Product data sheet

MedKoo Cat#: 561365
Name: NBD-Pen
CAS: 1955505-54-0
Chemical Formula: $C_{19}H_{30}N_5O_4$
Exact Mass: 392.2298
Molecular Weight: 392.48

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:

NBD-Pen high-sensitivity, specific fluorescence probe for lipid radicals. NBD-Pen directly detected lipid radicals in living cells by turn-on fluorescence. In a rat model of hepatic carcinoma induced by diethylnitrosamine (DEN), NBD-Pen detected lipid radical generation within 1 hour of DEN administration.

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
TBD	TBD	TBD

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.55 mL	12.74 mL	25.48 mL
5 mM	0.51 mL	2.55 mL	5.10 mL
10 mM	0.26 mL	1.27 mL	2.55 mL
50 mM	0.05 mL	0.26 mL	0.51 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. Mishima E, Sato E, Ito J, Yamada KI, Suzuki C, Oikawa Y, Matsuhashi T, Kikuchi K, Toyohara T, Suzuki T, Ito S, Nakagawa K, Abe T. Drugs Repurposed as Antiferroptosis Agents Suppress Organ Damage, Including AKI, by Functioning as Lipid Peroxyl Radical Scavengers. J Am Soc Nephrol. 2020 Feb;31(2):280-296. doi: 10.1681/ASN.2019060570. Epub 2019 Nov 25. PMID: 31767624; PMCID: PMC7003311.
2. Ishida Y, Okamoto Y, Matsuoka Y, Tada A, Janprasit J, Yamato M, Morales NP, Yamada KI. Detection and inhibition of lipid-derived radicals in low-density lipoprotein. Free Radic Biol Med. 2017 Dec;113:487-493. doi: 10.1016/j.freeradbiomed.2017.10.388. Epub 2017 Oct 28. PMID: 29107744.

In vivo study

1. Ishida Y, Okamoto Y, Matsuoka Y, Tada A, Janprasit J, Yamato M, Morales NP, Yamada KI. Detection and inhibition of lipid-derived radicals in low-density lipoprotein. Free Radic Biol Med. 2017 Dec;113:487-493. doi: 10.1016/j.freeradbiomed.2017.10.388. Epub 2017 Oct 28. PMID: 29107744.
2. Yamada K, Mito F, Matsuoka Y, Ide S, Shikimachi K, Fujiki A, Kusakabe D, Ishida Y, Enoki M, Tada A, Ariyoshi M, Yamasaki T, Yamato M. Fluorescence probes to detect lipid-derived radicals. Nat Chem Biol. 2016 Aug;12(8):608-13. doi: 10.1038/nchembio.2105. Epub 2016 Jun 13. PMID: 27294322.

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7. Bioactivity

Biological target:

NBD-Pen high-sensitivity, specific fluorescence probe for lipid radicals.

In vitro activity

To evaluate radical-scavenging activity, this study used electron paramagnetic resonance-spin trapping methods and a fluorescence probe for lipid radicals, NBD-Pen, that this study had developed.

Reference: J Am Soc Nephrol. 2020 Feb;31(2):280-296. https://pubmed.ncbi.nlm.nih.gov/31767624/

In vivo activity

This study describes the first high-sensitivity, specific fluorescence probe for lipid radicals, 2,2,6-trimethyl-4-(4-nitrobenzo[1,2,5]oxadiazol-7-ylamino)-6-pentylpiperidine-1-oxyl (NBD-Pen). In a rat model of hepatic carcinoma induced by diethylnitrosamine (DEN), NBD-Pen detected lipid radical generation within 1 h of DEN administration.

Reference: Nat Chem Biol. 2016 Aug;12(8):608-13. https://pubmed.ncbi.nlm.nih.gov/27294322/

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.