Belatacept

Cat. No.: HY-108813
CAS No.: 706808-37-9
Target: Others
Pathway: Others
Storage: Store at 4°C, do not freeze

Belatacept

SOLVENT & SOLUBILITY

In Vitro	H_2O : 50 mg/mL (Need ultrasonic)

BIOLOGICAL ACTIVITY

Description	Belatacept (BMS 224818) is a selective T-cell costimulation blocker. Belatacept binds to CD 80/86 ligands and thereby inhibits the CD-28-mediated T-cell costimulation. Belatacept can be used in the research of Immunosuppression in organ transplants[1].
IC_{50} & Target	CD80/86[1]

In Vitro

Belatacept (0-5 mg/mL, 1 h) inhibits T-cell proliferation in a dose-dependent manner[2].
Belatacept (500 ng/mL, 7 days) enhances predominance of effector-memory T-cells after allogeneic stimulation[2].
Belatacept (100, 500 ng/mL, 7 days) has no effect on differentiation and allogeneic IFNγ production of isolated effector-memory T cells[2].
Belatacept (10 μg/mL, 1 h) does not inhibit follicular T Cell-dependent B-Cell differentiation[4].
Belatacept (40 μg/mL, 10 days) reduces plasmablast differentiation, Ig production, and the major transcription factor Blimp-1 in a T cell-independent manner[5].
Belatacept (40 μg/mL, 30 min) induces activation of the STAT3 transcription factor in stimulated B cells and reduced the expression of CD86[5].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[2]

Cell Line:	PBMCs from healthy volunteers
Concentration:	0-5 mg/mL
Incubation Time:	1 h
Result:	Inhibited T-cell proliferation l with IC_{50} values of 215 ng/mL, and residual T-cell proliferation (±30%) was still present at high doses.

Western Blot Analysis[5]

Cell Line:	CD40L and IL-21 stimulated B cells
Concentration:	40 μg/mL
Incubation Time:	15, 30 min
Result:	Increased in STAT signaling determined by increased STAT3 phosphorylation.

In Vivo

Belatacept (intraperitoneal injection, 60 mg/kg) inhibits ABMR (Antibody-Mediated Rejection), and inhibits acute rejection when combined with BTLA (B and T lymphocyte attenuator) overexpression therapy[3].
Belatacept (intravenous injection, 20 mg/kg) displays immunosuppressive activities in monkeys immunized with sheep red blood cell[6].
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Animal Model:	Acute rejection model of orthotopic kidney transplantation in rats[3]
Dosage:	60 mg/kg
Administration:	Intraperitoneal injection, at postoperative and 4 days after transplantation.
Result:	Inhibited creatinine increase after kidney transplantation (combined with BTLA overexpression therapy). Reduced C4d in graft IF staining, and reduced CD138 infiltration and DSA production.

Animal Model:	Rhesus monkeys immunized with sheep red blood cell[6]
Dosage:	Intra-operatively 10 mg/kg, on day 4 (15 mg/kg) and on post-operative days 14, 28, 42, 56, 70 (20 mg/kg).
Administration:	intravenous injection
Result:	Caused a 50% reduction in the peak anti-SRBC response. Prolonged renal allograft survival and synergies with conventional immunosuppression.

REFERENCES

[1]. George Melvin, et al. Belatacept: A worthy alternative to cyclosporine?. J Pharmacol Pharmacother. 2012 Jan-Mar; 3(1): 90–92.

[2]. Gretchen N de Graav, et al. Down-Regulation of Surface CD28 under Belatacept Treatment: An Escape Mechanism for Antigen-Reactive T-Cells. PLoS One. 2016 Feb 26;11(2):e0148604.

[3]. Hengcheng Zhang, et al. Combined Immunotherapy With Belatacept and BTLA Overexpression Attenuates Acute Rejection Following Kidney Transplantation. Front Immunol. 2021 Feb 24;12:618737.

[4]. Gretchen N de Graav, et al. Belatacept Does Not Inhibit Follicular T Cell-Dependent B-Cell Differentiation in Kidney Transplantation. Front Immunol. 2017 May 31;8:641.

[5]. laire Leibler, et al. Control of Humoral Response in Renal Transplantation by Belatacept Depends on a Direct Effect on B Cells and Impaired T Follicular Helper-B Cell Crosstalk. J Am Soc Nephrol. 2018 Mar;29(3):1049-1062.

[6]. Christian P Larsen, et al. Rational development of LEA29Y (belatacept), a high-affinity variant of CTLA4-Ig with potent immunosuppressive properties. Am J Transplant. 2005 Mar;5(3):443-53.

Caution: Product has not been fully validated for medical applications. For research use only.

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