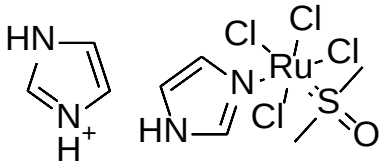
Product data sheet

MedKoo Cat#: 206020 Name: NAMI-A CAS: 201653-76-1 Chemical Formula: $C_8H_{15}Cl_4N_4ORuS$ Molecular Weight: 458.1645	
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:

NAMI-A is a ruthenium anticancer agent and a metastasis inhibitor. NAMI is an acronym for "New Anti-tumour Metastasis Inhibitor", while the -A suffix indicates that this is the first of a potential series. NAMI-A is a potent agent for the treatment of solid tumor metastases as well as when these tumor lesions are in an advanced stage of growth. NAMI-A is endowed with a mechanism of action unrelated to direct tumor cell cytotoxicity, and such mechanism of action is responsible for a reduced host toxicity. NAMI-A and KP-1019 are two ruthenium anticancer agents that have entered clinical trials. (http://en.wikipedia.org/wiki/NAMI-A).

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	8.28	18.07

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.18 mL	10.91 mL	21.83 mL
5 mM	0.44 mL	2.18 mL	4.37 mL
10 mM	0.22 mL	1.09 mL	2.18 mL
50 mM	0.04 mL	0.22 mL	0.44 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. Pelillo C, Mollica H, Eble JA, Grosche J, Herzog L, Codan B, Sava G, Bergamo A. Inhibition of adhesion, migration and of α5β1 integrin in the HCT-116 colorectal cancer cells treated with the ruthenium drug NAMI-A. J Inorg Biochem. 2016 Jul;160:225-35. doi: 10.1016/j.jinorgbio.2016.02.025. Epub 2016 Feb 27. PMID: 26961176.
2. Pillozzi S, Gasparoli L, Stefanini M, Ristori M, D'Amico M, Alessio E, Scaletti F, Becchetti A, Arcangeli A, Messori L. NAMI-A is highly cytotoxic toward leukaemia cell lines: evidence of inhibition of KCa 3.1 channels. Dalton Trans. 2014 Aug 28;43(32):12150-5. doi: 10.1039/c4dt01356e. PMID: 24975719.

In vivo study

1. Vadori M, Florio C, Groppo B, Cocchietto M, Pacor S, Zorzet S, Candussio L, Sava G. The antimetastatic drug NAMI-A potentiates the phenylephrine-induced contraction of aortic smooth muscle cells and induces a transient increase in systolic blood pressure. J Biol Inorg Chem. 2015 Jul;20(5):831-40. doi: 10.1007/s00775-015-1269-z. Epub 2015 May 16. PMID: 25982099.
2. Pacor S, Zorzet S, Cocchietto M, Bacac M, Vadori M, Turrin C, Gava B, Castellarin A, Sava G. Intratumoral NAMI-A treatment triggers metastasis reduction, which correlates to CD44 regulation and tumor infiltrating lymphocyte recruitment. J Pharmacol Exp Ther. 2004 Aug;310(2):737-44. doi: 10.1124/jpet.104.066175. Epub 2004 Apr 9. PMID: 15075381.

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7. Bioactivity

Biological target:

NAMI-A is a ruthenium-based drug characterised by the selective activity against tumour metastases, inhibits the adhesion and migration.

In vitro activity

NAMI-A inhibits two important steps of the tumour metastatic progression of colorectal cancer, i.e. the adhesion and migration of the tumour cells on the extracellular matrix proteins. The fibronectin receptor α5β1 integrin is likely involved in the anti-adhesive effects of NAMI-A on the HCT-116 colorectal cancer cells during their interaction with the extracellular matrix. Mechanistically, NAMI-A decreases the α5β1 integrin expression, and reduces FAK (Focal Adhesion Kinase) auto-phosphorylation on Tyr397, an important signalling event, involved in α5β1 integrin activation.

Reference: J Inorg Biochem. 2016 Jul;160:225-35. https://pubmed.ncbi.nlm.nih.gov/26961176/

In vivo activity

Intratumor (i.t.) injection of 35 mg/kg/day NAMI-A for six consecutive days to CBA mice bearing i.m. implants of MCa mammary carcinoma reduces primary tumor growth and particularly lung metastasis formation, causing 60% of animals to be free of macroscopically detectable metastases. Under these conditions, NAMI-A reduces the number of CD44+ tumor cells and changes tumor cell phenotype to a lower aggressive behavior, as shown by scanning electron microscopy analysis. On primary tumor site, NAMI-A causes unbalance between 2n and aneuploid cells in favor of lymphocytes.

Reference: J Pharmacol Exp Ther. 2004 Aug;310(2):737-44. https://pubmed.ncbi.nlm.nih.gov/15075381/