standard specifies the determination method of vitamin C in foods for infants and young children, milk and milk products.

This standard is applicable to the determination of vitamin C in foods for infants and young children, milk and milk products. The determination result of this Standard indicates the total content of reduction-type vitamin C and oxidation-type vitamin C.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

3 Principle

Vitamin C (ascorbic acid) is oxidized to be dehydroascorbic acid in the presence of activated carbon. The dehydroascorbic acid reacts with o-phenylenediamine to generate fluorescent substances. Use fluorescent spectrophotometer to determine its fluorescence intensity.

4 Reagents and materials

Unless otherwise specified, the reagents used in the method are analytically pure; the water used is Grade 3 water regulated in GB/T 6682.

4.1 Amylase. enzyme activity is 1.5U/mg; adjust the dosage in accordance with the activity unit size.

4.2 Metaphosphoric acid-acetic acid solution A. weigh 15 g of metaphosphoric acid and 40 mL of acetic acid (36%) in 200 mL of water; dissolve and dilute to

4.3 Metaphosphoric acid-acetic acid solution B. weigh 15 g of metaphosphoric acid and 40 mL of acetic acid (36%) in 100 mL of water; dissolve and dilute to

4.5 Sodium acetate solution. use water to dissolve 500 g of sodium acetate trihydrate till it is diluted to 1 L.

4.6 Boric acid-sodium acetate. weigh 3.0 g of boric acid; use the sodium acetate solution (4.5) to dissolve till it is diluted to 100 mL; prepare when required.

4.8 Vitamin C standard solution (100 µg/mL). weigh 0.050 g of Vitamin C standard product; use metaphosphoric acid - acetic acid solution A (4.2) to dissolve and make constant volume to 50 mL;

6.1.1 Starch-containing specimen. WEIGH about 5 g (accurate to 0.0001 g) of well mixed or about 20 g (accurate to 0.0001 g) of liquid specimen (containing about 2 mg of Vitamin C) in a 150 mL erlenmeyer flask.

6.1.2 Starch-free specimen. WEIGH about 5 g of well mixed solid specimen (accurate to 0.0001 g). USE metaphosphoric acid-acetic acid A (4.2) to dissolve. MAKE constant volume to 100 mL.

6.2.1 TRANSFER the aforementioned specimens (6.1.1, 6.1.2) and Vitamin C standard solution (4.8) to a 250 mL erlenmeyer flask having about 2 g of acidic activated carbon (4.4). Severely VIBRATE it. FILTER it (discard about 5 mL of initial filtration) and it shall be the filtration of specimen and standard solution. Accurately PIPETTE 5.0 mL of the filtration of specimen and standard solution. Respectively PLACE in the 25 mL and 50 mL flasks having 5.0 mL of boric acid-sodium acetate solution (4.6). Place for 30 min. USE distilled water for constant volume. Use it as the blank solution of specimen and standard solution.

6.3.1 Drawing of standard curve

Immediately transfer the standard series of test solution (6.2.4) into the quartz cuvette of the fluorescence spectrophotometer. Determine its fluorescence value when excitation wavelength is 350 nm, emission wavelength is 430 nm. Standard fluorescent value respectively minus standard blank fluorescence value as Y-axis; take the corresponding vitamin C mass concentration as X-coordinate to draw the standard curve.

7 Result representation

The vitamin C content in specimen shall be calculated according to equation (1).

8 Precision

The absolute difference between two independent determination results obtained under repeatability conditions shall not exceed 10% of the arithmetic mean.

9 Other

The detection limit of this Standard is 0.1 mg/100 g.

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