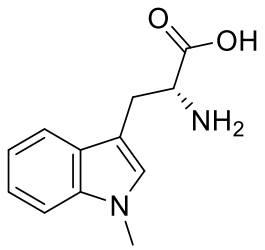
Product data sheet

MedKoo Cat#: 206160 Name: Indoximod CAS#: 110117-83-4 Chemical Formula: $C_{12}H_{14}N_2O_2$ Exact Mass: 218.10553 Molecular Weight: 218.25	
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:

Indoximod, also known as NLG8189 and D-1MT, is a methylated tryptophan with anti-immunosuppressive activity. 1-methyl-d-tryptophan inhibits the enzyme indoleamine 2,3-dioxygenase (IDO), which degrades the essential amino acid tryptophan, and may increase or maintain tryptophan levels important to T cell function. Tryptophan depletion is associated with immunosuppression involving T cell arrest and anergy.

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
DMSO	0.55	2.52
Water	5.0	22.91
Methanol	0.1	0.46
Acetic Acid	1.0	4.58
5% TFA	3.02	13.84

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	4.58 mL	22.91 mL	45.82 mL
5 mM	0.92 mL	4.58 mL	9.16 mL
10 mM	0.46 mL	2.29 mL	4.58 mL
50 mM	0.09 mL	0.46 mL	0.92 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. Brincks EL, Adams J, Wang L, Turner B, Marcinowicz A, Ke J, Essmann M, Mautino LM, Allen CV, Kumar S, Vahanian N, Link C, Mautino MR. Indoximod opposes the immunosuppressive effects mediated by IDO and TDO via modulation of AhR function and activation of mTORC1. Oncotarget. 2020 Jun 23;11(25):2438-2461. doi: 10.18632/oncotarget.27646. PMID: 32637034; PMCID: PMC7321702.

2. Wirthgen E, Leonard AK, Scharf C, Domanska G. The Immunomodulator 1-Methyltryptophan Drives Tryptophan Catabolism Toward the Kynurenic Acid Branch. Front Immunol. 2020 Feb 28;11:313. doi: 10.3389/fimmu.2020.00313. PMID: 32180772; PMCID: PMC7059861.

In vivo study

Product data sheet

1. Gualdoni GS, Jacobo PV, Sobarzo CM, Pérez CV, Matzkin ME, Höcht C, Frungieri MB, Hill M, Anegon I, Lustig L, Guazzone VA. Role of indoleamine 2,3-dioxygenase in testicular immune-privilege. Sci Rep. 2019 Nov 4;9(1):15919. doi: 10.1038/s41598-019-52192-8. PMID: 31685866; PMCID: PMC6828782.
2. Wirthgen E, Otten W, Tuchscherer M, Tuchscherer A, Domanska G, Brenmoehl J, Günther J, Ohde D, Weitschies W, Seidlitz A, Scheuch E, Kanitz E. Effects of 1-Methyltryptophan on Immune Responses and the Kynurenine Pathway after Lipopolysaccharide Challenge in Pigs. Int J Mol Sci. 2018 Oct 2;19(10):3009. doi: 10.3390/ijms19103009. PMID: 30279361; PMCID: PMC6213023.

7. Bioactivity

Biological target:

Indoximod (1-Methyl-D-tryptophan; NLG-8189) is an indoleamine 2,3-dioxygenase (IDO) pathway inhibitor.

In vitro activity

Pair-wise comparisons between 1-MT (indoximod) treatment and controls (main effect: Treatment) are presented in Table 1. Thereby, the concentrations of TRP were increased by 1-MT in Balb/C and IDO1−/− mice as well as in human blood. In both murine and human cell culture supernatants, the increased level of TRP concentration corresponded to decreased levels of KYN, and 5-HT indicating downregulation of TRP breakdown. The downstream TRP metabolite QUIN was reduced by 1-MT in mice but not in human blood, suggesting species-specific differences. The observation of a diminished degradation of TRP via KP was further supported by the results of KYN to TRP ratio, often used as a marker for IDO activity. This ratio was decreased by 1-MT at all time points both in mice and human cell cultures, indicating that 1-MT inhibited the activity of IDO. 1-MT induced an increase of KYNA in cell culture supernatants of murine splenocytes as well as in human blood, confirming studies in pigs and mice.

Reference: Front Immunol. 2020; 11: 313. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7059861/

In vivo activity

To elucidate the role of IDO in testicular immune regulation, the impact of inhibiting IDO during EAO induction was evaluated. As described in Materials and Methods, immunized rats were treated or not with a specific enzyme inhibitor 1-MT until euthanasia. Notably, rats treated with 1-MT during the immunization period developed orchitis with significantly increased severity (Fig. 8B). Testicular histopathology showed that vehicle group presented multifocal testicular damage characterized by mild infiltration of mononuclear cells and foci of ST with different degrees of germ cell sloughing. In contrast, most rats treated with 1-MT presented extended areas of severely damaged ST presenting aspermatogenesis (Fig. 8A). Epididymis of EAO rats treated with 1-MT compared to EAO vehicle group showed a higher degree of inflammation represented by interstitial immune cell infiltrates and similar sperm depletion in the tubular lumen (Fig. 8A).

Reference: Sci Rep. 2019; 9: 15919. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6828782/

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.