Status: Currently Official on 15-Feb-2025
Official Date: Official as of 01-May-2018
Document Type: USP Monographs
DocId: GUID-F4BF2536-5419-4200-B1AB-2F875E334875_3_en-US
DOI: https://doi.org/10.31003/USPNF_M41935_03_01
DOI Ref: mds9n

Iopamidol Injection

» Iopamidol Injection is a sterile solution of Iopamidol in Water for Injection. It contains not less than 95.0 percent and not more than 105.0 percent of the labeled amount of iopamidol ($C_{17}H_{22}I_3N_3O_8$). It may contain small amounts of suitable buffers and of Edetate Calcium Disodium as a stabilizer. Iopamidol Injection intended for intravascular or intrathecal use contains no antimicrobial agents.

Packaging and storage—Preserve Injection intended for intravascular or intrathecal use in single-dose containers, preferably of Type I glass, and protected from light.

Labeling—Label containers of Injection to direct the user to discard any unused portion remaining in the container and to check for the presence of particulate matter before using. Label it also to state its routes of administration.

USP Reference standards ⟨11⟩—

USP Iopamidol RS

USP Iopamidol Related Compound A RS

N,*N*′-Bis-(1,3-dihydroxy-2-propyl)-5-amino-2,4,6-triiodoisophthalamide.

$C_{14}H_{18}I_3N_3O_6$ 705.03

USP Iopamidol Related Compound B RS

5-Glycolamido-*N*,*N*′-bis[2-hydroxy-1-(hydroxymeth yl)ethyl]-2,4,6-triiodoisophthalamide.

$C_{16}H_{20}I_3N_3O_7$ 747.07

Identification—

A: Evaporate a volume of Injection, equivalent to about 500 mg of iopamidol, to dryness, and heat the residue so obtained in a suitable crucible: violet vapors are evolved.

B: It responds to the *Thin-Layer Chromatographic Identification Test* ⟨201⟩, the test solution and the Standard solution being prepared at a concentration of 0.5 mg per mL in a mixture of methanol and water (9:1), the solvent mixture being chloroform, methanol, ammonium hydroxide, and water (60:30:9:1), and short-wavelength UV light being used to locate the spots.

Bacterial Endotoxins Test ⟨85⟩ —It contains not more than 0.6 USP Endotoxin Unit per mg of iodine.

pH ⟨791⟩: between 6.5 and 7.5.

Particulate Matter in Injections ⟨788⟩ —The Injection labeled for intrathecal use meets the requirements for small-volume injections.

Free aromatic amine—Transfer an accurately measured volume of Injection, equivalent to about 500 mg of iopamidol, to a 25-mL volumetric flask, dilute with water to 20 mL, and mix. To a second 25-mL volumetric flask transfer 16 mL of water and 4.0 mL of Standard solution prepared by dissolving a suitable quantity of USP Iopamidol Related Compound A RS in water and diluting with water to obtain a solution having a concentration of 62.5 µg per mL. Proceed as directed in the test for *Free aromatic amine* under *Iopamidol*, beginning with "to the third 25-mL volumetric flask add 20 mL of water." The absorbance of the solution from the iopamidol is not greater than that of the Standard solution (0.05%).

Free iodine—Transfer a volume of Injection, equivalent to 2.0 g of iopamidol, to a glass-stoppered test tube. Add 2 mL of 2 N sulfuric acid and 1.0 mL of toluene, shake, and allow the layers to separate: the toluene layer shows no red color.

Limit of free iodide—Transfer 10.0 mL of Injection to a beaker, add 40 mL of water, and mix. Proceed as directed in the *Limit of free iodide* test under *Iopamidol* beginning with "add 2.0 mL of 0.001 M potassium iodide." Not more than 3.1 mL of 0.001 N silver nitrate is required (0.04 mg of iodide per mL).

Other requirements—It meets the requirements under *Injections and Implanted Drug Products* ⟨1⟩.

Assay—

Solution A—Use water.

Solution B—Prepare a filtered and degassed mixture of water and methanol (3:1).

Mobile phase—Use variable mixtures of *Solution A* and *Solution B* as directed for *Chromatographic system.* Make adjustments if necessary (see *System Suitability* under *Chromatography* ⟨621⟩).

Resolution solution—Transfer 10.0 mg of USP Iopamidol Related Compound B RS and 10.0 mg of USP Iopamidol RS to a 1000-mL volumetric flask. Dissolve in and dilute with water to volume, and mix.

Standard preparation—Dissolve about 20 mg of USP Iopamidol RS, accurately weighed, in about 10 mL of water, and dilute quantitatively and stepwise with water to obtain a solution having a known concentration of about 80 µg of USP Iopamidol RS per mL.

Assay preparation—Dilute an accurately measured volume of Injection, equivalent to about 1000 mg of iopamidol, quantitatively and stepwise with water to obtain a solution having a concentration of about 80 µg of iopamidol per mL.

Chromatographic system (see *Chromatography* ⟨621⟩)—The liquid chromatograph is equipped with a 240-nm detector and a 4.6-mm × 25-cm stainless steel column that contains 5-µm packing L1. The column temperature is maintained at 35°, and the flow rate is about 1.5 mL per minute. The chromatograph is programmed to provide variable mixtures of *Solution A* and *Solution B*, the percentage of *Solution B* being 8.0%

at the time of injection, and is held at that percentage for 6 minutes, then increased linearly to 35.0% at 18 minutes, after which it is changed to increase linearly to 92.0% at 30 minutes, maintained at that percentage for 4 minutes, and decreased linearly to 8.0% at 36 minutes, where it is held to the end of the run at 40 minutes. Chromatograph the *Resolution solution,* and record the peak responses as directed for *Procedure:* the resolution, *R,* between iopamidol related compound B and iopamidol is not less than 7.

Procedure—Separately inject equal volumes (about 20 µL) of the *Standard preparation* and the *Assay preparation* into the chromatograph, record the chromatograms, and measure the responses for the major peaks. Calculate the quantity, in mg, of iopamidol ($C_{17}H_{22}I_3N_3O_8$) in the portion of Injection taken by the formula:

$$12.5C(r_U/r_S)$$

in which C is the concentration, in µg per mL, of USP Iopamidol RS in the *Standard preparation,* and r_U and r_S are the peak responses obtained from the *Assay preparation* and the *Standard preparation,* respectively.

Auxiliary Information - Please check for your question in the FAQs before contacting USP.

Topic/Question	Contact	Expert Committee
IOPAMIDOL INJECTION	Documentary Standards Support	SM42020 Small Molecules 4
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM42020 Small Molecules 4

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. PF 33(6)

Current DocID: GUID-F4BF2536-5419-4200-B1AB-2F875E334875_3_en-US
Previous DocID: GUID-F4BF2536-5419-4200-B1AB-2F875E334875_1_en-US
DOI: https://doi.org/10.31003/USPNF_M41935_03_01
DOI ref: mds9n