Product Data Sheet

Product Name: PBP 10
Cat. No.: GC17409

Chemical Properties

Cas. No.	794466-43-6
Chemical Name	(1E,3S,4Z,6S,7Z,9S,10Z,12S,13Z,15S,16Z,18S,19Z,21S,22Z,25Z,27S,28Z,30S)-21-(4-aminobutyl)-12-benzyl-1-(2-(3,6-bis(diethylamino)xanthylium-9-yl)phenyl)-6,27,30-tris(3-guanidinopropyl)-1,4,7,10,13,16,19,22,25,28-decahydroxy-3,15-bis(3-hydroxy-3-iminopropyl)
SMILES	CCN(C(C=CC1=C2C3=CC=CC=C3/C(O)=N\[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/C/C(O)=N/[C@@](/C(O)=N/[C@@](C([O-])=O)([H])CCCNC(N)=N)([H])CCCNC(N)=N)([H])CCCCN)([H])C(C)C)([H])CCC(O)=N)([H])CC4=CC=CC=C4
Formula	$C_{84}H_{126}N_{24}O_{15}$
M.Wt	1712.1
Solubility	Soluble to 2 mg/ml in Water
Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.
Structure	PBP 10

Protocol

Cell experiment [1]:

Cell lines	HaCaT cells (human immortalized keratinocyte cell line)

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Preparation Method	HaCaT cells were maintained in high-glucose Dulbecco's Modified Eagle Medium (DMEM) supplemented with 10% fetal bovine serum (FBS), 2mM L-glutamine, and antibiotics (50U/mL penicillin, 50µg/mL streptomycin) at 37°C, 5% CO_2. Cells were pretreated with PBP 10 (2–10µg/mL) for 20 min, followed by stimulation with bacterial lipopolysaccharide (LPS; 1µg/mL) or lipoteichoic acid (LTA; 1µg/mL) for 24h in serum-free conditions.
Reaction Conditions	2–10µg/mL; pretreatment for 20min
Applications	PBP 10 significantly suppressed LPS/LTA-induced production of inflammatory mediators, including nitric oxide (NO), reactive oxygen species (ROS), and interleukin-8 (IL-8), in a dose-dependent manner. PBP 10 also reversed LPS-induced softening of cell stiffness, as measured by atomic force microscopy (AFM), indicating restoration of cytoskeletal integrity.

References:

[1] Korimová A, Dubový P. N-Formylated Peptide Induces Increased Expression of Both Formyl Peptide Receptor 2 (Fpr2) and Toll-Like Receptor 9 (TLR9) in Schwannoma Cells-An In Vitro Model for Early Inflammatory Profiling of Schwann Cells. Cells. 2020 Dec 11;9(12):2661.

Background

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PBP 10 is a cell-permeable formyl peptide receptor 2 (FPR2) antagonist[1-2]. PBP 10 exhibits multiple biological activities, including antibacterial, antiviral, and cancer-inhibitory effects[3-4].

In vitro, pretreatment of human keratinocytes (HaCaT) with PBP 10 (2-10μg/mL) for 20 minutes significantly suppresses the release of pro-inflammatory mediators such as nitric oxide (NO), reactive oxygen species (ROS), and interleukin-8 (IL-8) induced by stimulation with lipopolysaccharide (LPS; 1μg/mL) or lipoteichoic acid (LTA; 1μg/mL), while also reversing inflammation-related nanomechanical changes, such as the reduction in cell stiffness caused by LPS[5]. Pretreatment of RT4 Schwann cells with PBP 10 (1 μM) for 20 minutes, followed by stimulation with fMLF (10nM–100nM) for 6 hours, significantly inhibits fMLF-induced upregulation of Fpr2 protein expression and the decrease in p-NFκB levels, while also reversing changes in the expression of CCR2, CXCR4, and PKCβ[6].

References:

[1] Forsman H, Andréasson E, Karlsson J, et al. Structural characterization and inhibitory profile of formyl peptide receptor 2 selective peptides descending from a PIP2-binding domain of gelsolin. J Immunol. 2012 Jul 15;189(2):629-37.
[2] Holdfeldt A, Winther M, Gabl M, et al. Data on human neutrophil activation induced by pepducins with amino acid sequences derived from β2AR and CXCR4. Data Brief. 2016 Jun 1;8:411-4.
[3] Courtin N, Fotso AF, Fautrad P, et al. Antiviral activity of formyl peptide receptor 2 antagonists against influenza viruses. Antiviral Res. 2017 Jul;143:252-261.
[4] Jia G, Wang X, Wu W, et al. LXA4 enhances prostate cancer progression by facilitating M2 macrophage polarization via inhibition of METTL3. Int Immunopharmacol. 2022 Jun;107:108586.
[5] Korimová A, Dubový P. N-Formylated Peptide Induces Increased Expression of Both Formyl Peptide Receptor 2 (Fpr2) and Toll-Like Receptor 9 (TLR9) in Schwannoma Cells-An In Vitro Model for Early Inflammatory Profiling of Schwann Cells. Cells. 2020 Dec 11;9(12):2661.
[6] Xu J, Su Z, Cheng X, et al. High PPT1 expression predicts poor clinical outcome and PPT1 inhibitor DC661 enhances sorafenib sensitivity in hepatocellular carcinoma. Cancer Cell Int. 2022 Mar 11;22(1):115.

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