Calcium ascorbate (Calcii ascorbas)

DEFINITION
Calcium di[(R)-2-[(S)-1,2-dihydroxyethyl]-4-hydroxy-5-oxo-2H-furan-3-olate] dihydrate.

Content: 99.0 per cent to 100.5 per cent of C₁₂H₁₄CaO₁₂·2H₂O.

CHARACTERS
Appearance: white or slightly yellowish, crystalline powder.

Solubility: freely soluble in water, practically insoluble in ethanol (96 per cent).

IDENTIFICATION
First identification: A, B, E.

Second identification: A, C, D, E.

A. Specific optical rotation (see Tests).

B. Infrared absorption spectrophotometry (2.2.24).


C. Dilute 1 ml of solution S (see Tests) to 10 ml with water R.

To 2 ml of the solution add 0.2 ml of a 100 g/l solution of ferrous sulphate R. A deep violet colour develops.

D. To 1 ml of solution S add 0.2 ml of dilute nitric acid R and 0.2 ml of silver nitrate solution R. A grey precipitate is formed.

E. The substance gives reaction (b) of calcium (2.3.1).

TESTS

Solution S. Dissolve 5.00 g in carbon dioxide-free water R and dilute to 50.0 ml with the same solvent.

Appearance of solution. Solution S is clear (2.2.7) and not more intensely coloured than reference solution Y₆ (2.2.2, Method II). Examine the colour of the solution immediately after preparation of the solution.

pH (2.2.3): 6.8 to 7.4 for solution S.

Specific optical rotation (2.2.7): +95 to +97 (dried substance), determined using freshly prepared solution S.

Related substances. The thresholds indicated under Related substances (Table 2034.1) in the general monograph Substances for pharmaceutical use (2034) do not apply.

Fluorides: maximum 10.0 ppm.

Potentiometry (2.2.36, Method I).

Test solution. In a 50 ml volumetric flask, dissolve 1.000 g in a 10.3 g/l solution of hydrochloric acid R, add 5.0 ml of fluoride standard solution (1 ppm F) R and dilute to 50.0 ml with a 10.3 g/l solution of hydrochloric acid R. To 20.0 ml of the solution add 20.0 ml of total-ionic-strength-adjustment buffer R and 3 ml of an 82 g/l solution of anhydrous sodium acetate R. Adjust to pH 5.2 with ammonia R and dilute to 50.0 ml with distilled water R.

Reference solutions. To 0.25 ml, 0.5 ml, 1.0 ml, 2.0 ml and 5.0 ml of fluoride standard solution (10 ppm F) R add 20.0 ml of total-ionic-strength-adjustment buffer R and dilute to 50.0 ml with distilled water R.

Indicator electrode: fluoride selective.

Reference electrode: silver-silver chloride.

Take into account the addition of fluoride to the test solution for the calculation.

Copper: maximum 5.0 ppm.

Atomic absorption spectrometry (2.2.23, Method I).

Test solution. Dissolve 2.0 g in a 9.7 g/l solution of nitric acid R and dilute to 25.0 ml with the same acid solution.

Reference solutions. Prepare the reference solutions using copper standard solution (10 ppm Cu) R, diluting with a 9.7 g/l solution of nitric acid R.
**Calcium carbonate**

**Calcii carbonas**

\[ \text{CaCO}_3 \]  \[ M, 100.1 \]

**DEFINITION**

*Content*: 98.5 per cent to 100.5 per cent (dried substance).

**CHARACTERS**

*Appearance*: white or almost white powder.

*Solubility*: practically insoluble in water.

**IDENTIFICATION**

A. It gives the reaction of carbonates (2.3.1).

B. 0.2 ml of solution S (see Tests) gives the reactions of calcium (2.3.1).

**TESTS**

**Solution S.** Dissolve 5.0 g in 80 ml of dilute acetic acid R. When the effervescence ceases, boil for 2 min. Allow to cool, dilute to 100 ml with dilute acetic acid R and filter, if necessary, through a sintered-glass filter (2.1.2).

**Substances insoluble in acetic acid**: maximum 0.2 per cent.

Wash any residue obtained during the preparation of solution S with 4 quantities, each of 5 ml, of hot water R and dry at 100-105 °C for 1 h. The residue weighs a maximum of 10 mg.

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**Calcium chloride dihydrate**

**Calcii chloridum dihydricum**

\[ \text{CaCl}_2 \cdot 2\text{H}_2\text{O} \]  \[ M, 147.0 \]

**DEFINITION**

*Content*: 97.0 per cent to 103.0 per cent of CaCl₂·2H₂O.

**CHARACTERS**

*Appearance*: white or almost white, crystalline powder, hygroscopic.

*Solubility*: freely soluble in water, soluble in ethanol (96 per cent).

**IDENTIFICATION**

A. Solution S (see Tests) gives reaction (a) of chlorides (2.3.1).