

Belatacept

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

Belatacept

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] .														
IC₅₀ & Target	CD80/86 ^[1]														
In Vitro	<p>Belatacept (0-5 mg/mL, 1 h) inhibits T-cell proliferation in a dose-dependent manner^[2].</p> <p>Belatacept (500 ng/mL, 7 days) enhances predominance of effector-memory T-cells after allogeneic stimulation^[2].</p> <p>Belatacept (100, 500 ng/mL, 7 days) has no effect on differentiation and allogeneic IFNγ production of isolated effector-memory T cells^[2].</p> <p>Belatacept (10μg/mL, 1 h) does not inhibit follicular T Cell-dependent B-Cell differentiation^[4].</p> <p>Belatacept (40μg/mL, 10 days) reduces plasmablast differentiation, Ig production, and the major transcription factor Blimp-1 in a T cell-independent manner^[5].</p> <p>Belatacept (40μg/mL, 30 min) induces activation of the STAT3 transcription factor in stimulated B cells and reduced the expression of CD86^[5].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay^[2]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>PBMCs from healthy volunteers</td> </tr> <tr> <td>Concentration:</td> <td>0-5 mg/mL</td> </tr> <tr> <td>Incubation Time:</td> <td>1 h</td> </tr> <tr> <td>Result:</td> <td>Inhibited T-cell proliferation with IC₅₀ values of 215 ng/mL, and residual T-cell proliferation (\pm30%) was still present at high doses.</td> </tr> </table> <p>Western Blot Analysis^[5]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>CD40L and IL-21 stimulated B cells</td> </tr> <tr> <td>Concentration:</td> <td>40 μg/mL</td> </tr> <tr> <td>Incubation Time:</td> <td>15, 30 min</td> </tr> </table>	Cell Line:	PBMCs from healthy volunteers	Concentration:	0-5 mg/mL	Incubation Time:	1 h	Result:	Inhibited T-cell proliferation with IC ₅₀ values of 215 ng/mL, and residual T-cell proliferation (\pm 30%) was still present at high doses.	Cell Line:	CD40L and IL-21 stimulated B cells	Concentration:	40 μ g/mL	Incubation Time:	15, 30 min
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Result:	Increased in STAT signaling determined by increased STAT3 phosphorylation.
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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]
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Dosage:	60 mg/kg
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Administration:	Intraperitoneal injection, at postoperative and 4 days after transplantation.
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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.
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Animal Model:	Rhesus monkeys immunized with sheep red blood cell ^[6]
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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).
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Administration:	intravenous injection
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Result:	Caused a 50% reduction in the peak anti-SRBC response. Prolonged renal allograft survival and synergies with conventional immunosuppression.
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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]. Iaire 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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