Product Data Sheet

Product Name: Avelumab (Anti-Human PD-L1, Human Antibody)
Cat. No.: GC31719

Chemical Properties

Cas. No.	1537032-82-8		
SMILES	[Avelumab]		
Formula		M.Wt	143.8 kDa
Solubility	Soluble in DMSO	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			

Protocol

Cell experiment [1]:

Cell lines	UM-Chor1 cells
Preparation Method	UM-Chor1 cells were treated with 50ng/ml IFN-γ for 24 hours. Cells were then seeded in 6-well round-bottom culture plates at a density of 5×10^4 cells/well and incubated with 2μg/ml Avelumab for 30min at room temperature. Subsequently, 2.5×10^7 NK cells/well were added with a 50:1 ratio of effector cells to target cells. Four hours later, tumor cells were harvested and stained with antibodies for flow cytometry analysis.
Reaction Conditions	2μg/ml; 30min

Caution: Product has not been fully validated for medical applications. For research use only.
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Applications	Avelumab treatment increased UM-Chor1 cells' sensitivity to NK-cell lysis.
Animal experiment [2]:	
Animal models	C57BL/6 mice
Preparation Method	Tumor injection was performed by subcutaneous injection of 1×10^5 MB49 parental cells into the right shaved abdomen of C57BL/6 mice. Tumor growth was measured with a vernier caliper, and mice were randomly assigned to treatment groups 8 days after inoculation. Treatment began on day 9 with an intraperitoneal injection of 400μg/100μl of Avelumab every three days for nine days. Tumors were measured twice a week throughout the study, and tumor volume was calculated according to the following formula: volume= $(\text{width})^2\times(\text{length})/2$.
Dosage form	400μg/100μl; every three days for nine days; i.p.
Applications	Avelumab treatment significantly suppressed tumor growth in C57BL/6 mice bearing MB49 subcutaneous tumors and substantially improved mouse survival.

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References:
[1] Fujii R, Friedman E R, Richards J, et al. Enhanced killing of chordoma cells by antibody-dependent cell-mediated cytotoxicity employing the novel anti-PD-L1 antibody avelumab[J]. Oncotarget, 2016, 7(23): 33498.
[2] Vandeveer A J, Fallon J K, Tighe R, et al. Systemic immunotherapy of non-muscle invasive mouse bladder cancer with avelumab, an anti–PD-L1 immune checkpoint inhibitor[J]. Cancer immunology research, 2016, 4(5): 452-462.

Background

Avelumab (Anti-Human PD-L1, Human Antibody) is an intravenously (i.v.) administered fully human IgG1 monoclonal antibody (mAb)[1]. Avelumab can inhibit the interaction between PD-L1 and PD-1 and mediate antibody-dependent cell-mediated cytotoxicity (ADCC) through retention of its native FcR, leading to the reinvigoration of effector T cells [2]. Avelumab has been widely used to inhibit tumor progression in different tumor models and to develop novel combination therapies to enhance synergistic anti-tumor effects[3].

In vitro, Avelumab treatment at 20μg/ml for 7 days increased IFN-γ levels and decreased

IL-5 concentrations in peripheral blood mononuclear cells (PBMC)[4]. Incubation with 2μg/ml Avelumab for 30min increased the sensitivity of IFN-γ-treated UM-Chor1 cells to natural killer (NK) lysis[5]. Treatment with Avelumab at 2μg/ml for 24h promoted NK cell disinhibition and enhanced the cytotoxicity against HPV-positive cervical cancer cells[6].

In vivo, Avelumab treatment, at a dose of 400μg/100μl intraperitoneally every three days for 9 days, significantly inhibited tumor growth in C57BL/6 mice bearing MB49 subcutaneous tumors and substantially improved 60-day survival[7]. Intraperitoneal injection of Avelumab at a dose of 400μg every 2 days for one week significantly delayed MC38 tumor growth in C57BL/6 mice and increased $CD8^+$ T cell frequency in mouse spleen[8].

References:
[1] Kim E S. Avelumab: first global approval[J]. Drugs, 2017, 77(8): 929-937.
[2] Collins J M, Gulley J L. Product review: avelumab, an anti-PD-L1 antibody[J]. Human vaccines & immunotherapeutics, 2019, 15(4): 891-908.
[3] Bourhis J, Stein A, de Boer J P, et al. Avelumab and cetuximab as a therapeutic combination: An overview of scientific rationale and current clinical trials in cancer[J]. Cancer treatment reviews, 2021, 97: 102172.
[4] Grenga I, Donahue R N, Lepone L M, et al. A fully human IgG1 anti-PD-L1 MAb in an in vitro assay enhances antigen-specific T-cell responses[J]. Clinical & translational immunology, 2016, 5(5): e83.
[5] Fujii R, Friedman E R, Richards J, et al. Enhanced killing of chordoma cells by antibody-dependent cell-mediated cytotoxicity employing the novel anti-PD-L1 antibody avelumab[J]. Oncotarget, 2016, 7(23): 33498.
[6] Liu H, Zhou S, Liu J, et al. Lirilumab and avelumab enhance anti-HPV+ cervical cancer activity of natural killer cells via Vav1-dependent NF-κB disinhibition[J]. Frontiers in oncology, 2022, 12: 747482.
[7] Vandeveer A J, Fallon J K, Tighe R, et al. Systemic immunotherapy of non-muscle invasive mouse bladder cancer with avelumab, an anti–PD-L1 immune checkpoint inhibitor[J]. Cancer immunology research, 2016, 4(5): 452-462.
[8] Fallon J K, Vandeveer A J, Schlom J, et al. Enhanced antitumor effects by combining an IL-12/anti-DNA fusion protein with avelumab, an anti-PD-L1 antibody[J]. Oncotarget, 2017, 8(13): 20558.

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