

Product data sheet



MedKoo Cat#: 464338 Name: PSI (trifluoroacetate salt) CAS: To be determined Chemical Formula: C ₃₄ H ₅₁ F ₃ N ₄ O ₁₀ Molecular Weight: 732.80	
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:

PSI is a synthetic peptide proteasome inhibitor.

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
Formic Acid	1	1.36

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.36 mL	6.82 mL	13.65 mL
5 mM	0.27 mL	1.36 mL	2.73 mL
10 mM	0.14 mL	0.68 mL	1.36 mL
50 mM	0.03 mL	0.14 mL	0.27 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

- Huong PT, Moon DO, Kim SO, Kim KE, Jeong SJ, Lee KW, Lee KS, Jang JH, Erikson RL, Ahn JS, Kim BY. Proteasome inhibitor-I enhances tunicamycin-induced chemosensitization of prostate cancer cells through regulation of NF-κB and CHOP expression. *Cell Signal*. 2011 May;23(5):857-65. doi: 10.1016/j.cellsig.2011.01.010. Epub 2011 Jan 27. PMID: 21276850.
- Choi MR, Najafi F, Safa AR, Drexler HC. Analysis of changes in the proteome of HL-60 promyeloid leukemia cells induced by the proteasome inhibitor PSI. *Biochem Pharmacol*. 2008 Jun 15;75(12):2276-88. doi: 10.1016/j.bcp.2008.03.017. Epub 2008 Apr 7. PMID: 18468579; PMCID: PMC2494601.

In vivo study

- Delli Pizzi S, Rossi C, Di Matteo V, Esposito E, Guarnieri S, Marigiò MA, Franciotti R, Caulo M, Thomas A, Onofri M, Tartaro A, Bonanni L. Morphological and metabolic changes in the nigro-striatal pathway of synthetic proteasome inhibitor (PSI)-treated rats: a MRI and MRS study. *PLoS One*. 2013;8(2):e56501. doi: 10.1371/journal.pone.0056501. Epub 2013 Feb 19. PMID: 23431380; PMCID: PMC3576393.
- Khonsari B, Klassen R. Impact of Pus1 Pseudouridine Synthase on Specific Decoding Events in *Saccharomyces cerevisiae*. *Biomolecules*. 2020 May 7;10(5):729. doi: 10.3390/biom10050729. PMID: 32392804; PMCID: PMC7277083.

7. Bioactivity

Biological target:

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PSI inhibits proteasome activities (IC₅₀s = 0.25 and 6.5 μ M), is cytotoxic to various human leukemia cells (IC₅₀s = 4.9 to 17.5 nM), and selectively induces apoptosis in endothelial cells (EC₅₀s = 7 to 24 nM) over confluent cells (EC₅₀s = 7,830 to 8,150 nM). PSI also causes ubiquitin-protein conjugate accumulation in neuronal cells.

In vitro activity

PSI induced apoptosis in HL-60 leukemia cells by activating caspases, modulating Bcl-2 family proteins, and stimulating stress pathways. It also triggered changes in protein expression. Multidrug-resistant HL-60 variants showed resistance to PSI, which is not solely due to drug efflux protein overexpression but is linked to factors like low Bax levels and impaired JNK activation.

Reference: Biochem Pharmacol. 2008 Jun 15;75(12):2276-88. <https://pubmed.ncbi.nlm.nih.gov/18468579/>

In vivo activity

In a rat model of Parkinson's disease, the in vivo effects of PSI were examined. Rats receiving PSI showed reduced volume in the substantia nigra, changes in brain metabolites, motor dysfunction, and decreased dopamine levels in the striatum. This suggests that PSI treatment leads to significant alterations in the nigro-striatal pathway and motor impairment, as confirmed by MRI and spectroscopy.

Reference: PLoS One. 2013;8(2):e56501. <https://pubmed.ncbi.nlm.nih.gov/23431380/>

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.