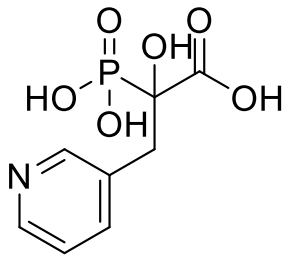
Product data sheet

MedKoo Cat#: 532318 Name: NE10790 CAS#: 152831-36-2 Chemical Formula: $C_8H_{10}NO_6P$ Exact Mass: 247.0246 Molecular Weight: 247.14	
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:

NE10790, also known as 3-PEHPC, is a Rab geranylgeranyl transferase inhibitor. NE10790 is a risedronate analog, which belongs to the group of phosphonocarboxylates in which one of the phosphonate groups is substituted by a carboxyl group. NE-10790 had strongly reduced binding affinity, but still retained some antiresorptive activity. The group of phosphonocarboxylates, with strongly reduced bone affinity, provides an interesting therapeutic option.

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
Water	5	20.2

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.05 mL	20.23 mL	40.46 mL
5 mM	0.81 mL	4.05 mL	8.09 mL
10 mM	0.40 mL	2.02 mL	4.05 mL
50 mM	0.08 mL	0.40 mL	0.81 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. Coxon FP, Helfrich MH, Larijani B, Muzylak M, Dunford JE, Marshall D, McKinnon AD, Nesbitt SA, Horton MA, Seabra MC, Ebetino FH, Rogers MJ. Identification of a novel phosphonocarboxylate inhibitor of Rab geranylgeranyl transferase that specifically prevents Rab prenylation in osteoclasts and macrophages. J Biol Chem. 2001 Dec 21;276(51):48213-22. doi: 10.1074/jbc.M106473200. Epub 2001 Oct 1. PMID: 11581260.

2. Coxon FP, Ebetino FH, Mules EH, Seabra MC, McKenna CE, Rogers MJ. Phosphonocarboxylate inhibitors of Rab geranylgeranyl transferase disrupt the prenylation and membrane localization of Rab proteins in osteoclasts in vitro and in vivo. Bone. 2005 Sep;37(3):349-58. doi: 10.1016/j.bone.2005.04.021. PMID: 16006204.

In vivo study

1. Coxon FP, Helfrich MH, Larijani B, Muzylak M, Dunford JE, Marshall D, McKinnon AD, Nesbitt SA, Horton MA, Seabra MC, Ebetino FH, Rogers MJ. Identification of a novel phosphonocarboxylate inhibitor of Rab geranylgeranyl transferase that specifically prevents Rab prenylation in osteoclasts and macrophages. J Biol Chem. 2001 Dec 21;276(51):48213-22. doi: 10.1074/jbc.M106473200. Epub 2001 Oct 1. PMID: 11581260.

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2. Coxon FP, Ebetino FH, Mules EH, Seabra MC, McKenna CE, Rogers MJ. Phosphonocarboxylate inhibitors of Rab geranylgeranyl transferase disrupt the prenylation and membrane localization of Rab proteins in osteoclasts in vitro and in vivo. Bone. 2005 Sep;37(3):349-58. doi: 10.1016/j.bone.2005.04.021. PMID: 16006204.

7. Bioactivity

Biological target:

NE 10790 is a phosphonocarboxylate analogue of the potent bisphosphonate risedronate and is a weak antiresorptive agent.

In vitro activity

RIS dramatically and dose-dependently reduced the number of viable J774 cells with an IC50 of approximately 30 μm (Fig.1 B). NE10790 also reduced viable J774 cell number but was ~40 times less potent than RIS (IC50, ~1.2 mm). By contrast, NE10485 had no effect on cell viability at concentrations up to 3 mm. NE10790 didn't affect FPP synthase at concentrations up to 100 μm, although at higher concentrations up to 1 mm, NE10790 partially inhibited (30–50%) FPP synthase activity in vitro. The effect of NE10790 on protein prenylation was investigated by examining the incorporation of [14C] mevalonic acid into prenylated proteins in J774 cells in vitro. 1.5 mm NE10790 inhibited incorporation of [14C]mevalonic acid into bands of prenylated small GTPases of higher molecular mass only (22–26 kDa proteins; most likely Rab GTPases based on molecular mass) (Fig.2 A). The effect of NE10790 was dose-dependent, with complete inhibition of incorporation of [14C]mevalonic acid into 22–26-kDa proteins at a concentration of 1 mm (Fig. 2 B).

Reference: J Biol Chem. 2001 Dec 21;276(51):48213-22. https://linkinghub.elsevier.com/retrieve/pii/S0021-9258(19)40337-2

In vivo activity

NE10790 retains the ability to inhibit bone resorption in vivo, although its anti-resorptive potency in rodents is markedly reduced compared with RIS (20). At least part of this loss of potency is due to the fact that NE10790 has reduced affinity for bone, because the loss of one of the phosphonate groups allows binding of only one calcium ion (21). However, it remains unclear whether this compound is also less effective at affecting osteoclast function at the cellular level or indeed whether it inhibits bone resorption by the same molecular mechanism as nitrogen-containing BPs (that is, by inhibition of FPP synthase).

Reference: J Biol Chem. 2001 Dec 21;276(51):48213-22. https://linkinghub.elsevier.com/retrieve/pii/S0021-9258(19)40337-2

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.