GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

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National food safety standard - Food additive - ε-Polylysine

食品安全国家标准

食品添加剂 ε-聚赖氨酸

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State Administration for Market Regulation.

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National food safety standard - Food additive - ε-Polylysine

1 Scope

This standard applies to the food additive ε-Polylysine obtained by using the yeast extract or other nitrogen-containing substances as the main raw material, through aerobic fermentation of *Streptomyces albulus*, separation and purification.

2 Chemical name, molecular formula, structural formula, and the relative molecular mass

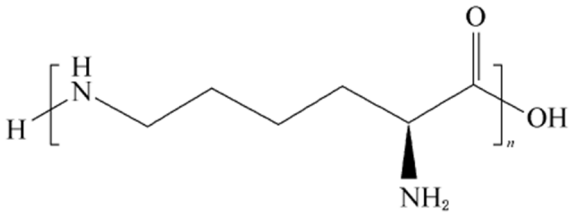
2.1 Chemical name

ε-Polylysine

2.2 Molecular formula

$H[C_6H_{12}N_2O]_nHO$

2.3 Structural formula



2.4 Relative molecular mass

128.176*n* + 18.016 (according to 2018 International Relative Atomic Mass)

3 Technical requirements

3.1 Sensory requirements

Sensory requirements shall meet the requirements of Table 1.

Appendix A

Testing method

A.1 Warning

Some of the reagents used in the test methods of this standard are toxic or corrosive and shall be handled with care and in accordance with relevant national regulations. If splashed on the skin, rinse immediately with water, if serious, seek medical attention immediately. When volatile acids are used, the operation shall be carried out in a fume cupboard.

A.2 General provisions

Unless other requirements are specified, the reagents and water used in this standard refer to analytical reagents and grade III water specified in GB/T 6682. The solution used in the test refers to the aqueous solution if the solvent is not specified.

A.3 Identification test

A.3.1 Reagents and materials

A.3.1.1 Basic bismuth nitrate solution: Weigh 0.85 g basic bismuth nitrate, and add 10 mL acetic acid and 40 mL water to dissolve it.

A.3.1.2 Potassium iodide solution: Dissolve 8 g potassium iodide in 20 mL water

A.3.1.3 Bismuth potassium iodide solution: Mix 5 mL basic bismuth nitrate solution, 5 mL potassium iodide solution, 20 mL acetic acid, and 100 mL water; prepare it just before using.

A.3.1.4 Phosphate buffer: pH 6.8. Weigh 3.40 g potassium dihydrogen phosphate and 3.55 g anhydrous disodium hydrogen phosphate, dissolve it in water and dilute to 1000 mL.

A.3.1.5 Methyl orange solution: Weigh 0.1 g methyl orange, dissolve it in 100 mL water, and filter if necessary.

A.3.2 Instruments and equipment

Electronic balance: The sense quantity shall be 0.001 g.

A.3.3 Identification method

A.3.3.1 Precipitation of bismuth potassium iodide

Weigh about 0.1 g of the sample and dissolve it in 100 mL water; take 1 mL of the solution, and add 1 mL bismuth potassium iodide solution (A.3.1.3), then, there shall be brown-red precipitation.

A.3.3.2 Methyl orange precipitation

Weigh about 0.1 g of the sample, dissolve it in 100 mL phosphate buffer (A.3.1.4); take 1 mL of the solution, and add 1 mL methyl orange solution (A.3.1.5), then, there shall be rufous precipitation.

A.4 Determination of the content of ε-Polylysine

A.4.1 Principles of the method

After the sample is dissolved in phosphate buffer, separate it by the liquid chromatography, detect it by an ultraviolet detector or a diode array detector, and quantify it by the external standard method.

A.4.2 Reagents and materials

A.4.2.1 The water shall be grade I water specified in GB/T 6682.

A.4.2.2 Sodium sulfate (Na_2SO_4).

A.4.2.3 Dipotassium hydrogen phosphate (K_2HPO_4).

A.4.2.4 Phosphoric acid (H_3PO_4).

A.4.2.5 Acetonitrile (C_2H_3N): chromatographically pure.

A.4.2.6 ε-Polylysine standard: purity ≥95.0%.

A.4.2.7 Phosphate buffer: Dissolve 1.7 g dipotassium hydrogen phosphate and 1.42 g sodium sulfate in 800 mL water, adjust the pH to 2.2 with the phosphoric acid, and dilute to 1000 mL with water. Filter it through a 0.45 μm membrane.

A.4.2.8 Solution for diluting to volume: Take 92 mL phosphate buffer (A.4.2.7), add 8 mL acetonitrile, and mix well.

A.4.2.9 Aqueous filter membrane: 0.45 μm.

A.4.3 Instruments and equipment

A.4.3.1 Electronic balance: The sense quantity shall be 0.1 mg.

A.4.3.2 Liquid chromatograph: It shall be equipped with a UV detector or diode array

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