

## OPBP-1

## Chemical Properties

CAS No. :	2378606-21-2
Formula:	C64H92N20O19S
Molecular Weight:	1477.62
Storage:	Keep away from moisture, Powder: -20°C for 3 years   In solvent: -80°C for 1 year <small>Actual storage temperature shall be subject to the COA.</small>

## Biological Description

Description	OPBP-1 is a D-peptide identified through phage display screening, molecular docking, and molecular dynamics simulation. It possesses high stability, strong oral bioavailability, and significant antitumor activity. Its mechanism of action involves selectively binding to PD-L1, thereby effectively disrupting the PD-1/PD-L1 interaction. This disruption restores T cell function and downregulates the proportion of myeloid-derived suppressor cells (MDSCs), counteracting immune escape. Therefore, OPBP-1 is a candidate molecule for cancer immunotherapy research.
Targets(IC50)	PD-1/PD-L1
In vitro	Method: CHO-K1-hPD-L1 cells were co-cultured with PHA/PMA-pre-activated Jurkat T cells, followed by treatment with OPBP-1 (100 $\mu$ M) or anti-PD-L1 antibody (10 $\mu$ g/mL) for 48 hours. The percentage of IL-2-positive cells among CD45 <sup>+</sup> Jurkat T cells was detected by flow cytometry. Result: OPBP-1 (100 $\mu$ M) significantly enhanced IL-2 secretion in CD45 <sup>+</sup> Jurkat T cells, showing an effect comparable to that of anti-PD-L1 antibody (10 $\mu$ g/mL) and stronger than that of the parent peptide H12[1].
In vivo	Method: BALB/c mice were subcutaneously inoculated with CT26 cells. When the tumor volume reached 40-70 mm <sup>3</sup> , OPBP-1 (0.2 or 0.5 mg/kg) was intraperitoneally injected once daily for two consecutive weeks, and tumor volume was measured. Result: OPBP-1 (0.5 mg/kg) significantly inhibited CT26 tumor growth without affecting body weight [1]. Method: CT26 tumor-bearing mice were treated with OPBP-1 (0.5 mg/kg, intraperitoneal injection) for two weeks. Tumor tissues were then collected to prepare single-cell suspensions, and the proportions of CD8 <sup>+</sup> T cells and IFN- $\gamma$ <sup>+</sup> CD8 <sup>+</sup> T cells were detected by flow cytometry. Result: OPBP-1 treatment significantly enhanced the infiltration ratio of CD8 <sup>+</sup> T cells and their IFN- $\gamma$ secretion function in the tumor tissue [1].

## Solubility Information

Solubility	H2O: 4 mg/mL (2.71 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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### Preparing Stock Solutions

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	1mg	5mg	10mg
1 mM	0.6768 mL	3.3838 mL	6.7676 mL
5 mM	0.1354 mL	0.6768 mL	1.3535 mL
10 mM	0.0677 mL	0.3384 mL	0.6768 mL
50 mM	0.0135 mL	0.0677 mL	0.1354 mL

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Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

### Reference

Li W, et al. An orally available PD-1/PD-L1 blocking peptide OPBP-1-loaded trimethyl chitosan hydrogel for cancer immunotherapy. *J Control Release*. 2021;334:376-388.

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