

ICS 67.220.20

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

GB 1903.12-2015

**National food safety standard -- Food Nutrition Enhancer --
L-selenium-methyl selenocysteine
(English Translation)**

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People's Republic of China**

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1 Scope

This standard applies to alpha- acetamido acrylate and methyl alcohol sodium selenium as the main raw material, through addition reaction, enzymatic resolution, refining Food nutrition fortifier L- selenium - methyl selenocysteine (L-Se-methylselenocysteine, called L-SeMC).

2.1 Chemical Name

(R) -2- amino-3-propionic acid seleno Formula 2.2 C₄H₉NO₂Se

2.4 Relative molecular mass

182.08 (according to 2012 international relative atomic mass)

3.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods Color White the state of a powder or granules Smell garlic-like odor Take the right amount of sample is placed in a clean, dry transparent containers, Observe its color, state under natural light, smell the smell

3.2 Physical and Chemical Indicators

Physical and chemical indicators should be consistent with the provisions of Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method L- selenium - methyl selenocysteine content (L-SeMC meter), w /% ≥ 96 Appendix A A.4 Specific rotation α_D^{20} (20 °C, D)/[(°) · dm² · kg⁻¹] -10 ~ -15 A.5 in Appendix A Loss on drying, w /% ≤ 1.5 GB 5009.3 vacuum drying method pH (1% aqueous solution) 4.5 ~ 6.5 GB/T 9724 Total arsenic (As)/(mg/kg) ≤ 2.0 GB 5009.11 Lead (Pb)/(mg/kg) ≤ 2.0 GB 5009.12 Appendix A Testing method A.1 Safety Tips Reagents The standard test methods used for toxic or corrosive in accordance with the relevant provisions need to be careful when using the operation. If the Splashed on the skin should immediately wash with water, severe cases should be treated immediately. When using a volatile acid, to be carried out in a fume hood. Use flammable when, prohibited the use of open flame heating.

A.2 General Provisions this standard reagents and water, did not indicate when the other requirements, refer to the three water analytical reagent and GB/T 6682 stipulated.

Standard solutions used in the tests, the determination of impurities standard solution preparation and its products, did not indicate when the other requirements, according to GB/T 601, GB/T 602, the provisions of the preparation of GB/T 603's. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.3 Identification Test A.3.1 solubility Soluble in water, slightly soluble in methanol.

A.3.2 HPLC qualitative identification test in L- selenium - chromatographic operating conditions methyl selenocysteine content of the test, the sample solution and standard solution L- selenium - methyl seleno Cysteine peak retention time relative difference does not exceed 2%. L- selenium - methyl selenocysteine reference standard solution chromatogram see Appendix B.

Determination of methyl selenocysteine (with L-SeMC meter) content - A.4 L- selenium

A.4.1 Method summary it was determined by high performance liquid chromatography. By ligand exchange chiral separation column, UV detector and external standard samples to the L- selenium - methyl selenocysteine content.

A.4.2 Reagents and materials A.4.2.1 copper sulfate pentahydrate (CuSO₄ · 5H₂O).

A.4.2.2 Water. GB/T 6682 specified in a water.

A.4.2.3 five water copper sulfate solution. 0.0004mol/L. Weigh accurately 0.1g copper sulfate pentahydrate (CuSO₄ · 5H₂O), dissolved in water, and Set the volume to 1L, shake spare.

A.4.2.4 L- selenium - methyl selenocysteine standard purity greater than 98%.

A.4.3 Instruments and Equipment High performance liquid chromatograph. equipped with UV detector and column oven, or other equivalent detector.

A.4.4 reference chromatographic conditions A.4.4.1 Column. with an optically active ligand exchange-type stationary phase coated on octadecylsilane bonded silica as filler chiral

column 250mm x 4mm, particle size 5 μ m; or other equivalent column.

A.4.4.2 Mobile phase. 0.0004mol/L of copper sulfate pentahydrate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) solution.

A.4.4.3 mobile phase flow rate. 1.0mL/min.

A.4.4.4 detection wavelength. 240nm.

A.4.4.5 Injection volume. 20 μ L.

A.4.4.6 Column temperature. 35 °C.

A.4.5 Analysis step

A.4.5.1 Preparation of standard solutions Weigh 15mgL- selenium - methyl selenocysteine standard, accurate to 0.1mg, placed in 25mL volumetric flask, add mobile phase and diluted to the mark, shake, have a standard solution. L- selenium - methyl selenocysteine reference standard solution chromatogram Appendix B.

A.4.5.2 Preparation of sample solution Weigh 30mg samples, accurate to 0.1mg, a 50mL volumetric flask, add the mobile phase dissolved and diluted to the mark, shake, have a sample Solution.

A.4.5.3 Determination in reference chromatographic conditions (A.4.4.), Respectively, of the standard solution, the sample solution was subjected to chromatographic analysis. The chromatogram of the sample solution and standard Chromatograms compared to standard solution to determine the sample solution chromatogram L- Se - methyl selenocysteine corresponding peak (t_R is the retention time of 9.45min). Record the sample solution chromatogram L- selenium - methyl selenocysteine peak area and standard solution chromatogram L- selenium - methyl Selenocysteine peak area.

A.4.6 Calculation Results L- selenium - methyl selenocysteine (with L-SeMC meter) mass fraction w_a , according to equation (A.1) Calculated.

100% (A.1)

Where.

m_R --- L- selenium standard solution - Quality-methyl-selenocysteine, in milligrams (mg);

M --- the quality of the sample, in milligrams (mg);

A_a --- sample solution chromatogram L- selenium - methyl selenocysteine peak area;

A_R --- standard solution chromatogram L- selenium - methyl selenocysteine peak area.

The results parallel arithmetic mean of the measurement results shall prevail. Twice under the same condition of independent determination results obtained absolute difference Value must not exceed 5% of the arithmetic mean.

A.5 Determination of specific rotation A.5.1 weighed amount of sample, accurate to 0.1mg, dissolved in water and diluted quantitatively made containing about 10mg per milliliter of solution.

Specific rotation α (20 °C, D) to the value "(°) · dm² · kg⁻¹" indicates, according to equation (A.2) Calculated.

α (20 °C, D) =

$\frac{\alpha}{l \times \rho}$

Where.

α --- measured rotation angle in degrees (°);

l --- optical tube length, measured in decimeters (dm);

ρ --- mass concentration of the effective component in solution, in grams per milliliter (g/mL).

A.5.2 Other press GB/T 613 performed.

Appendix B

L- selenium - methyl selenocysteine reference standard solution chromatogram L- selenium - methyl selenocysteine reference standard solution chromatogram shown in Figure B.1.

Figure B.1 L- selenium - methyl selenocysteine reference standard solution chromatogram

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