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NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB 5413.6-2010

National food safety standard -- Determination of insoluble dietary fiber in foods for infants and young children, milk and milk products

婴幼儿食品和乳品中不溶性膳食纤维的测定

(English Translation)

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1 Scope

This Standard stipulates the method for the determination of insoluble dietary fiber in foods for infants and young children, milk and milk products.

This Standard is applicable to the determination of insoluble dietary fiber in foods for infants and young children, milk and milk products.

2 Normative references

The references in this Standard are indispensable to the application of this Standard.

In terms of references with a specified date, only versions with a specified date are applicable to this Standard. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this Standard.

3 Principle

Use neutral detergent to dissolve and eliminate sugar, starch, protein and pectin in sample; the residue that cannot be dissolved shall be insoluble dietary fiber, which mainly includes cellulose, hemicellulose, lignin, keratin and silicon dioxide; it also includes insoluble ash.

4 Reagents and materials

4.1

Anhydrous sodium sulfite.

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4.2
Petroleum ether
Boiling range: 30 °C ~ 60 °C.

4.3
Acetone.

4.4
Toluene.

4.5
EDTA disodium salt.

4.6
Sodium tetraborate (contains 10 crystal waters).

μm.

d) Reflux condenser.

e) Extraction filtration device: constituted of extraction filtration flask, extraction filtration pad and water pump.

f) pH meter: division value: 0.01.

6 Analytical procedures

6.1
Weigh-take 0.5 g ~ 1.0 g of solid sample, or, 8.0 g of liquid sample (accurate to 0.1 mg); place it into a tall mouthless beaker. If fat content in the sample exceeds 10%, such fat needs to be removed first. For example, 1.00 g of sample: use petroleum ether, at 30 °C ~ 60 °C (4.2) to extract for 3 times; 10 mL each time.

6.2
Add 100 mL of neutral detergent solution (4.13); add 0.5 g of anhydrous sodium sulfite (4.1).

6.3
Use electric furnace to heat it up. Within 5 min ~ 10 min, make it boil. Then, transfer it onto the electric heating plate, maintain micro-boiling for 1 h.

6.4
In the acid-resistant glass filter, lay 1 g ~ 3 g of glass wool, then, transfer it into the oven. At 110 °C, start drying for 4 h. Then, take it out, place it in a dryer; cool it down to room temperature. Then, weigh it, obtain m1 (accurate to 0.0001 g).

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6.5

While the boiled sample is still hot, pour it into the filter; use water pump to start extraction and filtration. Use 500 mL of hot water (90 °C ~ 100 °C), divide it into several times to rinse the beaker and the filter, then, extract and filter it, till it reaches dryness.

Rinse the liquid and foam on the lower part of the filter, then, put on a rubber plug.

6.6

Add enzyme solution (4.15) into the filter. The liquid level shall be covered with fiber. Use fine needle to extrude the bubbles. Add several drops of methylbenzene (4.4); cover it with a watch glass. At 37 °C, place it in the incubator for an overnight.

6.7

Take out the filter; remove the plug on the bottom; use extraction and filtration to remove the enzyme solution. In addition, use 300 mL of hot water, divide it into several times to rinse the residual enzyme solution. Use iodine solution to examine whether there is any residue of starch. If there is residue of starch, continue to add enzyme for hydrolysis. If starch is eliminated, drain it, then, use acetone (4.3) to rinse twice.

6.8

Place the filter into the oven. At 110 °C, start drying for 4 h. Then, take it out, place it into the dryer to cool it down to room temperature. Then, weigh it, obtain m2 (accurate to 0.0001 g).

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