Product Data Sheet

Product Name: Tocilizumab
Cat. No.: GC37809

Chemical Properties

Cas. No.	375823-41-9		
SMILES	[Tocilizumab]		
Formula		M.Wt	
Solubility	Soluble in water	Storage	Store at -80°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	Tocilizumab		

Protocol

Cell experiment [1]:

Cell lines	U266B1 cells
Preparation Method	Cell Proliferation Assays U266B1 cells were suspended with SOMAmer (1, 10, or 100 μg/ml) or tocilizumab (1, 10, or 100 μg/ml) in RPMI 1640 medium containing 10% FBS at 104 cells per well and cultured for 30 min at 37 °C in a 5% CO2 incubator.
Reaction Conditions	1, 10, or 100 μg/ml□30 min at 37 °C

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Applications	SL1026 achieved complete inhibition of IL-6 at 1 μg/ml (83 nm), whereas tocilizumab achieved 60% inhibition at a roughly equivalent molar concentration (67 nm) .

Animal experiment [2]:

Animal models	Patients with rheumatoid arthritis
Preparation Method	Patients (n=1262) were randomised 1:1 to receive Tocilizumab-SC 162 mg weekly (qw)+placebo-IV every four weeks (q4w) or Tocilizumab-IV 8 mg/kg q4w+placebo-SC qw in combination with DMARD(s). Maintenance of clinical responses and safety through week 97 were assessed.
Dosage form	8 mg/kg; SC,IV
Applications	Tocilizumab-SC had a comparable safety profile to Tocilizumab-IV through week 97, except that injection site reactions (ISRs) were more common with Tocilizumab-SC. Safety profiles in patients who switched were similar to those in patients who received continuous Tocilizumab-SC or Tocilizumab-IV treatment.

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References:

[1]. [1]Gupta S, et al. Chemically modified DNA aptamers bind interleukin-6 with high affinity and inhibit signaling by blocking its interaction with interleukin-6 receptor. J Biol Chem. 2014 Mar 21;289(12):8706-19.

[2]. Burmester GR, et al. Efficacy and safety of subcutaneous tocilizumab versus intravenous tocilizumab in combination with traditional DMARDs in patients with RA at week 97 (SUMMACTA). Ann Rheum Dis. 2016 Jan;75(1):68-74.

Background

Tocilizumab, as a humanised monoclonal antibody, can target both membrane-bound and soluble forms of the IL-6 receptor.[1] Tocilizumab has been approved for treatment in patients with rheumatologic disorders and chimeric antigen receptor T cell-induced cytokine release syndrome.[3]

In vitro efficacy test it shown that treatment with tocilizumab (1 or 10 μm) or SOMAmer (0.83 or 8.3 μm), SOMAmer suppressed the proliferation of U87MG and HepG2 cells to a greater extent than tocilizumab at similar molar concentrations.[7]

In vivo efficacy test it indicated that treatment with 8 mg/kg tocilizumab using two consecutive intravenous infusions 12 h apart in 100 patients with COVID-19 and ARDS requiring ventilatory support in Brescia (Italy) has 20% mortality according to an optional third infusion based on clinical response.[1] In vivo, tocilizumab 8 mg/kg?×?1 in mechanically ventilated patients, the results shown that receipt of tocilizumab was

independently associated with improved survival.[2] In vivo study for the treatment of rheumatoid arthritis, treatment with 4?mg/kg tocilizumab, the results exhibited that the average IL-6 level reached the peak at the second week after administration, and then decreased gradually.[4] In a 61-year-old man with COVID-19, treatment with 324 mg Tocilizumab via subcutaneous with hydroxychloroquine can successfully manage the infection.[6] In addition, the recommended dose of Tocilizumab is 4–8 mg/kg administered as a single 60- minute intravenous infusion every 4 weeks for treatment in moderate to severe active arthritis in adults, Giant cell arthritis, Polyarticular juvenile idiopathic arthritis and cytokine release syndrome in patients 2 years of age older with active disease.[5]

References:
[1] Lan SH, et al. Tocilizumab for severe COVID-19: a systematic review and meta-analysis. Int J Antimicrob Agents. 2020 Sep;56(3):106103.
[2]Somers EC, et al. Tocilizumab for Treatment of Mechanically Ventilated Patients With COVID-19. Clin Infect Dis. 2021 Jul 15;73(2):e445-e454.
[3]Wei Q, et al. Tocilizumab treatment for COVID-19 patients: a systematic review and meta-analysis. Infect Dis Poverty. 2021 May 18;10(1):71.
[4]Smolen J.S, et al. Effect of interleukin-6 receptor inhibition with tocilizumab in patients with rheumatoid arthritis (OPTION study): a double-blind, placebo-controlled, randomised trial.?Lancet.?2008;371(9617):987–997.
[5]Sebba A, et al. Tocilizumab: the first interleukin -6 receptor inhibitor.?Am J Health Syst Pharm.?2008;65(15):1413–1418. ?
[6]Fontana F, et al. Covid-19 pneumonia in a kidney transplant recipient successfully treated with Tocilizumab and Hydroxychloroquine.?Am. J. Transplant. American J. Transplant.?2020;20(7).
[7]Gupta S, et al. Chemically modified DNA aptamers bind interleukin-6 with high affinity and inhibit signaling by blocking its interaction with interleukin-6 receptor. J Biol Chem. 2014 Mar 21;289(12):8706-19.