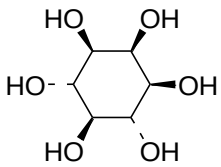
Inositol



$C_6H_{12}O_6$ Mol. Wt. 180.2

Inositol is *cis*-1,2,3,5-trans-4, 6-cyclohexanehexol.

Inositol contains not less than 97.0 per cent and not more than 102.0 per cent of $C_6H_{12}O_6$, calculated on the anhydrous basis.

Category. Carbohydrate

Description. A white or almost white crystalline powder.

Identification

A. Determine by infrared absorption spectrophotometry (2.4.6). Compare the spectrum with that obtained with *inositol RS* or with the reference spectrum of inositol.

B. In the Assay, the principal peak in the chromatogram obtained with the test solution corresponds to the peak in the chromatogram obtained with reference solution (a).

Tests

Appearance of solution. A 10 per cent w/v solution is not more opalescent than opalescence standard OS2 (2.4.1), and not more intensely coloured than reference solution RS1 (2.4.1).

Conductivity (2.4.9). Not more than 20 µS cm^{-1}, determined on a 20 per cent w/v solution at 20º.

Related substances. Determine by liquid chromatography (2.4.14),

Test solution. A 5.0 per cent w/v solution of the substance under examination in *water*.

Reference solution (a). A 5.0 per cent w/v solution of *inositol RS* in *water*.

Reference solution (b). Dilute 2.0 ml of reference solution (a) to 100.0 ml with *water*.

Reference solution (c). A solution containing 0.005 per cent w/v, each of, *inositol RS* and *mannitol RS* in *water*.

Chromatographic system
- a stainless steel column 30 cm x 7.8 mm, packed with a strong cation-exchange resin consisting of sulphonated cross-linked styrene - divinylbenzene copolymer in the hydrogen form 9 µm (Such as Carbo CHO - 820),
- column temperature: 85°,
- mobile phase: *water*,
- flow rate: 0.5 ml per minute,
- refractive index detector,
- Injection volume; 20µl.

Inject reference solution (c). The test is not valid unless the resolution between the peaks corresponding to inositol and mannitol is not more than 4.0.

Inject reference solution (b) and the test solution. In the chromatogram obtained with the test solution, the area of any secondary peak is not more than 0.15 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.3 per cent) and the sum of the areas of all the secondary peaks is not more than 0.5 times the area of the principal peak in the chromatogram obtained with reference solution (b) (1.0 per cent).

Heavy metals (2.3.13). 1.0 g complies with the limit test for heavy metals, Method B (20 ppm).

Lead (2.3.15). Not more than 0.5 ppm.

Determine by atomic absorption spectrophotometry (2.4.2), measuring at 283.3 nm using a lead hellow cathode discharge lamp and an air acetylene flame.

NOTE— Prepare these solutions on the day of use.

Test solution. Dissolve 20.0 g of inositol to 100 ml of *dilute acetic acid*. Add 2.0 ml of saturated *ammonium pyrrolidinedithiocarbamate* solution (containing about 1 per cent w/v of *ammonium pyrrolidinedithiocarbamate*), and 10.0 ml of *methyl isobutyl ketone*, and shake for 30 seconds. Protect from bright light. Allow the two layers to separate, and use the methyl isobutyl ketone layer.

Reference stock solution. Dissolve 0.16 g of lead nitrate in 100 ml of *water*, add 1 ml of *nitric acid* and dilute to 1000 ml with *water*. Dilute 10.0 ml of the solution to 100.0 ml with *water* (Each ml contains 10 µg of lead).

Reference solutions. Prepare as directed for the test solution, except prepare three reference solutions 0.5, 1.0 and 1.5 ml, respectively of the reference solution (a) in addition to the 20.0 g of inositol under examination.

Set zero using blank solution prepared in test solution without inositol. Introduce the test solution and each of the three reference solutions on the instrument and record the absorbance. Plot the absorbance reading against the known concentration of lead and draw a straight line.

Water (2.3.43). Not more than 0.5 per cent, determined on 1.0 g.

Assay. Determine by liquid chromatography (2.4.14), as described under Related substances using with the following modification.

– injection volume: 10 µl.

Inject reference solution (a) and (c). The test is not valid unless the resolution between the peaks corresponding to inositol and mannitol is not more than 4.0 in the chromatogram obtained with reference solution (c) and the relative standard deviation for replicate injection is not more than 2.0 per cent in the chromatogram obtained with reference solution (a).

Inject reference solution (a) and the test solution.

Calculate the content of $C_6H_{12}O_6$.

Storage. Store protected from moisture, at a temperature not exceeding 30°.

Solubility. Very soluble in *water*, practically insoluble in *ethanol* and in *ether*.