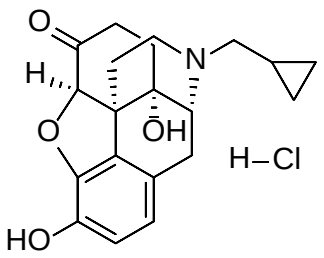
Product data sheet

MedKoo Cat#: 413539 Name: Naltrexone HCl CAS: 16676-29-2 (HCl) Chemical Formula: $C_{20}H_{24}ClNO_4$ Exact Mass: 377.1394 Molecular Weight: 377.865	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Naltrexone HCl is a derivative of noroxymorphone that is the N-cyclopropylmethyl congener of NALOXONE. It is a narcotic antagonist that is effective orally, longer lasting and more potent than naloxone, and has been proposed for the treatment of heroin addiction. The FDA has approved naltrexone for the treatment of alcohol dependence.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMF	5.0	13.23
DMSO	40.0	105.86
Ethanol	10.0	26.46
Ethanol:PBS (pH 7.2) (1:1)	0.5	1.32
Water	56.40	149.25

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.65 mL	13.23 mL	26.46 mL
5 mM	0.53 mL	2.65 mL	5.29 mL
10 mM	0.26 mL	1.32 mL	2.65 mL
50 mM	0.05 mL	0.26 mL	0.53 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Kučić N, Rački V, Šverko R, Vidović T, Grahovac I, Mršić-Pelčić J. Immunometabolic Modulatory Role of Naltrexone in BV-2 Microglia Cells. Int J Mol Sci. 2021 Aug 5;22(16):8429. doi: 10.3390/ijms22168429. PMID: 34445130; PMCID: PMC8395119.
2. Liu N, Yan L, Shan F, Wang X, Qu N, Handley MK, Ma M. Low-dose naltrexone plays antineoplastic role in cervical cancer progression through suppressing PI3K/AKT/mTOR pathway. Transl Oncol. 2021 Apr;14(4):101028. doi: 10.1016/j.tranon.2021.101028. Epub 2021 Feb 1. PMID: 33540155; PMCID: PMC7859308.

In vivo study

1. Dehe L, Shaqura M, Nordine M, Habazettl H, von Kwiatkowski P, Schluchter H, Shakibaei M, Mousa SA, Schäfer M, Treskatsch S. Chronic Naltrexone Therapy Is Associated with Improved Cardiac Function in Volume Overloaded Rats. Cardiovasc Drugs Ther. 2021 Aug;35(4):733-743. doi: 10.1007/s10557-020-07132-4. Epub 2021 Jan 23. PMID: 33484395; PMCID: PMC8266787.

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2. Wang YS, Hung TW, Bae EK, Wu KJ, Hsieh W, Yu SJ. Naltrexone is neuroprotective against traumatic brain injury in mu opioid receptor knockout mice. CNS Neurosci Ther. 2021 Jul;27(7):831-841. doi: 10.1111/cns.13655. Epub 2021 May 21. PMID: 34018697; PMCID: PMC8193702.

7. Bioactivity

Biological target:

Naltrexone HCl(PTI-901) is an opioid receptor antagonist.

In vitro activity

The aim of the present study was to assess the immunometabolic effects of naltrexone on microglia cells in in vitro conditions. LDN (low dose naltrexone) induced a shift from highly activated pro-inflammatory phenotype ($iNOS^{high}CD206^{low}$) to quiescent anti-inflammatory M2 phenotype ($iNOS^{low}CD206^{high}$) in BV-2 microglia cells. Changes in the inflammatory profile were accompanied by cellular metabolic switching based on the transition from high glycolysis to mitochondrial oxidative phosphorylation (OXPHOS). LDN-treated cells were able to maintain a metabolically suppressive phenotype by supporting OXPHOS with high oxygen consumption, and also maintain a lower energetic state due to lower lactate production.

Reference: Int J Mol Sci. 2021 Aug 5;22(16):8429. https://pubmed.ncbi.nlm.nih.gov/34445130/

In vivo activity

TBI (traumatic brain injury) significantly reduced locomotor activity and increased the expression of IBA1, iNOS, and CD4 in the lesioned cortex. Naltrexone significantly and equally antagonized the motor deficits and expression of IBA1 and iNOS in WT and KO mice. TBI-mediated CD4 protein production was attenuated by naltrexone in WT mice, but not in KO mice.

Reference: CNS Neurosci Ther. 2021 Jul;27(7):831-841. https://pubmed.ncbi.nlm.nih.gov/34018697/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.