# Product data sheet

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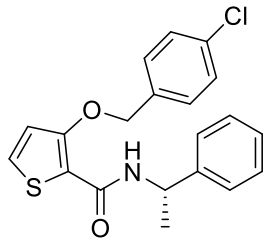
|---|---|
| MedKoo Cat#: 531479<br>Name: AS1949490<br>CAS#: 1203680-76-5<br>Chemical Formula: $C_{20}H_{18}ClNO_2S$<br>Exact Mass: 371.0747<br>Molecular Weight: 371.879 |  |
| Product supplied as: | Powder |
| Purity (by HPLC): | ≥ 98% |
| Shipping conditions | Ambient temperature |
| Storage conditions: | Powder: -20°C 3 years; 4°C 2 years. |
| | In solvent: -80°C 3 months; -20°C 2 weeks. |

**1. Product description:**
AS1949490 is a small molecule inhibitor of SH2 domain-containing inositol 5'-phosphatase 2 (SHIP2, a.k.a. inositol polyphosphate phosphatase-like 1, with gene symbol INPPL1) which can be used as a tool compound to elucidate the normal and pathophysiological roles of SHIP2.

**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 | 43.60 | 117.24 |
| DMSO:PBS (pH 7.2) (1:2) | 0.3 | 0.81 |
| DMF | 30.0 | 80.67 |
| Ethanol | 28.60 | 76.91 |

**4. Stock solution preparation table:**

| Concentration / Solvent Volume / Mass | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 2.69 mL | 13.45 mL | 26.89 mL |
| 5 mM | 0.54 mL | 2.69 mL | 5.38 mL |
| 10 mM | 0.27 mL | 1.34 mL | 2.69 mL |
| 50 mM | 0.05 mL | 0.27 mL | 0.54 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. Azzi A. Scaffold dependent role of the inositol 5'-phosphatase SHIP2, in regulation of oxidative stress induced apoptosis. Arch Biochem Biophys. 2021 Jan 15;697:108667. doi: 10.1016/j.abb.2020.108667. Epub 2020 Nov 9. PMID: 33181128.
2. Saurus P, Tolvanen TA, Lindfors S, Kuusela S, Holthöfer H, Lehtonen E, Lehtonen S. Inhibition of SHIP2 in CD2AP-deficient podocytes ameliorates reactive oxygen species generation but aggravates apoptosis. Sci Rep. 2017 Sep 6;7(1):10731. doi: 10.1038/s41598-017-10512-w. PMID: 28878342; PMCID: PMC5587593.

In vivo study

1. Tsuneki H, Yoshida H, Okamoto K, Yamaguchi M, Endo K, Nakano A, Tsuda M, Toyooka N, Wada T, Sasaoka T. AS1949490, an inhibitor of 5'-lipid phosphatase SHIP2, promotes protein kinase C-dependent stabilization of brain-derived neurotrophic factor mRNA in cultured cortical neurons. Eur J Pharmacol. 2019 May 15;851:69-79. doi: 10.1016/j.ejphar.2019.02.003. Epub 2019 Feb 10. PMID: 30753865.

2. Suwa A, Yamamoto T, Sawada A, Minoura K, Hosogai N, Tahara A, Kurama T, Shimokawa T, Aramori I. Discovery and functional characterization of a novel small molecule inhibitor of the intracellular phosphatase, SHIP2. Br J Pharmacol. 2009 Oct;158(3):879-87. doi: 10.1111/j.1476-5381.2009.00358.x. Epub 2009 Aug 19. PMID: 19694723; PMCID: PMC2765606.

**7. Bioactivity**

Biological target:

AS1949490 is a potent and selective SHIP-2 (SH2 domain-containing inositol 5′ phosphatase 2) inhibitor, with an IC50 of 620 nM.

In vitro activity

Cells were first treated with vehicle or SHIP2 inhibitor AS1949490 for 24 h then treated with 1 mM H2O2 for 1 h. As indicated in Fig. 1A, western blot analysis showed that SHIP2 inhibition enhances H2O2 induced AKT and ERK1/2 phosphorylation. Furthermore, higher phosphorylation of c-Jun N-terminal kinases (JNKs) also was seen in cells treated with AS1949490 (Fig. 1A). Next, this study analyzed the impact of longer H2O2 treatment on the phosphorylation levels of these proteins. Compared to control cells and similar to the observation above, 6 h H2O2 treatment led to sustained phosphorylation of AKT at Ser473 (Fig. 1B–C). To this study's surprise, ERK1/2 phosphorylation displayed marked and sustained activation in cells treated with AS1949490 and H2O2.

Reference: Arch Biochem Biophys. 2021 Jan 15;697:108667. https://pubmed.ncbi.nlm.nih.gov/33181128/

In vivo activity

When cultured cortical neurons were exposed to $A\beta_{25-35}$ (10), survival rate was markedly reduced (Fig. 5A). Pretreatment with AS1949490 (10 μM) significantly increased cell viability in the presence of $A\beta_{25-35}$, although BDNF (1 ng/ml) had no effect. The protective efficacy of AS1949490 alone was nearly identical to that of AS1949490 plus BDNF. Similarly, when cultured cortical cells (i.e., cells prepared without Ara-C) were exposed to $A\beta_{25-35}$ (25 μM), marked cell death was detected (Fig. 5B). Pretreatment with 10 μM AS1949490 (Fig. 5B) and higher concentration (10 ng/ml) of BDNF (data not shown) protected the Aβ toxicity, although 1 ng/ml BDNF had no effect. The potency of the effect of AS1949490 alone was not different from that of AS1949490 plus BDNF. These results indicate that AS1949490 directly caused neuroprotection against the Aβ toxicity.

Reference: Eur J Pharmacol. 2019 May 15;851:69-79. https://pubmed.ncbi.nlm.nih.gov/30753865/

*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.*