

Product Data Sheet

Product Name: QL9
Cat. No.: GC30580

Chemical Properties

Cas. No. 159646-83-0

SMILES Gln-Leu-Ser-Pro-Phe-Pro-Phe-Asp-Leu

Formula $C_{52}H_{74}N_{10}O_{14}$ M.Wt 1063.21

Solubility Water : 33.33 mg/mL (31.35 mM) Storage Store at -20°C

General tips For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C 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

QLSPFPFDL

Protocol

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

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Cell experiment: Wild type 2C and high affinity 2C T cell transfectants m67 and m6 are incubated with Kb- or Ld-positive cells and various concentrations of peptide SIY and QL9 alanine variants. T cell activation is measured by assaying for levels of IL-2 release. Briefly, T cell transfectants (7.5×10^4) are incubated with T2-Kb (7.5×10^4) or T2-Ld (7.5×10^4) along with various concentrations of peptide for 20-24 h at 37 °C and 5% CO₂. Supernatant is harvested, and levels of IL-2 are measured in an enzyme-linked immunosorbent assay type format. Results are plotted as percentage of maximal IL-2 release = $\frac{(A450(\text{sample}) - A450(\text{no peptide}))}{(\text{Max } A450(\text{sample}) - A450(\text{no peptide}))} \times 100$; signal obtained from no peptide is similar to that obtained for the null peptides MCMV or OVA. Binding curves are generated in GraphPad Prism by plotting the percentage of maximal IL-2 release against peptide concentration. The concentrations of peptide yielding 50% maximal IL-2 release (SD50) are calculated using non-linear regression (sigmoidal fitting; GraphPad Prism) of the activation curves[2].

References:

- [1]. Speir JA, et al. Structural basis of 2C TCR allorecognition of H-2Ld peptide complexes. *Immunity*. 1998 May;8(5):553-62.
- [2]. Bowerman NA, et al. Different strategies adopted by K(b) and L(d) to generate T cell specificity directed against their respective bound peptides. *J Biol Chem*. 2009 Nov 20;284(47):32551-61.

Background

QL9 (QLSPFPFDL) is a high-affinity alloantigen for the 2C T cell receptor (TCR).

Mouse T cell clone 2C recognizes two different major histocompatibility (MHC) ligands, the self MHC Kb and the allogeneic MHC Ld. Two distinct peptides, SIY (SIYRYYYGL) and QL9 (QLSPFPFDL), act as strong and specific agonists when bind to Kb and Ld, respectively. QL9 binding to MHC Ld is influenced by the majority of peptide side chains, distributed across the entire length of the peptide. Findings with both systems, but QL9-Ld in particular, suggest that many single-residue substitutions, introduced into peptides to improve their binding to MHC and thus their vaccine potential, could impair T cell reactivity due to their dual impact on TCR binding. T cell activation assays are

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performed to measure effects of peptide SIY and QL9 residues on T cell function[2].

[1]. Speir JA, et al. Structural basis of 2C TCR allorecognition of H-2Ld peptide complexes. *Immunity*. 1998 May;8(5):553-62. [2]. Bowerman NA, et al. Different strategies adopted by K(b) and L(d) to generate T cell specificity directed against their respective bound peptides. *J Biol Chem*. 2009 Nov 20;284(47):32551-61.

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