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Vedolizumab

Cat. No.:	HY-P9911
CAS No.:	943609-66-3
Molecular Weight:	146814.91
Target:	Integrin
Pathway:	Cytoskeleton
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.

BIOLOGICAL ACTIVITY

Description	Vedolizumab is a humanized IgG1 monoclonal antibody that targets the α4β7 integrin for the treatment of ulcerative colitis and Crohn's disease.
IC_{50} & Target	Integrin[1]
In Vitro	Vedolizumab does not bind to the majority of memory CD4+ T lymphocytes (60%), neutrophils, and most monocytes. The highest level of vedolizumab binding is to a subset (25%) of human peripheral blood memory CD4+ T lymphocytes that include gut-homing interleukin 17 T-helper lymphocytes. Vedolizumab also binds to eosinophils at high levels, and to naive T-helper lymphocytes, naive and memory cytotoxic T lymphocytes, B lymphocytes, natural killer cells, and basophils at lower levels; vedolizumab binds to memory CD4+ T and B lymphocytes with subnanomolar potency (EC_{50}=0.3-0.4 nM). Vedolizumab selectively inhibits adhesion of α4β7-expressing cells to mucosal addressin cell adhesion molecule 1 (IC_{50} =0.02-0.06 μg/mL) and fibronectin (IC_{50}=0.02 μg/mL), but not vascular cell adhesion molecule 1[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Blockade of α4β7 receptors on T-lymphocytes has been shown to occur for several weeks after a single dose of vedolizumab. The drug concentration following the infusion has been shown to be dose related with a mean maximum concentration of 12.5 μg/mL in those receiving 0.5 mg/kg of vedolizumab and 52.0 μg/mL in those receiving 2 mg/kg. The serum half-life of these two doses is 9-12 days respectively and saturation of α4β7 receptors on T-lymphocytes is >90% at both 4-6 weeks following infusion. In a dose ranging study, the serum drug concentrations increase with increasing dose and when regular induction infusions are used (on day 1, 15, 29 and 85), the serum half-life is between 15 and 22 days across all groups[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Kinase Assay [1]	Vedolizumab inhibition of high-affinity binding of MAdCAM-1 to human peripheral blood memory CD4+ T lymphocytes is tested. Peripheral blood (90 μL) is incubated with a saturating concentration (3 μg/mL) of MAdCAM-1-murine-Fc fusion protein and 4 mM $MnCl_2$ in a final volume of 100 μL for 1 h at room temperature, in the presence or absence of vedolizumab. After washing with assay buffer, the cells are stained with fluorescentlabeled anti-mouse IgG for 15 min at room temperature. After washing again, cells are incubated with mouse serum for 10 min at room temperature, followed by staining with anti-CD4 and anti-CD45RO antibodies for 15 min at room temperature. After washing, red blood cells are lysed with BD FACS lysing solution and analyzed by flow cytometry in a FACSCalibur with CellQuest Pro software[1].

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

CUSTOMER VALIDATION

- Anal Chim Acta. 2021, 338306.

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REFERENCES

[1]. Soler D, et al. The binding specificity and selective antagonism of vedolizumab, an anti-alpha4beta7 integrintherapeutic antibody in development for inflammatory bowel diseases. J Pharmacol Exp Ther. 2009 Sep;330(3):864-75.

[2]. Singh H, et al. Vedolizumab: A novel anti-integrin drug for treatment of inflammatory bowel disease. J Nat Sci Biol Med. 2016 Jan-Jun;7(1):4-9.

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