

# Product data sheet



|                                                                                                                                                                                    |                                                                                   |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|
| MedKoo Cat#: 526824<br>Name: SMER28<br>CAS#: 307538-42-7<br>Chemical Formula: C <sub>11</sub> H <sub>10</sub> BrN <sub>3</sub><br>Exact Mass: 263.0058<br>Molecular Weight: 264.13 |                                                                                   |  |
| Product supplied as:                                                                                                                                                               | Powder                                                                            |  |
| Purity (by HPLC):                                                                                                                                                                  | ≥ 98%                                                                             |  |
| Shipping conditions                                                                                                                                                                | Ambient temperature                                                               |  |
| Storage conditions:                                                                                                                                                                | Powder: -20°C 3 years; 4°C 2 years.<br>In solvent: -80°C 3 months; -20°C 2 weeks. |  |

## 1. Product description:

SMER28 is a small molecule modulator of autophagy, inducing autophagy independently of rapamycin in mammalian cells. SMER28, acting via an mTOR-independent mechanism, prevented the accumulation of amyloid beta peptide within these cells. SMER28 may have therapeutic potential for the treatment of Alzheimer's disease and other proteinopathies.

## 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 |
|---------|-----------------|--------------|
| DMF     | 1               | 3.79         |
| DMSO    | 30              | 113.58       |
| Ethanol | 30              | 113.58       |

## 4. Stock solution preparation table:

| Concentration / Solvent Volume / Mass | 1 mg    | 5 mg     | 10 mg    |
|---------------------------------------|---------|----------|----------|
| 1 mM                                  | 3.79 mL | 18.93 mL | 37.86 mL |
| 5 mM                                  | 0.76 mL | 3.79 mL  | 7.57 mL  |
| 10 mM                                 | 0.38 mL | 1.89 mL  | 3.79 mL  |
| 50 mM                                 | 0.08 mL | 0.38 mL  | 0.76 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

- Kirchenwitz M, Stahnke S, Grunau K, Melcher L, van Ham M, Rottner K, Steffen A, Stradal TEB. The autophagy inducer SMER28 attenuates microtubule dynamics mediating neuroprotection. *Sci Rep.* 2022 Oct 25;12(1):17805. doi: 10.1038/s41598-022-20563-3. PMID: 36284196; PMCID: PMC9596692.
- Kirchenwitz M, Stahnke S, Pretin S, Borowiak M, Menke L, Sieben C, Birchmeier C, Rottner K, Stradal TEB, Steffen A. SMER28 Attenuates PI3K/mTOR Signaling by Direct Inhibition of PI3K p110 Delta. *Cells.* 2022 May 16;11(10):1648. doi: 10.3390/cells11101648. PMID: 35626685; PMCID: PMC9140127.

### In vivo study

- Koukourakis MI, Giatromanolaki A, Fylaktakidou K, Sivridis E, Zois CE, Kalamida D, Mitrakas A, Pouliliou S, Karagounis IV, Simopoulos K, Ferguson DJP, Harris AL. SMER28 is a mTOR-independent small molecule enhancer of autophagy that protects mouse bone marrow and liver against radiotherapy. *Invest New Drugs.* 2018 Oct;36(5):773-781. doi: 10.1007/s10637-018-0566-0. Epub 2018 Jan 31. PMID: 29387992.
- Doulatov S, Vo LT, Macari ER, Wahlster L, Kinney MA, Taylor AM, Barragan J, Gupta M, McGrath K, Lee HY, Humphries JM, DeVine A, Narla A, Alter BP, Beggs AH, Agarwal S, Ebert BL, Gazda HT, Lodish HF, Sieff CA, Schlaeger TM, Zon LI,

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Daley GQ. Drug discovery for Diamond-Blackfan anemia using reprogrammed hematopoietic progenitors. Sci Transl Med. 2017 Feb 8;9(376):eaah5645. doi: 10.1126/scitranslmed.aah5645. PMID: 28179501; PMCID: PMC5501179.

## 7. Bioactivity

### Biological target:

SMER28 is a positive regulator of autophagy acting via an mTOR-independent mechanism. SMER28 prevents the accumulation of amyloid beta peptide.

### In vitro activity

SMER28 has a unique spectrum of bioactivities distinct from other known microtubule-stabilizing or autophagy-inducing drugs. In cells, SMER28 significantly stabilized microtubules and decelerated microtubule dynamics. SMER28 displayed neurotrophic and neuroprotective effects at the cellular level by inducing neurite outgrowth and protecting from excitotoxin-induced axon degeneration.

Reference: Sci Rep. 2022 Oct 25;12(1):17805. <https://pubmed.ncbi.nlm.nih.gov/36284196/>

### In vivo activity

SMER28 has potential in facilitating the safe administration of higher radiation doses and improving the cure rates of radiotherapy for cancer patients. This study found that SMER28 protected mouse bone marrow and liver against radiation damage and facilitated survival of mice after lethal whole body or abdominal irradiation.

Reference: Invest New Drugs. 2018 Oct;36(5):773-781. <https://pubmed.ncbi.nlm.nih.gov/29387992/>

*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.*