



CERTIFICATE OF ANALYSIS

20 Martin Ross Avenue, North York, ON, M3J 2K8, CANADA
Tel: (416) 665-9696, Fax: (416) 665-4439
Email: orders.trc@lgcgroup.com Website: www.trc-canada.com

1. Identification

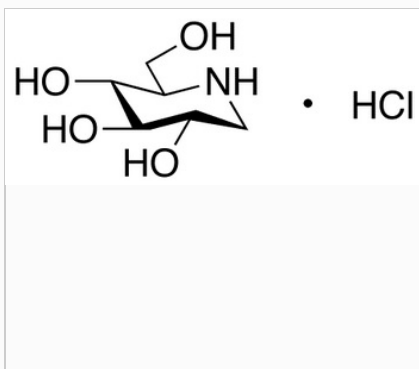
Catalogue Number: D245005

CAS Number: 73285-50-4

Product: Deoxynojirimycin Hydrochloride

Synonym: (2R,3R,4R,5S)-2-(Hydroxymethyl)-3,4,5-piperidinetriol Hydrochloride; 1-Deoxynojirimycin Hydrochloride; AT 2220; Duvoglustat Hydrochloride; Moranoline Hydrochloride; DNJ Hydrochloride

Structure:



Molecular Formula:

$C_6H_{14}ClNO_4$

Molecular weight:

199.63

Source of Product:

Synthetic

Solubility:

Methanol (Very Slightly, Heated), Water (Slightly)

Lot Number: 1-AMC-185-3

Purity: 98%

Shipping Condition: This Product Is Stable To Be Shipped At Room Temperature

Storage Condition: -20°C

2. Warning

Warning 1: Not Determined

Warning 2:

Warning 3:

3. Analytical Information

| Tests: | Specifications: | Results: |
|--------------------|--------------------------|-------------------------------|
| Appearance | White to Off-White Solid | White to Off-White Solid |
| Melting Point | >200°C | 207 - 209°C |
| H NMR | Conforms to Structure | Conforms |
| Elemental Analysis | Conforms | %C: 36.20, %H: 7.08, %N: 6.95 |
| MS | Conforms to Structure | Conforms |
| Chloride Content | (Calc.) 17.76% | 17.41% by Ion Chromatography |
| Specific Rotation | Report Results | +38.5° (c = 0.2, Water) |
| HPLC Purity | >95% | 100% |

Additional Information:

TLC Conditions: C18; Methanol : Ethyl Acetate : Ammonium Hydroxide = 6 : 3 : 1; Visualized with KMnO₄ and Ninhydrin; Single Spot, R_f = 0.70. ¹H NMR and MS conform to structure. Elemental Analysis: (Found) %C: 36.20, %H: 7.08, %N: 6.95; (Calculated) %C: 36.10, %H: 7.07, %N: 7.02 Chloride Content: 17.41% by Ion Chromatography Specific Rotation: +38.5° (c = 0.2, Water)

Purity is based on the analytical results of the tests performed. NMR and Elemental Analysis (if available) may have an accuracy of ± 2%. Isotopic purity is based on mass distribution observed. The contents of the specifications are subject to change without advance notice, and the specification values displayed here are the most up to date values.

4. Signatures

| Reviewed By | Reviewed By | C of A Approved By | Test Date | Retest Date |
|--------------------|--------------------|---------------------------|------------------|--------------------|
| Rhonda Tu | Eric Beaton | | 8/8/2018 | 8/6/2028 |
| <i>RTU</i> | <i>EB</i> | | | |