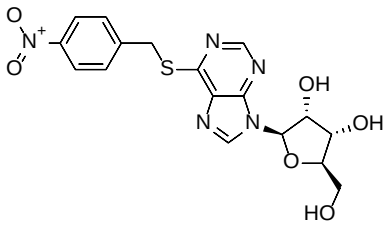
Product data sheet

MedKoo Cat#: 555827 Name: NBMPR CAS: 38048-32-7 Chemical Formula: $C_{17}H_{17}N_5O_6S$ Exact Mass: 419.09 Molecular Weight: 419.412	
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:
NBMPR, also known as S-4-nitrophenylmethyl-6-thioinosine, is a nucleoside analog that competitively inhibits the equilibrative nucleoside transporter 1. NBMPR is routinely used at concentrations of 0.10 μM and 0.10 mM to specifically inhibit transport of nucleosides mediated by equilibrative nucleoside transporters 1 (ENT1) and 2 (ENT2), respectively. NBMPR at a concentration of 0.10 mM abolishes ABCG2 activity.

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	15.0	35.76
DMF:PBS (pH 7.2) (1:1)	0.5	1.19
DMSO	46.49	110.83

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.38 mL	11.92 mL	23.84 mL
5 mM	0.48 mL	2.38 mL	4.77 mL
10 mM	0.24 mL	1.19 mL	2.38 mL
50 mM	0.05 mL	0.24 mL	0.48 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. Tsujie M, Nakamori S, Nakahira S, Takahashi Y, Hayashi N, Okami J, Nagano H, Dono K, Umeshita K, Sakon M, Monden M. Human equilibrative nucleoside transporter 1, as a predictor of 5-fluorouracil resistance in human pancreatic cancer. Anticancer Res. 2007 Jul-Aug;27(4B):2241-9. PMID: 17695509.
2. Lin W, Buolamwini JK. Synthesis, flow cytometric evaluation, and identification of highly potent dipyridamole analogues as equilibrative nucleoside transporter 1 inhibitors. J Med Chem. 2007 Aug 9;50(16):3906-20. doi: 10.1021/jm070311l. Epub 2007 Jul 18. PMID: 17636949; PMCID: PMC2536492.

In vivo study

1. Huang H, Wang J, Zhang J, Luo Z, Li D, Qiu X, Peng Y, Xu Z, Xu P, Xu Z. Nitrobenzylthioinosine mimics adenosine to attenuate the epileptiform discharge of hippocampal neurons from epileptic rats. Oncotarget. 2017 May 30;8(22):35573-35582. doi: 10.18632/oncotarget.16012. PMID: 28415676; PMCID: PMC5482599.

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2. Parkinson FE, Zhang YW, Shepel PN, Greenway SC, Peeling J, Geiger JD. Effects of nitrobenzylthioinosine on neuronal injury, adenosine levels, and adenosine receptor activity in rat forebrain ischemia. J Neurochem. 2000 Aug;75(2):795-802. doi: 10.1046/j.1471-4159.2000.0750795.x. PMID: 10899957.

7. Bioactivity

Biological target:

Nitrobenzylthioinosine is an ENT1 transporter inhibitor that binds to ENT1 transporter with high affinity.

In vitro activity

A [3H] gemcitabine cellular uptake assay was performed to examine the inhibition of hENT1 by nitrobenzylmercaptoprine ribonucleoside (NBMPR). In the PSN1 cells, [3H] gemcitabine uptake via hENT1 was significantly inhibited by NBMPR, and 5-FU sensitivity was significantly increased when the cells were pretreated with NBMPR.

Reference: Anticancer Res. 2007 Jul-Aug;27(4B):2241-9. https://pubmed.ncbi.nlm.nih.gov/17695509/

In vivo activity

To test whether NBTI (NBPMR) mimics adenosine effecting on eEPSCs mediated by adenosine A1 receptor, this study investigated the role of adenosine and adenosine A1 receptor antagonist DPCPX in the process of NBTI regulating eEPSCs. At 24 h after pilocarpine induced rat seizures, preparation of hippocampal slices, selecting the pyramidal neurons of hippocampus CA1 region, the eEPSCs amplitudes were recorded by the whole-cell patch clamp, and they were stable during the whole recording process, which was consistent with previous study. Compared to the eEPSCs amplitude of control epilepsy group (1.44±0.05), bath application of NBTI (100 nM) significantly reduced eEPSCs amplitude at 10 min (0.67±0.06) and 30 min (0.63±0.08), while application of A1 receptor inhibitor DPCPX (10 μM) partially reversed this effect (0.87±0.08, Figure 3A and 3B, n = 5). In addition, inhibition of eEPSCs amplitude by adenosine was mimicked by NBTI (100 nM), and the reduced eEPSCs amplitude by adenosine (50M, 0.45±0.06) were further inhibited by NBTI (100 nM, 0.17±0.04, Figure 4A and 4B, n = 5).

Reference: Oncotarget. 2017 May 30;8(22):35573-35582. https://pubmed.ncbi.nlm.nih.gov/28415676/

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.