Polaprezinc Granules

ポラプレジンク顆粒

Polaprezinc Granules contain not less than 95.0% and not more than 105.0% of the labeled amount of polaprezinc $[(C_9H_{12}N_4O_3Zn)_n]$.

Method of preparation Prepare as directed under Granules, with Polaprezinc.

Identification **(1)** To a quantity of Polaprezinc Granules, equivalent to 20 mg of Polaprezinc, add 20 mL of 0.2 mol/L hydrochloric acid TS, shake for 10 minutes, centrifuge, and use the supernatant liquid as the sample solution. To 2 mL of the sample solution add 0.5 mL of a solution of sulfanilic acid in 1 mol/L hydrochloric acid TS (1 in 200), 0.5 mL of a solution of sodium nitrite (1 in 20) and 3 mL of sodium carbonate TS: a red color develops.

(2) The sample solution obtained in (1) responds to the Qualitative Tests *<1.09>* for zinc salt.

Uniformity of dosage units *<6.02>* Perform the test according to the following method: Polaprezinc Granules in single-dose packages meet the requirement of the Content uniformity test.

To the total content of 1 package of Polaprezinc Granules, add exactly V mL of 0.2 mol/L hydrochloric acid TS so that each mL contains about 5 mg of polaprezinc $[(C_9H_{12}N_4O_3Zn)_n]$, shake vigorously for 10 minutes, and centrifuge. Pipet 5 mL of the supernatant liquid, add exactly 5 mL of the internal standard solution, add the mobile phase to make 50 mL, and use this solution as the sample solution. Then, proceed as directed in the Assay.

Amount (mg) of polaprezinc $[(C_9H_{12}N_4O_3Zn)_n]$
$= M_S \times Q_T / Q_S \times V / 5 \times 1.292$

M_S: Amount (mg) of L-Carnosine RS taken

Dissolution *<6.10>* When the test is performed at 50 revolutions per minute according to the Paddle method, using 900 mL of 0.05 mol/L acetic acid-sodium acetate buffer solution (pH 4.0) as the dissolution medium, the dissolution rate in 15 minutes of Polaprezinc Granules is not less than 80%.

Start the test with an accurately weighed amount of Polaprezinc Granules, equivalent to about 75 mg of polaprezinc $[(C_9H_{12}N_4O_3Zn)_n]$, withdraw not less than 20 mL of the medium at the specified minute after starting the test, and filter through a membrane filter with a pore size not exceeding 0.45 μm. Discard the first 10 mL of the filtrate, pipet 1 mL of the subsequent filtrate, add diluted nitric acid (77 in 10,000) to make exactly 25 mL, and use this solution as the sample solution. Separately, pipet suitable volumes of Standard Zinc Stock Solution, to each solution add diluted nitric acid (77 in 10,000) so that each mL contains 0.4 to 0.8 μg of zinc (Zn: 65.38), and use these solutions as the standard solutions. Perform the test with the sample solution and standard solutions as directed under Atomic Absorption Spectrophotometry *<2.23>* according to the following conditions, and calculate the amount of zinc in the sample solution using a calibration curve obtained from the absorbances of the standard solutions.

Dissolution rate (%) with respect to the labeled amount of polaprezinc $[(C_9H_{12}N_4O_3Zn)_n]$
$=$ Content (μg/mL) of zinc in the sample solution $/ M_T \times 1 / C \times 2250 \times 4.429$

M_T : Amount (g) of Polaprezinc Granules taken
C : Labeled amount (mg) of polaprezinc $[(C_9H_{12}N_4O_3Zn)_n]$ in 1 g

Gas:
Combustible gas — Acetylene.
Supporting gas — Air.
Lamp: Zinc hollow-cathode lamp.
Wavelength: 213.9 nm.

Assay Weigh accurately an amount of Polaprezinc Granules, equivalent to about 0.1 g of polaprezinc $[(C_9H_{12}N_4O_3Zn)_n]$, add exactly 20 mL of 0.2 mol/L hydrochloric acid TS, shake vigorously for 10 minutes, and centrifuge. Pipet 5 mL of the supernatant liquid, add exactly 5 mL of the internal standard solution, add the mobile phase to make 50 mL, and use this solution as the sample solution. Separately, weigh accurately about 20 mg of L-Carnosine RS, previously dried at 105℃ for 3 hours, dissolve in 5 mL of 0.2 mol/L hydrochloric acid TS, add exactly 5 mL of the internal standard solution, add the mobile phase to make 50 mL, and use this solution as the standard solution. Perform the test with 5 μL each of the sample solution and standard solution as directed under Liquid Chromatography *<2.01>* according to the following conditions, and calculate the ratios, Q_T and Q_S, of the peak area of L-carnosine to that of the internal standard.

Amount (mg) of polaprezinc $[(C_9H_{12}N_4O_3Zn)_n]$
$= M_S \times Q_T / Q_S \times 4 \times 1.292$

M_S: Amount (mg) of L-Carnosine RS taken

Internal standard solution — Dissolve 0.25 g of 4-aminoacetophenone in 5 mL of acetonitrile, and add mobile phase to make 100 mL.

Operating conditions —

Detector: An ultraviolet absorption photometer (wavelength: 210 nm).

Column: A stainless steel column 4.6 mm in inside diameter and 15 cm in length, packed with

octadecylsilanized silica gel for liquid chromatography (5 μm in particle diameter).

Column temperature: A constant temperature of about 45℃.

Mobile phase: Dissolve 1.4 g of potassium dihydrogen phosphate in 1000 mL of water, and adjust to pH 3.5 with diluted phosphoric acid (1 in 100). Dissolve 2 g of sodium 1-octane sulfonate in 900 mL of this solution, and add 100 mL of acetonitrile for liquid chromatography.

Flow rate: Adjust so that the retention time of L-carnosine is about 15 minutes.

System suitability—

System performance: When the procedure is run with 5 μL of the standard solution under the above operating conditions, 4-aminoacetophenone and L-carnosine are eluted in this order with the resolution between these peaks being not less than 6.

System repeatability: When the test is repeated 6 times with 5 μL of the standard solution under the above operating conditions, the relative standard deviation of the ratio of the peak area of L-carnosine to that of the internal standard is not more than 1.0%.

Containers and storage Containers—Tight containers.

Change the following 9.01 Reference Standards (1) as follows:

L-Carnosine RS