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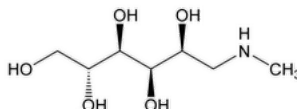
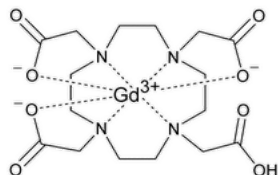
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Gadoterate Meglumine Injection


 $C_{16}H_{25}GdN_4O_8 \cdot C_7H_{17}NO_5$ 753.86

D-Glucitol, 1-deoxy-1-(methylamino)-, [1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetato(4-)-

$\kappa N^1, \kappa N^4, \kappa N^7, \kappa N^{10}, \kappa O^1, \kappa O^4, \kappa O^7, \kappa O^{10}$]gadolate(1-) (1:1);

1-Deoxy-1-(methylamino)-D-glucitol hydrogen [1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetato(4-)-

$\kappa N^1, \kappa N^4, \kappa N^7, \kappa N^{10}, \kappa O^1, \kappa O^4, \kappa O^7, \kappa O^{10}$]gadolate(1-) CAS RN®: 92943-93-6.

DEFINITION

Gadoterate Meglumine Injection is a sterile solution of Gadoterate Meglumine in Water for Injection. It contains NLT 90.0% and NMT 110.0% of the labeled amount of gadoterate meglumine ($C_{16}H_{25}GdN_4O_8 \cdot C_7H_{17}NO_5$).

IDENTIFICATION

- A. SPECTROSCOPIC IDENTIFICATION TESTS (197), [Ultraviolet-Visible Spectroscopy](#):** 197U

Analytical wavelength: 265–285 nm

Sample solution: Dilute Injection with [water](#) (1:10).

Acceptance criteria: The absorption spectrum exhibits maxima at 273 and 276 nm.

- B.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.

ASSAY

PROCEDURE

Buffer 1: 5.5 g/L of [ammonium acetate](#). Adjust with [acetic acid](#) to a pH of 6.0.

Buffer 2: 2.1 g/L of [ammonium acetate](#). Adjust with [acetic acid](#) to a pH of 6.0.

Mobile phase: [Acetonitrile](#) and Buffer 1 (65:35)

Diluent: [Acetonitrile](#) and Buffer 2 (60:40)

Standard solution: 3.6 mg/mL of [USP Gadoterate Meglumine RS](#) in *Diluent*. Vigorous shaking may be required for complete dissolution.

Sample solution: Nominally 3.6 mg/mL of gadoterate meglumine from a suitable volume of Injection in *Diluent*. Vigorous shaking may be required for complete dissolution.

Chromatographic system

(See [Chromatography \(621\), System Suitability](#).)

Mode: LC

Detector: Fluorescence

Excitation wavelength: 274 nm

Emission wavelength: 312 nm

Column: 4.6-mm × 25.0-cm; 5-μm packing [L114](#)

Column temperature: 50°

Flow rate: 0.8 mL/min

Injection volume: 5 μL

Run time: NLT 2.5 times the retention time of gadoterate

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 2

Relative standard deviation: NMT 1.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of gadoterate meglumine ($C_{16}H_{25}GdN_4O_8 \cdot C_7H_{17}NO_5$) in the portion of Injection taken.

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response of fluorescence emission for gadoterate from the *Sample solution*

r_S = peak response of fluorescence emission for gadoterate from the *Standard solution*

C_S = concentration of [USP Gadoterate Meglumine RS](#) in the *Standard solution* (mg/mL)

C_U = nominal concentration of gadoterate meglumine in the *Sample solution* (mg/mL)

Acceptance criteria: 90.0%–110.0%

OTHER COMPONENTS

Change to read:

• CONTENT OF MEGLUMINE

Sample solution: Gadoterate Meglumine Injection

Blank: [Water](#)

Instrumental conditions

Mode: Polarimetry (see [Optical Rotation \(781S\)](#), [Procedures](#), [Specific Rotation](#)), except for *Temperature*

Temperature: 20°

Lamp: Sodium

Analytical wavelength: 589 nm

Cell: 1 dm

Analysis:

Samples: *Sample solution* and *Blank*

Determine the angular rotation (see [Optical Rotation \(781\)](#)).

Calculate the amount of meglumine as a percentage of the formulation content of meglumine ($C_7H_{17}NO_5$) in the portion of Injection taken:

$$\text{Result} = (a/\alpha) \times 100 \times (1/l) \times (1/L) \times 100$$

a = observed angular rotation of the *Sample solution* corrected for the *Blank* (°)

α = average specific rotation of meglumine, 24.0 deg · dm⁻¹ · g⁻¹ · dL

l = cell path length, dm

L = formulation content of meglumine in the Injection, 9.76 g/dL

Acceptance criteria: 90.0%–110.0%

IMPURITIES

• LIMIT OF FREE GADOLINIUM

Buffer: 5.7 mL/L of [glacial acetic acid](#) and 8.2 g/L of [sodium acetate](#) (10:20). [NOTE—If necessary, adjust with 5.7 mL/L of [glacial acetic acid](#) or 8.2 g/L of [sodium acetate](#) to a pH between 4.8 and 5.2.]

Indicator solution: 0.1% [xylenol orange](#) in [water](#)

Sample solution: Transfer 20 mL of Injection into a suitable flask. Add 30 mL of [water](#), 10 mL of *Buffer*, 1 drop of [pyridine](#), and 5–10 drops of *Indicator solution*.

Blank: [Water](#)

Titrimetric system

(See [Titrimetry \(541\)](#).)

Mode: Direct titration

Titrant: 0.01 M edetate disodium VS

Endpoint detection: Visual

Analysis

Sample: *Sample solution*

Titrate with *Titrant* to a yellow endpoint. Add an additional drop of pyridine. If a violet color appears, continue the analysis until it turns yellow.

Calculate the percentage of free gadolinium (% w/v) in the portion of Injection taken:

$$\text{Result} = [V_T \times M \times F \times (1/V_U)] \times (1/10)$$

V_T = volume of *Titrant* consumed (mL)

M = molarity of *Titrant* (mM/mL)

F = equivalency factor, 157.25 mg/mM