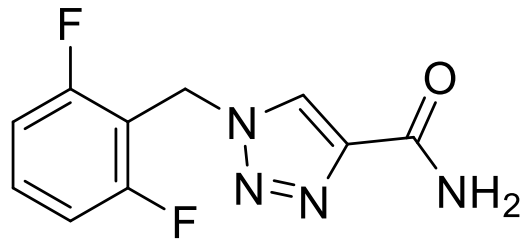
Product data sheet

MedKoo Cat#: 300330 Name: Rufinamide CAS#: 106308-44-5 Chemical Formula: $C_{10}H_8F_2N_4O$ Exact Mass: 238.0666 Molecular Weight: 238.19	
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:

Rufinamide is a board spectrum anticonvulsant. It is used in combination with other medication and therapy to treat Lennox–Gastaut syndrome and various other seizure disorders. Rufinamide was approved by the US Food and Drug Administration on November 14, 2008 as adjunctive treatment of seizures associated with Lennox-Gastaut syndrome in children 4 years and older and adults. Rufinamide has efficacy for partial seizures. Rufinamide prolongs the inactivation of sodium channels and limits the frequency of action potential firing in cultured and acutely isolated neurons.

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	48	201.52

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.20 mL	20.99 mL	41.98 mL
5 mM	0.84 mL	4.203 mL	8.40 mL
10 mM	0.42 mL	2.10 mL	4.20 mL
50 mM	0.08 mL	0.42 mL	0.84 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. Skov M, de Paoli FV, Nielsen OB, Pedersen TH. The anti-convulsants lacosamide, lamotrigine, and rufinamide reduce myotonia in isolated human and rat skeletal muscle. Muscle Nerve. 2017 Jul;56(1):136-142. doi: 10.1002/mus.25452. Epub 2017 Feb 23. PMID: 27783415.
2. Chan PS, Zhang C, Zuo Z, Kwan P, Baum L. In vitro transport assays of rufinamide, pregabalin, and zonisamide by human P-glycoprotein. Epilepsy Res. 2014 Mar;108(3):359-66. doi: 10.1016/j.eplepsyres.2014.01.011. Epub 2014 Jan 30. PMID: 24530088.

In vivo study

1. Lai MC, Wu SN, Huang CW. Rufinamide, a Triazole-Derived Antiepileptic Drug, Stimulates Ca2+-Activated K+ Currents While Inhibiting Voltage-Gated Na+ Currents. Int J Mol Sci. 2022 Nov 8;23(22):13677. doi: 10.3390/ijms232213677. PMID: 36430153; PMCID: PMC9697614.
2. Lin YC, Lai YC, Lin TH, Yang YC, Kuo CC. Selective stabilization of the intermediate inactivated Na+ channel by the new-generation anticonvulsant rufinamide. Biochem Pharmacol. 2022 Mar;197:114928. doi: 10.1016/j.bcp.2022.114928. Epub 2022 Jan 19. PMID: 35063442.

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7. Bioactivity

Biological target:

Rufinamide inhibits the activation of voltage-gated sodium channel 1.1 (Nav1.1). It is an inhibitor of carbonic anhydrase VA (CAVA; Ki = 343.8 nM) that is selective for CAVA over CAI and CAII (Kis = >10,000 nM for both). Rufinamide inhibits seizures induced by pentylenetetrazole (ED50 = 54 mg/kg, i.p.) and reduces kainic acid-induced neuronal cell death in the mouse hippocampal CA3 region.

In vitro activity

Rufinamide is not a substrate of human P-glycoprotein (Pgp). Rufinamide was not transported by MDR1-transfected cells from basolateral to apical sides in concentration equilibrium transport assays.

Reference: Epilepsy Res. 2014 Mar;108(3):359-66. https://pubmed.ncbi.nlm.nih.gov/24530088/

In vivo activity

In addition to inhibiting the INa, rufinamide effectively modifies the IK(Ca), which suggests that it has an impact on neuronal function and excitability. Rufinamide increased the amplitude of Ca2+-activated K+ currents (IK(Ca)) in pituitary GH3 lactotrophs. Rufinamide increased the strength of the hysteresis exhibited by the BKCa channels and induced by an inverted isosceles-triangular ramp pulse.

Reference: Int J Mol Sci. 2022 Nov 8;23(22):13677. https://pubmed.ncbi.nlm.nih.gov/36430153/

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.