

Certificate of Analysis

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Product Name: (R)-(-)-Ketamine hydrochloride

Catalog No.: 6751

Batch No.: 1

CAS Number: 33795-24-3

EC Number: 625-831-1

IUPAC Name: (R)-(-)-2-(2-Chlorophenyl)-2-(methylamino)cyclohexanone hydrochloride

1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula: C₁₃H₁₆ClNO.HCl

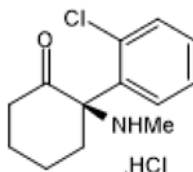
Batch Molecular Weight: 274.19

Physical Appearance: White solid

Solubility: water to 100 mM
DMSO to 100 mM
ethanol to 50 mM

Storage: Store at RT

Batch Molecular Structure:



2. ANALYTICAL DATA

HPLC: Shows 99.8% purity

Chiral HPLC: Shows 100% purity

¹H NMR: Consistent with structure

Mass Spectrum: Consistent with structure

Optical Rotation: [α]_D = -89.3 (Concentration = 2, Solvent = Water)

Caution - Not Fully Tested • Research Use Only • Not For Human or Veterinary Use

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IUPAC Name: (R)-(-)-2-(2-Chlorophenyl)-2-(methylamino)cyclohexanone hydrochloride

Description:

NMDA antagonist ($K_i = 1.4 \mu\text{M}$); exhibits more potent and longer lasting antidepressant effects compared to its enantiomer (S)-ketamine in vivo. Also may not display the psychotomimetic or addictive side effects associated with (S)-ketamine.

Physical and Chemical Properties:

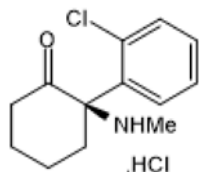
Batch Molecular Formula: $\text{C}_{13}\text{H}_{16}\text{ClNO}\cdot\text{HCl}$

Batch Molecular Weight: 274.19

Physical Appearance: White solid

Minimum Purity: $\geq 99\%$

Batch Molecular Structure:



Storage: Store at RT

Solubility & Usage Info:

water to 100 mM

DMSO to 100 mM

ethanol to 50 mM

Stability and Solubility Advice:

Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).

Information concerning product stability, particularly in solution, has rarely been reported and in most cases we can only offer a general guide. Our standard recommendations are:

SOLIDS: Provided storage is as stated on the product label and the vial is kept tightly sealed, the product can be stored for up to 6 months from date of receipt.

SOLUTIONS: We recommend that stock solutions, once prepared, are stored aliquoted in tightly sealed vials at -20°C or below and used within 1 month. Wherever possible solutions should be made up and used on the same day.

Other Information:

INFORMATION FOR CUSTOMERS IN THE UK ONLY

This product is a Schedule 2 Home Office controlled substance and customers in the UK are required to hold the relevant licence or be exempt from restrictions in order to purchase and possess this material.

References:

Xiong et al (2018) Comparison of rapid and long-lasting antidepressant effects of negative modulators of $\alpha 5$ -containing GABA_A receptors and (R)-ketamine in a chronic social defeat stress model. *Pharmacol.Biochem.Behav.* **175** 139. PMID: 30359627.

Zanos et al (2016) NMDAR inhibition-independent antidepressant actions of ketamine metabolites. *Nature* **533** 481. PMID: 27144355.

Zhang et al (2014) R(-)-ketamine shows greater potency and longer lasting antidepressant effects than S-(+)-ketamine. *Pharmacol.Biochem.Behav.* **116** 137. PMID: 24316345.

Ebert et al (1997) Norketamine, the main metabolite of ketamine, is a non-competitive NMDA receptor antagonist in the rat cortex and spinal cord. *Eur.J.Pharmacol.* **333** 99. PMID: 9311667.

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