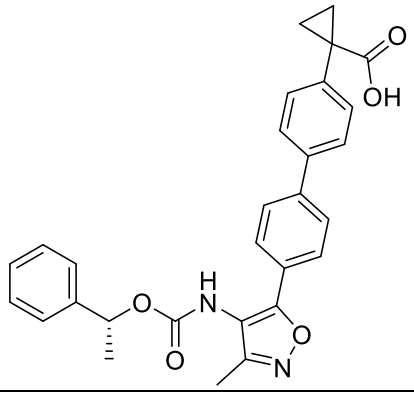
Product data sheet

MedKoo Cat#: 526856 Name: BMS-986020 CAS#: 1257213-50-5 Chemical Formula: $C_{29}H_{26}N_2O_5$ Exact Mass: 482.1842 Molecular Weight: 482.536	
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:

BMS-986020, also known as AM152 and AP-3152 free acid, is a potent and selective LPA1 antagonist. BMS-986020 is in Phase 2 clinical development for treating idiopathic pulmonary fibrosis. BMS-986020 selectively inhibits the LPA receptor, which is involved in binding of the signaling molecule lysophosphatidic acid, which in turn is involved in a host of diverse biological functions like cell proliferation, platelet aggregation, smooth muscle contraction, chemotaxis, and tumor cell invasion, among others.

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	62.0	128.49
Ethanol	58.5	121.23

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.07 mL	10.36 mL	20.72 mL
5 mM	0.41 mL	2.07 mL	4.14 mL
10 mM	0.21 mL	1.04 mL	2.07 mL
50 mM	0.04 mL	0.21 mL	0.41 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.Pena A, Kim J, Donnelly D, Murphy B, Shuster D, Watson L, et al. Autoradiographic evaluation of [18F]BMT-083133, a lysophosphatidic acid receptor 1 (LPA1) radioligand. Journal of Nuclear Medicine. Society of Nuclear Medicine; 2014: https://jnm.snmjournals.org/content/55/supplement_1/1207

In vivo study

1. Gaire BP, Sapkota A, Choi JW. BMS-986020, a Specific LPA1 Antagonist, Provides Neuroprotection against Ischemic Stroke in Mice. Antioxidants (Basel). 2020 Nov 8;9(11):1097. doi: 10.3390/antiox9111097. PMID: 33171697; PMCID: PMC7695306.

7. Bioactivity

Biological target:

BMS-986020 is a high-affinity and selective lysophosphatidic acid receptor 1 (LPA1) antagonist that inhibits bile acid and phospholipid transporters with IC50s of 4.8 µM, 6.2 µM, and 7.5 µM for BSEP, MRP4, and MDR3, respectively.

Product data sheet

In vitro activity

BMS-986020, a high-affinity, selective, small-molecule antagonist of LPA1, is presently in Phase two development for IPF. [18F]BMT-083133, a radioligand targeting LPA1 was developed as a translational research tool for assessment of lung LPA1 engagement of BMS-986020 using in vitro autoradiography (ARG). Sections from healthy and diseased lungs from different species, as well as heterologous cells over-expressing LPA1 were studied. LPA1 target engagement was assessed at various concentrations of BMS-986020 (0.1nM-10nM). Sections and cells were pre-incubated in BMS-986020/buffer solution, followed by incubation with [18F]BMT-083133/BMS-986020/buffer solution and assayed for LPA1 binding using a wash protocol. ~2.6 fold increase in specific [BMT-083133 binding was detected using ARG in diseased mouse lung compared to healthy mouse lung (187 PSL/mm2 vs. 487 PSL/mm2, $p<0.001$). A BMS-986020 concentration-dependent displacement of [18F]BMT-083133 binding was observed in LPA1(+) cells and lung sections. At 0.1nM of BMS-986020, the percent displacement in healthy mice, bleomycin mice, and IPF lungs was 18%, 24%, and 31%, respectively; and at 10nM, the percent displacement was 73%, 76%, and 64%, respectively. Thus, BMT-083133 was demonstrated as the first translational radioligand for the assessment of lung LPA1 target engagement using in vitro ARG.

Reference: Journal of Nuclear Medicine. Society of Nuclear Medicine; 2014
https://jnm.snmjournals.org/content/55/supplement_1/1207

In vivo activity

After confirming neuroprotective effects of BMS against acute brain injuries in tMCAO-induced mice, it was next sought to determine whether these effects could be observed against sub-acute brain injuries following ischemic challenge by assessing its effects up to 15 days after tMCAO challenge. BMS was administered either once immediately after reperfusion (single administration) or daily for 14 consecutive days (repeated administration). Repeated BMS administration significantly lowered neurological deficit scores compared to vehicle administration control (Figure 4A). A single administration of BMS also attenuated neurological deficits, although the degree of its effectiveness was smaller than that by repeated administration (Figure 4A). In addition, repeated administration of BMS significantly increased the survival rate of tMCAO-challenged mice compared to the vehicle-administration control (Figure 4B). In the end point of the experiment (15 days after tMCAO), 41.2% of mice survived in the vehicle-administered group (Figure 4B). Single administration of BMS slightly but not significantly increased the survival rate to 53.8% compared to vehicle administration (Figure 4B). However, repeated administration of BMS significantly increased the survival rate to 81.8% (Figure 4B). It was next determined whether BMS administration could attenuate tMCAO-induced brain atrophy. Either single or repeated administration of BMS significantly attenuated the tMCAO-induced brain tissue loss compared to vehicle administration, with more dramatic attenuation by repeated administration (Figure 4C,D). In addition, tMCAO-induced cell apoptosis was dramatically attenuated in the group with repeated administration of BMS, as evidenced by decreased numbers of TUNEL-positive cells (Figure 4E,F). In case of single administration of BMS, the number of TUNEL-positive cells was slightly but significantly reduced compared to that in the vehicle-administered group (Figure 4E,F). Taken together, these data clearly suggest that BMS administration can also exert neuroprotective effects against sub-acute brain injuries in mice following ischemic stroke.

Reference: Antioxidants (Basel). 2020 Nov; 9(11): 1097. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7695306/